Mr. Aaron Nadig, Island Team Manager  
Fish and Wildlife Service  
Page 2

eliminating some improvements. Reducing some areas proposed for public access and  
passive outdoor recreation would subsequently reduce the projected number of visitors.  
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a  
bridge), and the Hale wa'a and some buildings shown at the cultural center. Figure 2.4A  
it identifies these revisions and a summary is provided below. More information on these  
modifications have been incorporated into other pertinent sections of this chapter.

1. Kahaniki Area  
   - Remove pedestrian trail leading to Mokuana peninsula and bridge over  
     Kahaniki Stream.

2. Pihakalo to Ni Pihaku o Haawaine Area  
   a. Remove some segments of the pedestrian trail within this upland area. Only  
      foot trails would be supported.
   b. Reduce the total building floor area proposed at the luauhele complex at  
      Pihakalo from about 8,250 sq ft to 4,600 sq ft by reducing the number of proposed  
      structures.
   c. Provide plans to first provide an off-street parking lot, restrooms facility (350 sf),  
      and open pavilion (150 sf) to support programs either as an interim or permanent  
      basis before proceeding with the education center.

3. Kapa'a Area  
   a. Remove pedestrian trail section along Kapa'a Quay Road from Ni Pihaku  
      to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a  
      from about 9,600 sq ft to 7,700 sq ft by reducing the number of proposed  
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural  
      center at Kapa'a to two instead of three.

4. Kapa'a to Kalalau Area  
   Changes proposed result in improvements at this site to only those already approved  
   by the City Kauai Nui Gateway Park proposal. The project (Proposed Action) does  
   not include any new improvements to this site. DSP may also not implement  
   construction of the approved pedestrian bridge across Kauai Stream.
   a. Remove Hale wa'a structure and canoe storage at the Kalalau park site.
   b. Restrict canoe launch activities into Kauaiinui Canal to only schools by  
      permit.

5. Waiauia to Ulupu Heiau Area  
   - Remove pedestrian trail from the levee to Ulupu Heiau, including the  
     boardwalk.

6. DOFAW Management Station to Mokuana Area  
   a. Remove two observation decks within DOFAW's management station area  
      and the interpretive pavilion at the park site below (southeast) the  
      management station.
Mr. Aaron Nadig, Island Team Manager
Fish and Wildlife Service
Page 3

- Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
- Remove pedestrian trail from Mokulana connecting to Kahanaiki sand area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Falvo of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHIF Planners

---

June 29, 2020

Ms. Christine Kinimaka, Public Works Administrator
Department of Accounting and General Services
State of Hawai‘i
P.O. Box 119
Honolulu, Hawai‘i 96810-0119

Dear Ms. Kinimaka:

Subject: Kawaihui-Hāmāku Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kā'eo, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmāku Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale wa'a and some buildings shown at the cultural center. Figure 2-4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanuiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanuiki Stream.

2. Pāhākea to Nā Pāhaku o Hawawaine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the luauhale complex at Pāhākea from about 4,200 sf to 4,100 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an offstreet parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quaerted from Nā Pāhaku to City-Medical Aispley Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 9,600 sf to 7,600 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapaa to Kapalua Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kapalua Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kapalua park site.
   b. Restrict canoe launch activities into Kapalua Canal to only schools by permit.

5. Wai'anae to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW's management station area, and the interactive pavilion at the park site below (southwest) the management station.

Although some improvements are being reinstated back into the Proposed Action by the BNR's action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – IHF Planners
Colonel Neal S. Mitsuyoshi
Office of the Adjutant General, Department of Defense
Page 2

incorporated into concept plans to further reduce public access within Kawaihae by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and ʻahe waʻa and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanuli Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanuli Stream.

2. Pōhakua to Nā Pōhaku o Hauwahi Area
   - a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - b. Reduce the total building floor area proposed at the lawaihe complex at Pōhakua from about 5,250 sf to 5,100 sf by reducing the number of proposed structures.
   - c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   - a. Remove pedestrian trail section along Kapa‘a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   - b. Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 5,600 sf to 5,500 sf by reducing the number of proposed structures.
   - c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. Kapa‘a to Kalāheo Area
   - Changes proposed result in improvements at this site to only those already approved by the ʻCity Kawaihae Nāl Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihae Canal.
   - a. Remove ʻahe waʻa structure and canoe storage at the Kalāheo park site.
   - b. Restrict canoe launch activities into Kawaihae Canal for only schools by permit.

5. Wa‘iau to Ulupō Heiau Area
   - Remove pedestrian trail from the ʻIwai to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area

Colonel Neal S. Mitsuyoshi
Chief Engineering Officer, Hawai‘i National Guard
Office of the Adjutant General
Department of Defense
State of Hawai‘i
3949 Diamond Head Road
Honolulu, Hawai‘i 96816-4495

Dear Colonel Mitsuyoshi:

Subject: Kawaihae-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihae-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihae resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been
Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.

Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Atri Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

---

Mr. Kenneth G. Madsen II, Public Works Manager
Office of School Facilities and Support Services
Department of Education
State of Hawai‘i
P.O. Box 2360
Honolulu, Hawai‘i 96804

Dear Mr. Madsen II:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating those concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the lā‘ike wā‘a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakii Area
   • Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakii Stream.

2. Pūhakea to Nā Pūhakū o Hawaione Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the lā‘ike center at Pūhakea from about 5,250 sf to 4,700 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quary Road from Nā Pūhakū to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 5,600 sf to 5,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kauaiwai Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kauaiwai Canal to only schools by permit.

5. Waipouli to Ulupe‘e Heiau Area
   • Remove pedestrian trail from the levee to Ulupe‘e Heiau, including the boardwalks.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below south of the management station.

b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

b. Remove pedestrian trail from Mokulana connecting to Kahanakii upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Satō – IHP Planners
Ms. Sina Pruder, P.E.
Wastewater Branch, State Department of Health

Page 2

June 29, 2020

Ms. Sina Pruder, P.E.
Wastewater Branch
Department of Health
State of Hawai‘i
P.O. Box 3378
Honolulu, Hawai‘i 96801-3378

Dear Ms. Pruder:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail, boardwalks, and a bridge and the hale wa‘a and some buildings shown at the cultural center. Figure 24A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanākiki Area
   • Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanākiki Stream.

2. Pēhākau to Nā Pēhākau o Harawaine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trail would be supported.
   b. Reduce the total building floor area proposed at the kanaha complex at Pēhākau from about 5,450 sf to 5,250 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (150 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’ī Area
   a. Remove pedestrian trail section along Kapa’ī Quarry Road from Nā Pēhākau to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’ī from about 9,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’ī to two instead of three.

4. Kapa’ī to Kalākehu Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kalākehu park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai‘ānae to Ulupō He‘iau Area
   • Remove pedestrian trail from the levee to Ulupō He‘iau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below Governmental management station.
ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
be. Remove pedestrian trail from Mokulana connecting to Kahana'i upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Dr. Bruce S. Anderson, Administrator
Division of Aquatic Resources
Department of Land and Natural Resources
State of Hawai'i
1151 Punchbowl Street, Room 330
Honolulu, Hawai'i 96813

June 29, 2020

Dear Dr. Anderson:

Subject: Kawaihui-Hämakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai'i

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hämakua Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a "Red" double strikethrough format to identify portions eliminated by this change and a double underline in "Red" for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’a, and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaka'i Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaki Stream.
2. Pāhakea to Na Pōhaku o Hawawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kauhale complex at Pāhakea from about 3,350 sf to 2,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.
3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Na Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 2,600 sf to 2,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa's to two instead of three.
4. Kapa'a to Kalākau Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalākau park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.
5. Wai'anae to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalks.
6. DOFAW Management Station to Moku'ula Area
   a. Remove two observation decks within DOFAW's management station area and the interpretive pavilion at the park site below (southwest) the management station.

a. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

b. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – IIHF Planner
June 29, 2020

Mr. Russell Y. Tsuji, Administrator
Land Division
Department of Land and Natural Resources
State of Hawai‘i
P.O. Box 621
Honolulu, Hawai‘i 96819

Dear Mr. Tsuji:

Subject: Kawainui-Hālākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hālākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa‘a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahana Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahana Stream.

2. Pāhākea to Nī Pāhākea o Haswahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the Makaha complex at Pāhākea from about 3,200 sf to 2,000 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapaa’s Area
   a. Remove pedestrian trail section along Kapaa’s Quarry Road from Nī Pāhākea to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapaa from about 4,600 sf to 2,000 sf, by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa’s to two instead of three.

4. Kapaa’s to Kalibōn Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove Hale wa‘a’s structure and canoe storage at the Kalibōn park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wai‘anae to Ulupal Heiau Area
   - Remove pedestrian trail from the levee to Ulupal Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area and the interactive pavilion at the park site below (southwest) the management station.
Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for D.O.F.A.W. management activities and authorized educational and cultural programs.

Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Atri Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planner

June 29, 2020

Mr. Samuel J. Lemno, Administrator
Office of Conservation and Coastal Lands
Department of Land and Natural Resources
State of Hawai‘i
P.O. Box 621
Honolulu, Hawai‘i 96813

Dear Mr. Lemno:

Subject: Kawainui-Hāmāku'a Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmāku‘a Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, D.O.F.A.W. and D.S.P. have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by...
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hale wa‘a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaki Stream.

2. Pōhakea to Nā Pōhaku o Haawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the ha‘au‘i complex at Pōhakea from about 8,350 sf to 6,700 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   a. Remove pedestrian trail section along Kapa‘a Quarry Road from Nā Pōhaku to City-Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 6,600 sf to 3,300 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. Kapa‘a to Kaliheo Area
   Changes proposed in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kaliheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai‘auia to Ulu‘pō Heiau Area
   - Remove pedestrian trail from the levee to Ulu‘pō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaki upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHP Planners
Darren T. Lerner, Ph.D., Interim Director  
Water Resources Research Center, University of Hawai‘i at Mānoa

Page 2

eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would substantially reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the land wa‘a‘a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanākapu Area
   • Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanākapu Stream.

2. Pihake to Nā Pihaku o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only feet-trails would be supported.
   b. Reduce the total building floor area proposed at the luhuāhe‘e complex at Pihake from about 8,250 sf to 6,250 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and an open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapā’s Area
   a. Remove pedestrian trail section along Kapā’s Quarry Road from Nā Pihaku to City Bakery parking.
   b. Reduce the total building floor area proposed for the cultural center at Kapā from about 6,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapā to two instead of three.

4. Kapā’s to Kalīhele Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove ha‘a wa‘a structure and canoe storage at the Kalīhele park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wa‘ia‘u to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.
6. DOWA Management Station to Mokulana Area

a. Remove two observation decks within DOWA’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOWA management activities and authorized educational and cultural programs.

c. Remove pedestrian trail from Mokulana connecting to Kahanaiku upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate these impacts are discussed. Kawaihui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffer-Fabro of DOWA at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1521 PUNCHBOWI STREET, ROOM 323
HONOLULU, HAWAII 96813

June 29, 2020

Mr. Ernest Y.W. Lau, P.E., Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawai‘i 96813

Dear Mr. Lau:

Subject: Kawaihui-Hämaküa Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hämaküa Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOWA and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale wā‘a and some buildings shown in the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications has been incorporated into other pertinent sections of this chapter.

1. Kahanaikai Area
   a. Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakai Stream.

2. Pōhākea to Nā Pōhaku o Hauwhaine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the huleia camp at Pōhākea from about 8,240 sf to 4,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quary Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed resulting in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove Hale wā‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wai’auia to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interactive pavilion at the park site below (southwest) the management station.

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaikai upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabe of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
June 29, 2020

Ms. Pamela A. Witty-Oakland, Director
City Department of Community Services
Kaua‘i, Kaua‘i, Hawaii 96750

Dear Ms. Witty-Oakland:

Subject: Kaua‘i Master Plan Project
Final Environmental Impact Statement Approval by Land Board

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kaua‘i Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions to the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with the Draft EIS resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions proposed improvements have now been incorporated into concept plans to further reduce public access within Kaua‘i by eliminating some improvements. Reducing some areas proposed for public access and

---

passive outdoor recreation would substantially reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the ha‘a‘a‘a‘a (a-wa‘a) and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kaua‘i Stream
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kaua‘i Stream.

2. Pōhaku to Nā Pōhaku o Haawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the ha‘a‘a‘a‘a complex at Pōhaku from about 1,500 sf to 600 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and an open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   a. Remove pedestrian trail section along Kapa‘a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 6,000 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. Kapa‘a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kaua‘i Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also implement the approved pedestrian bridge across Kawainui Canal.
   a. Remove ha‘a‘a‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa‘iau to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest the management station).
ah. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana
peninsula would only be used for DOFAW management activities and
authorized educational and cultural programs.
bh. Remove pedestrian trail from Mokulana connecting to Kāhakuloa upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s
action, impacts associated with these improvements were already addressed in the Draft EIS
document published. The completed Final EIS includes these revisions and will be filed with the
State Office of Environmental Quality Control (OEQC) for publication and notification that it has
been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once
publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati
Jeffers Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. Mark Yonomine, P.E., Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawai‘i 96813

Dear Mr. Yonomine:

Subject: Kawainui-Hāmōkua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kālia, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR)
approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-
Hāmōkua Master Plan Project to the Governor’s Office for Acceptance determination at their
October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that
some of the redactions to project improvements identified in the pre-Final EIS be added back into
the Proposed Action. The BLNR believed it was better to include them to provide a more
comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of
these project elements for environmental effects does not necessarily mean that the elements will
be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is
provided below. This section has been updated to identify additional revisions being made based
upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify
portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting
from project improvements which increase public access. Although such concerns were
addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have
decided to incorporate additional modifications to the project (Proposed Action) after
evaluating these concerns. Revisions to proposed improvements have now been
incorporated into concept plans to further reduce public access within Kawainui by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaikai Area
   a. Remove pedestrian trail leading to Mokulama peninsula and bridge over Kahanaikai Stream.

2. Pōhakea to Niʻi Pōhaku o Haawihine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot-trails would be supported.
   b. Reduce the total building floor area proposed at the humane complex on Pōhaku from about 9,350 sf to 4,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapaʻa Area
   a. Remove pedestrian trail sections along Kapaʻa Quarry Road from Niʻi Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapaʻa from about 5,602 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaʻa to two instead of three.

4. Kapaʻa to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Waikīkī to Ulupalū Heiau Area
   a. Remove pedestrian trail from the levee to Ulupalū Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulama Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

ab. Remove pedestrian trail and two viewing pavilions at Mokulama. Mokulama peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulama connecting to Kahanaikai upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

[Signature]

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
June 29, 2020

Ms. Kathy Sakugawa, Acting Director
Department of Planning and Permitting
City and County of Honolulu
630 South Beretania Street, 7th Floor
Honolulu, Hawai‘i 96813

Subject: Kawainui-Hamakua Master Plan Project
         Final Environmental Impact Statement Approval by Land Board
         Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hamakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the halé wa‘a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. **Kahana'ai Area**
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahana'ai Stream.

2. **Pāhakea to Nā Pāhake o Hāswahine Area**
   - Remove some segments of the pedestrian trail within this island area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the lāhui complex at Pāhakea from about 5,500 to 4,000 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. **Kapa‘a's Area**
   - Remove pedestrian trail section along Kapa‘a Quarry Road from Nā Pāhake to Civic Model Airplane Park.
   - Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 6,000 to 7,000 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. **Kapa‘a to Kalihoe Area**
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaiulani Canal.
     - Remove halé wa‘a structure and canoe storage at the Kalihoe park site.
     - Restrict canoe launch activities into Kawaiulani Canal to only schools by permit.

5. **Wa‘iau to Ulupō Heiau Area**
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. **DOFAW Management Station to Mokulua Area**
   - Remove existing node within DOFAW’s management station area and the interactive pavilion at the park site (southwest) the management station.
Ms. Kahi Sokugawa, Acting Director  
City Department of Planning and Permitting

Page 3

b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

b. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator  
Division of Forestry and Wildlife

cc: Ronald Sato – HHIF Planners

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
1151 PUNCHBowl STREET, ROOM 325  
HONOLULU, HAWAII 96813

June 29, 2020

Mr. Wes Frysztacki, Director  
Department of Transportation Services  
City and County of Honolulu  
630 South Beretania Street, 3rd Floor  
Honolulu, Hawai’i 96813

Dear Mr. Frysztacki,

Subject: Kawaihui-Hāmākua Master Plan Project  
Final Environmental Impact Statement Approval by Land Board  
Kailua, O'ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating those concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by...
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa'a and some buildings shown at the cultural center. Figure 2.AA identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaikai Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaikai Stream.

2. Pōhakupu to Nā Pōhaku o Hawaikī Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building area proposal at the kūpuna complex at Pōhakupu from about 6,250 sf to 4,500 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (50 sf), and open pavilion (50 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quay Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building area proposal for the cultural center at Kapa'a from about 9,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to five instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wai'aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalks.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW's management station area, and the interpretive pavilion at the park site below (southwest) the management station.

7. Mokulana Peninsula
   a. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana Peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
   b. Remove pedestrian trail from Mokulana connecting to Kahanaikai upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The project is still not expected to attract a large number of visitors for passive recreational use. Projected visitors would still be less than that addressed in the Draft EIS with the remaining elimination of some improvements, and a multi-modal transportation impact assessment (TIA) is not necessary. With proposed restrictions on public access and less activity with remaining reduced improvements, there should be no corresponding need to mitigate intersection impacts by applying Complete Street principles.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
June 29, 2020

Mr. Manuel P. Neves, Fire Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawai‘i 96813

Dear Mr. Neves:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional changes use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would substantially reduce the projected number of visitors. Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hele wa’a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanai‘ai Area
   - Remove pedestrian trail leading to Molokana peninsula and bridge over Kahanai‘ai Stream.

2. Pōhakalua to Ni‘ilhēhu o Haawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only
      foot trails would be supported.
   b. Reduce the total building floor area proposed at the tunnel-like complex at
      Pohakalua from about 8,250 sf to 6,100 sf by reducing the number of proposed
      structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf),
      and open pavilion (350 sf) to support programs either as an interim or
      permanent basis before proceeding with the education center.

3. Kapa‘aArea
   a. Remove pedestrian trail section along Kapa‘a Quarry Road from Nā Pāhau
      to Citi Model Airplane Park
   b. Reduce the total building floor area proposed for the cultural center at Kapa‘a
      from about 2,100 sf to 720 sf by reducing the number of proposed
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural
      center at Kapa‘a to two instead of three.

4. Kapa‘a to Kalihe‘ō Area
   Changes proposed result in improvements at this site to only those already approved
   by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does
   not include any new improvements to this site. DSP may also not implement
   construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hele wa’a structure and canoe storage at the Kalihe‘ō park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by
      permit.

5. Wai‘aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the
     boardwalk.

6. DOFAW Management Station to Molokana Area
   - Remove two observation decks within DOFAW’s management station area
     and the interpretive pavilion at the park site below (southwest) the
     management station.
ah. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaiki pond area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. Mark Tsuynamara, Management Analyst VI
Honolulu Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawai‘i 96813

Dear Mr. Tsuynamara:

Subject: Kawaihau-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihau-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihau resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihau by
eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a
bridge) and the late wa‘a and some buildings shown at the cultural center. Figure 2.4A
demonstrates these revisions and a summary is provided below. More information on these
modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   a. Remove pedestrian trail leading to Mokulana peninsula and bridge over
      Kahanaki Stream.

2. Pāhakea to Nii Pāhaku o Haawaine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only
      those trails would be supported.
   b. Reduce the total building floor area proposed on the bukahele campus at
      Pāhakea from about 8,200 sf to 4,200 sf by reducing the number of proposed
      structures.
   c. DSP plans to first provide an off street parking lot, restroom facility (350 sf),
      and open pavilion (350 sf) to support programs either as an interim or
      permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nii Pāhaku
to City Model Airport Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a
      from about 9,600 sf to 7,200 sf by reducing the number of proposed
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural
      center at Kapa’a to two instead of three.

4. Kape’a to Kalāheo Area
   Changes proposed result in improvements to this site to only those already approved
by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does
not include any new improvements to this site. DSP may also not implement
construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove half wa‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by
      permit.

5. Wa’iania to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the
      boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area
      and the interpretive pavilion at the park site below southwest the
      management station.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s
action, impacts associated with these improvements were already addressed in the Draft EIS
document published. The completed Final EIS includes these revisions and will be filed with the
State Office of Environmental Quality Control (OEQC) for publication and notification that it has
been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once
publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati
Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – IHF Planners
Senator Laura Thielen
25th District
The Senate
State of Hawai‘i
415 South Beretania Street, Room 231
Honolulu, Hawai‘i 96813

June 29, 2020

Dear Senator Thielen:

Subject: Kāwanui-Kāhākaua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kāwanui-Kāhākaua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kāwanui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kāwanui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalk and a bridge), and the Hale wāa, and some buildings shown at the cultural center. Figure 2.4.A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kāhākaua Area
   - Remove pedestrian trail leading to Moku‘ula peninsula and bridge over Kāhākaua Stream.

2. Pāhakua to Nā Pāhakua o Hawai‘i
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kūlapu‘u complex at Pāhakua from about 8,350 sf to 5,360 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pāhakua to Civic Model Amenity Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 6,650 sf to 7,500 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kaliiheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai‘a Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kāwanui Canal.
   a. Remove Hale wāa structure and canoe storage at the Kaliiheo park site.
   b. Restrict canoe launch activities into Kāwanui Canal to only schools by permit.

5. Wa‘ima to Ulupū Heiau Area
   - Remove pedestrian trail from the levee to Ulupū Heiau, including the boardwalk.

6. DOFAW Management Station to Moku‘ula Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Senator Laura Thielen
District 25, The Senate
Page 3

Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

Remove pedestrian trail from Mokulana connecting to Kahana Kai upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kailua and public access to this resource. We do not believe the Kawaiuinu wetland would be significantly impacted by some improvements being included by the BLNR because they would be located within upland areas. An important purpose for the project is to increase public access and provide for managed passive outdoor recreation for the public, which includes residents.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate. With remaining improvements included, we do not expect Kawaiuinu would become a major tour attraction which the community is concerned with.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiuinu is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HIF Planners

Representative Cynthia Thielen
56th District
House of Representatives
State of Hawai‘i
415 South Beretania Street, Room 443
Honolulu, Hawai‘i 96813

Dear Representative Thielen:

Subject: Kawaiuinu-Himikua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 20, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiuinu-Himikua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiuinu resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have been incorporated into concept plans to further reduce public access within Kawaiuinu by
Eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa'a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. **Kahanaihi Area**
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaihi Stream.

2. **Pōhakea to Nā Pōhake o Hauwahine Area**
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the hale center complex at Pōhakea from about 3,500 sf to 2,000 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (150 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. **Kapa’a Area**
   - Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhake to City-Mobil Airplane Park.
   - Reduce the total building floor area proposed for the cultural center at Kapa’a from about 6,600 sf to 7,600 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. **Kapa’a to Kalāheo Area**
   - Changes proposed result in improvements at this site to only those already approved by the City Kaihau Nai Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   - Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. **Wai’au to Ulupō Heiau Area**
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. **DOFAW Management Station to Mokulana Area**
   - Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southeast) the management station.

**ab.** Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

**be.** Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your concerns with views to Kailua and public access to this resource. We do not believe the Kawainui wetland would be significantly impacted by some improvements being included by the BLNR because they would be located within upland areas. An important purpose for the project is to increase public access and provide for managed passive outdoor recreation for the public, which includes residents.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate. With remaining improvements included, we do not expect Kawainui would become a major tourist attraction to the extent you were concerned with.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 971-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HIIF Planners
Mr. William Hicks, Chairman  
Kailua Neighborhood Board, No. 31  
923 Alauma Street  
Kailua, Hawai‘i 96734

June 29, 2020

Dear Mr. Hicks:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i’s Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

- Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were not addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the number of visitors.

- Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa‘a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   - Remove pedestrian trail leading to Moku‘ula peninsula and bridge over Kahanaki Stream.

2. Pōhakua to Nā Pāhaku o Hawawihine Area
   - a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - b. Reduce the total building floor area proposed at the hangar complex at Pōhakua from about 2,250 sf to 1,200 sf by reducing the number of proposed structures.
   - c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   - a. Remove pedestrian trail section along Kapa’a’s Quarry Road from Nā Pāhaku to City Model Airplane Park.
   - b. Decrease the total building floor area proposed for the cultural center at Kapa’a from about 6,000 sf to 2,000 sf by reducing the number of proposed structures.
   - c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawainui Nāl Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - a. Remove Hale wa‘a structure and canoe storage at the Kalāheo park site.
   - b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa‘iau to Ulupō Heiau Area
   - F. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Moku‘ula Area
   - a. Remove two observation docks within DOFAW’s management station area and the interpretive pavilion at the park site below southwest of the management station.
ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for Dofaw management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaikai upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document published. Several reductions to the project remain that address your opposition to and concerns with the level of visitors to Kailua and public access to this resource. Reinstating some elements of the project would not change the overall impact assessment results documented in the Draft EIS on the wetland and natural resources. Remaining elements still being eliminated from the Proposed Action (e.g. pedestrian trail sections, bridge, hale wā'a) would reduce effects on the wetland and resources by restricting public access to certain areas, eliminate passive outdoor recreational activities, and disturb the environment.

Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than that presently allowed under the City's zoning standards for this site. These improvements would not create a human footprint large enough to compromise the integrity of the wetland. Proposed improvements would continue to be phased over time; modest is scale given the extent of the area; planned to be environmentally sustainable; and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining improvements included. While remaining improvements included, we do not expect Kawaihui would become a major tourist attraction to the extent you may be concerned. Further, Dofaw and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Based upon the BLNR's action, we are providing supplemental information to pertinent written responses previously sent to you addressing your Draft EIS comments.

g. Page 2-44: The map shows two bridges 191 feet and 644 feet long in the wetland for trails and vehicles, plus four boardwalks. What construction procedures and materials will be used for these in the wetland, and what would be their impact?

Response: Figure 2.7 of the Draft EIS shows three boardwalks, not four. Several other pedestrian trail sections have now been eliminated from the Proposed Action in the Final EIS to address community concerns with public access and reduce effects on the environment. The Draft EIS addressed the effects of the pedestrian trail section extending from Nā Pōhaku to the City's Model Airplane Park. This section of the trail was reinstated back into the Proposed Action by the BLNR’s action. About 640 linear feet for two boardwalk sections would continue to be required for portions of this pedestrian trail section. This would be the only section of the pedestrian trail under the Proposed Action that includes a boardwalk.

15c. The DEIS indicates that BLNR is planning to facilitate more public and private visitation to Kawaihui Marsh by creating trails around the 8-mile perimeter of the Marsh. While on some of these trails it is likely that people will come into contact with contaminated water originating in Kapa'a Industrial Park, which the City and County of Honolulu has allowed to expand to the borders of Kawaihui Marsh. Yet, Kapa'a Stream is barely mentioned in the DEIS, let alone any discussion of the probability of human contact with contaminated water or any plan for cleaning up the waters moving both on the surface and underground from Kapa'a Stream and Valley into Kawaihui Marsh to ensure better and safer water quality. The DEIS needs to inform the public about the impact of the Kapa'a industrial development and activities on the wetlands and include a plan to mitigate the polluted waters originating from the upstream industrial park and old Kailua landfill that will contaminate the waters to Class 1 waters before they enter Kawaihui Marsh.

Response: The section of the pedestrian trail from Nā Pōhaku to the City's Model Airplane Park was reinstated back into the Proposed Action by the BLNR’s action. Project effects on Kapa'a Stream are adequately discussed in Section 3.4.3 of the Draft EIS and such effects discussed would continue to be applicable and included in the Final EIS. The public would not come into contact with water discharged from Kapa'a Stream into Kawaihui with this reinstated section of the trail. As already discussed in the Draft EIS, sampling of toxic materials within Kawaihui’s waters did not identify major issues, as most materials were not present in detectable amounts.

Additional general comments provided:

a. Comprehensive Security Plan for the Area: What steps will be taken to ensure security after hours and what is the comprehensive security plan for the entire project?

Response: As previously responded, a comprehensive security plan is not required as sufficient information and details are already discussed in the Draft EIS to address this subject. The cultural centers operated by non-profit organizations would be responsible for the operations and security of guests participating in activities at their facilities. Public safety is important for this project as upland areas are made available for public access in a phased and managed manner as discussed in the Draft EIS. Such management efforts include: adding DOCARD officers; opening areas for public access only when Dofaw and DSP are able to manage them (phased implementation); increasing stewardship partnerships that expand monitoring of activities; and allowing the education center to serve an important management function as the primary point of entrance and orientation for visitors to that area. Furthermore, additional sections of the pedestrian trail have been eliminated to address concerns on the Draft EIS. Persons using trails would need to exercise common sense and typical precautions when visiting, which is no different from persons visiting other trails or State parks.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft EIS and the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.
The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HIF Planners

June 29, 2020

Ms. Linda M.B. Pau, President
Hawai‘i Audubon Society
850 Richards Street, Suite 505
Honolulu, Hawai‘i 96813

Dear Ms. Pau:

Subject: Kawainui–Hāmakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui–Hāmakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating those concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by...
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa'a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakai Stream.

2. Pōhāke to Nā Pōhāke o Hauwahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the hale keiki. Proposals from about 8,350 sf to 6,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before completing the educational center.

3. Kap'a Area
   a. Remove pedestrian trail section along Kap'a Quarry Road from Nā Pōhāke to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kap'a from about 5,600 sf to 7,500 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kap'a to two instead of three.

4. Kap'a to Kālāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kālāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Waiau to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southeast) the management station.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. Several reductions to the project remain that address your opposition to and concerns with the level of visitors to Kailua and public access to this resource. Reinstating some elements of the project would not change the overall impact assessment results documented in the Draft EIS on the wetland and natural resources. Remaining elements still being eliminated from the Proposed Action (e.g. pedestrian trail sections, bridge, hale wa’a) would reduce effects on the wetland and resources by restricting public access to certain areas, eliminate passive outdoor recreational activities, and disturbances to the environment.

Structures proposed within the built environment would total only about 1.2 acres in floor area (about 5,600 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than that presently allowed under the City’s zoning standards for this site. These improvements would not create a human footprint large enough to compromise the integrity of the wetland. Proposed improvements would continue to be phased over time, modest in scale given the extent of the area; planned to be environmentally sustainable; and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawamii would become a major tourist attraction to the extent you may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Based upon the BLNR’s action, we are providing supplemental information to pertinent written responses previously sent to you addressing your Draft EIS comments.

Page 2-41: The map shows two bridges 191 feet and 444 feet long in the wetland for trails and vehicles, plus four boardwalks. What construction procedures and materials will be used for these in the wetland, and what would be their impact?

Response: Figure 2.7 of the Draft EIS shows three boardwalks, not four. Several other pedestrian trail sections have now been eliminated from the Proposed Action in the Final EIS due to address community concerns with public access and reduce effects on the environment. The Draft EIS addressed the effects of the pedestrian trail section extending from Nā Pōhāke to the City’s Model Airplane Park. This section of the trail was reinstated back into the Proposed Action by the BLNR’s action. About 640 linear feet for two boardwalk sections would continue to be required for portions of this pedestrian trail section. This would be the only section of the pedestrian trail under the Proposed Action that includes a boardwalk.
15. c. The DEIS indicates that DLNR is planning to facilitate more public and private visitation to Kawaiwaie Marsh by creating trails around the 6-mile perimeter of the Marsh. While on some of these trails it is likely that people will come into contact with contaminated water originating in Kapa'a Industrial Park, which the City and County of Honolulu has allowed to expand to the borders of Kawaiwaie Marsh. Yet, Kapa'a Stream is barely mentioned in the DEIS, let alone any discussion of the probability of human contact with contaminated water or any plan for cleaning up the waters moving both on the surface and underground from Kapa'a Stream and Valley into Kawaiwaie Marsh to ensure better and safer water quality. The DEIS needs to inform the public about the impact of the Kapa'a industrial development and activities on the wetlands and include a plan to mitigate the polluted waters originating from the upstream industrial park and old Kailua landfill that will convert the contaminated waters to Class 1 waters before they enter Kawaiwaie Marsh.

Response: The section of the pedestrian trail from Nā Pōhaku to the City's Model Airplane Park was reinstated back into the Proposed Action by the BLNR's action. Project effects on Kapa'a Stream are adequately discussed in Section 3.4 of the Draft EIS and such effects discussed would continue to be applicable and included in the Final EIS. The public would not come into contact with water discharged from Kapa'a Stream into Kawaiwaie with this reinstated section of the trail. As already discussed in the Draft EIS, sampling of toxic materials within Kawaiwaie's waters did not identify major issues, as most materials were not present in detectable amounts.

15. a. Concern for public safety and security for visitors that will be using the planned trails and boardwalks in the Kawaiwaie-Humahuaka wetland complex does not seem to be of paramount concern in the DEIS. This is unfortunate because people use public trails with the expectation that they are safe and that security measures are in place. Yet there is no detailed plan for providing for the safety and security of the thousands of visitors that the preferred alternative allows.

Response: Public safety is important to this project, as upland areas are made available for public access in a phased and managed manner. Such management efforts include: adding DOCARE officers; opening areas for public access only when DOFAW and DSP are able to manage them (phased implementation); increasing stewardship partnerships that expand monitoring of activities; and allowing the education center to serve an important management function as the primary point of entrance and orientation for visitors to that area. Furthermore, additional sections of the pedestrian trail have been eliminated to address community concerns. Persons along trails would need to exercise common sense and typical precautions when visiting, which is not different from persons visiting other trails or State parks.

As discussed in Section 2.2 of the Draft EIS, areas available to the public would only be open during normal business or daylight hours. DOCARE officers would patrol the project area during operating hours and coordinate with DOFAW and DSP on operations and activities. Furthermore, visitors would not be allowed to enter the Kawaiwaie wetland, and such passive outdoor recreational activities would occur in upland areas.
Ms. Donna Wong
Hawai‘i’s Thousand Friends
300 Kualii Road, Unit A #281
Kailua, Hawai‘i 96734

June 29, 2020

Dear Ms. Wong:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAR and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks) and a bridge and the half wā’a and some buildings shown on the cultural section. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   • Remove pedestrian trail leading to Mokualae peninsula and bridge over Kahanaki Stream.

2. Pōhake to Nā Pōhaku o Haumōane Area
   a. Reduce the total building floor area proposed at Pāhakoe from about 8,250 sf to 6,200 sf by reducing the number of proposed structures.
   b. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a’s Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 8,600 sf to 7,200 sf by reducing the number of proposed structures.

4. Kapa’a to Kālihē Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kālihē park site.
   b. Rastrest canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai‘ahu to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.
6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station areas and the interpretive pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulua. Mokulua peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
   c. Remove pedestrian trail from Mokulua connecting to Kahanakai upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. Several reductions to the project remain that address your opposition to and concerns with the level of visitors to Kauai and public access to this resource. Reinstating some elements of the project would not change the overall impact assessment results documented in the Draft EIS on the wetland and natural resources. Remaining elements still being eliminated from the Proposed Action (e.g. pedestrian trail sections, bridge, hale wa’a) would reduce effects on the wetland and resources by restricting public access to certain areas, eliminate passive outdoor recreational activities, and disturbances to the environment.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kauaii to become a major tourist attraction to the extent you may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Based upon the BLNR’s action, we are providing supplemental information to pertinent written responses previously sent to you addressing your Draft EIS comments.

5. Page 2-97, Table 2.8 Cost Estimates
   a. C. Kapa’u Area – total costs for these actions
      - Wetland restoration, upland site clearing/grading
      - Pedestrian trail
      - Cultural center
      - Vegetation processing facility
   o It is unclear if this figure includes 2 proposed new septic systems, 2 parking lots
   Response: The BLNR’s action to reinstate the pedestrian trail in this section from Nā Pōhākua to the City’s Model Airplane Park results in including the estimated $1.01 million cost for it. The updated costs for the cultural center and vegetation processing facility amount to about $7.00 million. Therefore, the total cost estimate for this Kapa’u area would be about $9.05 million that reflects a reduction of 37% from that shown in the Draft EIS Table 2.8.

7. Carrying Capacity.
   a. Because of the extensive amount of development proposed in the Kawaihina-Hanahaua Master Plan Project: 4, possibly 5, new septic systems; approximately 18 new structures with 3 areas up to 5,000 sq ft interior space; 7 new parking lots/areas; approximately 5 new pavilions and 8 viewing decks; approximately 2,000 sq ft of new boardwalk; at least 3 new bridges/causeways and unknown miles of trails, roads; 6,950 visitors a month, which is an increase of 7,450 people a month.
   Response: Several improvements initially proposed in the Draft EIS to support these activities remain eliminated from the project with the BLNR’s action due to community concerns with increasing public access and visitors. Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sq ft), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 46 acres of upland areas and have a lower building area than that presently allowed under the City’s zoning standards for this site. The City’s Land Use Ordinance development standards for the General Preservation District, applicable to the project’s upland areas, limits the maximum building area to 3% of the lot, or about 143,790 square feet. The project would utilize significantly less than that (only 1.3% of the total floor area) allowed under zoning standards. The only boardwalks would be associated with the pedestrian trail from Nā Pōhākua to the City’s Model Airplane Park that was reinstated by the BLNR’s action. These improvements would not create a human footprint large enough to compromise the integrity of the wetland. Proposed improvements would continue to be phased over time; modest in scale given the extent of the area; planned to be environmentally sustainable; and support increased stewardship and native Hawaiian cultural practices.

10. Subarea B. Kahanakai-Nā Pōhākua-Kapa’u
   Response: With the reduction of improvements included under the Proposed Action with the BLNR’s action, this subarea includes: 1) the education center with kahalee complex at Pōhākua; 2) cultural center at Kapa’u; 3) a new parking lot with restroom and pavilion at Kahanakai; and 4) buildings to support the vegetation processing site.
   i. Page 2-55 states that a “10 acre (approximate) kahalee cultural site located next to ... may occupy would be determined during the design of these structures”
   2) Calculating an average of 1,000 sq ft each for 8 hale equals 8,000 sq ft. Along with the 5,900 sq ft interior space for the Education Center, unknown dimensions for the parking lot and septic system with leach field this is a huge footprint in the Kawaihina riparian area.
Response: Only about 13,850 square feet in total is proposed for both the education center and kauhale complex with the BLNR’s action to reinstate the kauhale complex to have 8,250 square feet of floor area. The City’s Land Use Ordinance development standards for the P-2 General Preservation District, allows a maximum building area of 5%. The Pōhakua-Nā Pōhaku upland area encompasses about 19.5 acres allowing for about 42,470 square feet of building area. The 13,850 square foot estimate reflects much less (1.6%) than the maximum building area allowed. We believe this building area reflects a reasonable footprint within this upland area.

Page 25 mentions a trail along Kapa’a Quarry Road

1) Where will the trail start and end? What is the length of the trail?
Response: Figure 2.7 of the Draft EIS showed the proposed trails along Kapa’a Quarry Road and included approximate lengths. Figure 2.10 of the Draft EIS showed the location of the trail along the Kapa’a section ending at the City’s model airplane park that is applicable with the reinstatement of the trail section from Nā Pōhaku to the City’s Model Airplane Park. Trails along this road extend over 1.5 miles in length.

13. Kapa’a Cultural Center
f. Page 2-59 Figure 2.10 shows 11 buildings yet the DEIS only mentions 4,000 sq ft interior space, green house and caretakers cottage.

1) Does the interior of the 11 buildings equal 4,000 sq ft of interior space?
Response: The floor area for the 11 buildings, without nursery, associated with the cultural center at Kapa’a would be about 9,600 square feet. Table 2.2A from the Final EIS is attached that summarizes the floor area for structures and buildings.

18. Ulupō Heiau

1) How boardwalks will be needed to cross various drainage areas?
Response: Figure 2.7 of the Draft EIS identified the location and approximate length of boardwalks planned to allow the trail to cross across major drainageways. With reductions to pedestrian trails under the Proposed Action, only two boardwalks associated with the trail section from Nā Pōhaku to the City’s Model Airplane Park remain.

Impacts on natural resources or the quality of life for residents of Kālua would not be significant, as discussed in several sections of the Draft EIS and now the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiina is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HIF Planners
Ms. Tanya Pili`ilani Alston
Page 2

eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a
bridge), and the Hale wa’a and some buildings shown at the cultural center. Figure 2.4A
identifies these revisions and a summary is provided below. More information on these
modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakii Area
   • Remove pedestrian trail leading to Mokulua peninsula and bridge over
     Kahanakii Stream.

2. Pōhaku to Nā Pōhaku o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only
      foot trails would be supported.
   b. Reduce the total building floor area proposed at the landsale complex at
      Pōhaku from about 8,245 sf to 6,500 sf by reducing the number of proposed
      structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (150 sf),
      and open pavilion (150 sf) to support programs either as an interim or
      permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhaku
to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a
      from about 7,600 sf to 7,300 sf by reducing the number of proposed
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural
      center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already
   approved by the City Kawailani Gateway Park proposal. The project (Proposed Action)
   does not include any new improvements to this site. DSP may also implement
   construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by
      permit.

5. Wa’au to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the
     boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area,
      and the interpretive pavilion at the park site below (southwest) the
      management station.
ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanakii upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiulii is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. Charles Pe’ape’a as Makawalu K. Burrows, Chairman
Hui Kailua Kawainui Ka Wai Ola

Mr. Bill Sager, Vice President
Mr. Paul Brennan, Treasurer
Ms. Beth Anderson

Via Email: kailua5@aol.com

Dear Mr. Burrows and Organization Members:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after
evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiului by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hale wa’a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakila Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakila Stream.

2. Pīhakea to Nā Pīhake o Haawalei Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot traffic would be supported.
   b. Reduce the total building floor area proposed at the luanahe komp at Pīhakea from about 8,250 sf to 5,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (300 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapua’ Area
   a. Remove pedestrian trail section along Kapua’ Quarry Road from Nā Pīhake to City Model-Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapua’ from about 9,000 sf to 7,800 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapua’ to two instead of three.

4. Kapua’ to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaiului Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaiului Canal to only schools by permit.

5. Wai’ania to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretative pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
   c. Remove pedestrian trail from Mokulana connecting to Kahanakila upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kauai would not be significant, as discussed in several sections of the Draft and final EISs, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiului is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffer-Fabro of DOFAW at 973-9788.

Sincerely,

[Signature]

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Mapuana de Silva
Kailua Hawaiian Civic Club
P.O. Box 1123
Kailua, Hawai‘i 96734

Dear Ms. de Silva:

Subject: Kawaiuin-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiuin-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the redactions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiuin resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiuin by

eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahananiki Area
   - Remove pedestrian trail leading to Moku‘ula peninsula and bridge over Kahananiki Stream.

2. Pōhakua to Nā Pōhakua a Hāwahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the hale wa‘a at Pōhakua from about 8,360 sf to 6,100 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhakua to City Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa’a from about 6,600 sf to 5,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kapa’a Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements at this site. DSP may not implement construction of the approved pedestrian bridge across Kawaiuin Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaiuin Canal to only schools by permit.

5. Wa‘i‘ua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Moku‘ula Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below southwest of the management station.
Ms. Manana de Silva

Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaiki strand area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihmii is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Mr. Kihei de Silva
Kailua Kaua‘i Ho‘ola

Via Email: desilvak009@gmail.com

Dear Mr. de Silva:

Subject: Kawaihmii-Hanakaa Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihmii-Hanakaa Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihmii resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihmii by...
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’ a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications has been incorporated into other pertinent sections of this chapter.

1. Kahanakiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakiki Stream.

2. Pōhakua to Nā Pōhakua o Hauwhaine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the Hale kāʻūwai at Pōhakua from about 5,250 sf to 5,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quay Road from Nā Pōhakua to City Model Aircraft Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nai Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove halē wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai’alua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below southwest the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa‘a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaki Stream.

2. Pōhakua to Ni‘i Pōhaku o Hawiwhine Area
   a. Remove some segments of the pedestrian trail within the upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the hale wa‘a complex at Pōhakua from about 2,500 sf to 2,000 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (550 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapua’ Area
   a. Remove pedestrian trail section along Kapua’s Quarry Road from Ni‘i Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapua’ from about 7,500 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapua’ to two instead of three.

4. Kapua’ to Ka‘eho‘o Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove hale wa‘a structure and canoe storage at the Ka‘eho‘o park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wa‘iaua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Nausha “Makanani” P. Lopes

Page 3

a. Remove pedestrian trail and two viewing pavilions at Mokulaua. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

b. Remove pedestrian trail from Mokulana connecting to Kahanaiki tidal area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihae is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Ms. Diane Harding, President
The Lani-Kailua Outdoor Circle
P.O. Box 261
Kailua, Hawai‘i 96734

Dear Ms. Harding:

Subject: Kawaihau-Hämākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihau-Hämākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihau resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihau by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hale wa’a, and some buildings shown at the cultural centers. Figure 2.4 identifies these revisions, and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiiki Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanaiiki Stream.

2. Pāhakea to NB Pāhakea o Hawawain Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the luahale complex at Pāhakea from about 2,400 sf to 2,100 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quassy Road from Nii Pōhaku to City-Medical Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 5,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalihoea Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalihoea park site.
   b. Restrict canoe launch activities into Kawaihui Canal to only schools by permit.

5. Wa’iau to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOWAF Management Station to Mokulua Area
   a. Remove two observation decks within DOWAF’s management station area, and the interactive pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulua. Mokulua peninsula would only be used for DOWAF management activities and authorized educational and cultural programs.
   c. Remove pedestrian trail from Mokulua connecting to Kahanaiiki upland area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document. Several reductions to the project remain that address your opposition to and concerns with the level of visitors to Kailua and public access to this resource. Reinstate some elements of the project would not change the overall impact assessment results documented in the Draft EIS on the wetland and natural resources. Remaining elements still being eliminated from the Proposed Action (e.g., pedestrian trail sections, bridge, hale wa’a) would reduce effects on the wetland and resources by restricting public access to certain areas, eliminate passive outdoor recreational activities, and disturbances to the environment.

Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than that presently allowed under the City’s zoning standards for this site. These improvements would not create a human footprint large enough to compromise the integrity of the wetland. Proposed improvements would continue to be phased over time; modest in scale given the extent of the area planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaihui would become a major tourist attraction to the extent you may be concerned with. Further, DOWAF and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Based upon the BLNR’s action, we are providing supplemental information to pertinent written responses previously sent to you addressing your Draft EIS comments.

2.a. The planners’ implementation of “LWCF 6(f)” requirements that necessitate increased public access and outdoor recreational activities based upon DSP coordination with the National Park Service” is too broad. Having to provide public access and recreational activities should not require the installation of miles of trails as provided in the plan. Yes, provision for a minimal trail system with viewing platforms is needed.

Response: As previously responded, pedestrian and foot trails proposed are within reasonable upland areas that DOWAF and DSP can manage and are necessary to improve public access and outdoor recreation. Several pedestrian trail sections have now been eliminated from the Proposed Action in the Final EIS to address community concerns with public access and reduce effects on the environment. The Draft EIS addressed the effects of the pedestrian trail section extending from Nii Pōhaku to the
City’s Model Airplane Park. This section of the trail was reinstated back into the Proposed Action by the BLNR’s action. DOFAW and DSP believe the reduced areas now proposed for the pedestrian trail are reasonable and the various minimization and mitigative measures discussed in the Draft EIS, and also included in the Final EIS, address community issues with visitor and public access.

2.b. The planners’ implementation providing for educational opportunities and native Hawaiian cultural practices, (as per Article XII of the Hawaii State Constitution), is too broad, and ignores public input asking that more environmentally friendly structures and facilities be built. State and Federal regulations do not require that landscape structures be built in order provide for these practices. Yes, provisions for support facilities are necessary to this stewardship activity, but not the extensive multi-acre multi-structure ‘centers’ provided for in the plan.

Response: Our prior response addressed your comments on project improvements supporting educational programs and native Hawaiian cultural practices perceived as being “too broad.” As discussed in Section 2.2.2, structures proposed would be environmentally friendly. Proposed locations with building footprints are shown on site plans, and other information is provided to evaluate structure characteristics and activities. The project does reflect considering public input as improvements have been scaled back considerably since the EIS Preparation Notice. Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR’s action. Structures associated with the cultural centers would total only about 21,850 square feet of floor area, which does not reflect “extensive multi-acre” structures. Cultural center plans are reasonable and would not adversely impact the environment as discussed in several sections of the Draft EIS, and they would provide beneficial effects supporting cultural, educational, and stewardship opportunities.

4.a. A minimal number facilities or structures were removed, moved, or modified to reduce significant environmental impacts as raised in community input. Six additional ‘kaaulea concept’ structures were added. We propose that only traditional, non-modern structures be allowed to be constructed at any building site. We feel support facilities can be incorporated into this low impact design concept.

Response: Structures proposed for the kaaulea complex at Pōhakea would consist of traditional Hawaiian pole and thatch structures, as discussed in Section 2.2.4 and our prior response letter. The BLNR’s action removed the proposal to reduce the floor area proposed for kaaulea structures in the Draft EIS. As a result, the kaaulea complex at Pōhakea would have about 8,250 sf of floor area. These improvements support cultural, educational, and stewardship opportunities, and are reasonable and would not adversely impact the environment as discussed in several sections of the Draft EIS.

Impacts on natural resources or the quality of life for residents of Kualoa would not be significant, as discussed in several sections of the Draft EIS and now the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiamii is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Dwayne Harding, President
The Lani-Kailua Outdoor Circle
P.O. Box 361
Kailua, Hawai‘i 96734

June 29, 2020

Dear Ms. Harding:

Subject: Kawaihui-Hamakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hamakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would substantially reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and some buildings shown at the cultural center. Figure 2.5A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakiki Area
   • Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakiki Stream.

2. Pūhakonu to Nā Pūhakonu o Harawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the handale complex at Pūhakonu from about 8,450 sf to 5,400 sf, reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, rest room facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapaa Area
   a. Remove pedestrian trail section along Kapaa’s Quarry Road from Nā Pūhakonu to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapaa from about 5,600 sf to 2,700 sf, reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa to two instead of three.

4. Kapaa’s Kalaheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawaihui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihui Canal.
   a. Remove Hale Wa’a structure and canoe storage at the Kalaheo park site.
   b. Restrict canoe launch activities into Kawaihui Canal to only schools by permit.

5. Wai‘anae to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below southwest the management station.
Ms. Diene Harding, President
The Lanai-Kailua Outdoor Circle
Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana
peninsula would only be used for DOFAW management activities and
authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaiki tial area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s
action, impacts associated with these improvements were already addressed in the Draft EIS
document published. Several reductions to the project remain that address community concerns
with the level of visitors to Kailua and public access to this resource. Reinstating some elements
of the project would not change the overall impact assessment results documented in the Draft EIS
on the wetland and natural resources. Proposed improvements would continue to be phased over
time; modest in scale given the extent of the area, planned to be environmentally sustainable; and
suppor: increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially
with the remaining reductions in project improvements. Further, DOFAW and DSP management
would include monitoring activity levels, opening areas to public access when they are able to
manage them, and making changes to access and activities, if appropriate. Impacts on natural
resources or the quality of life for residents of Kailua would not be significant, as discussed in
several sections of the Draft EIS, and now the Final EIS, and if necessary, measures to minimize
or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public
and the State needs to consider the broader public interest. The BLNR’s action to add some
improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of
Environmental Quality Control (OEQC) for publication and notification that it has been submitted
to the Governor’s Office for Acceptance. Notification will be provided to you once publication of
the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati
Jeffere Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

HAWAII, KG
Chairwoman of BLNR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1511 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

June 29, 2020

Ms. Beth Anderson
Via Email: kailua5@aol.com

Dear Ms. Anderson:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR)
approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-
Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their
October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that
some of the reductions to project improvements identified in the pre-Final EIS be added back into
the Proposed Action. The BLNR believed it was better to include them to provide a more
comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of
these project elements for environmental effects does not necessarily mean that the elements
will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is
provided below. This section has been updated to identify additional revisions being made based
upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify
portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting
from project improvements which increase public access. Although such concerns were
addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have
decided to incorporate additional modifications to the project (Proposed Action) after
evaluating those concerns. Revisions to proposed improvements have now been
incorporated into concept plans to further reduce public access within Kawainui by
eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale wa'a and some buildings shown at the cultural center. Figure 2-4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaiki Stream.

2. Pāhakea to Nā Pāhake o Hawawine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the iwi hale komop of Pāhakea from about 3,250 sf to 5,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pāhake o Pāhakea to City Municipal Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 6,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kaliheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai'ui Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kaliheo park site.
   b. Restrict canoe launch activities into Kawai'ui Canal to only schools by permit.

5. Wai'auia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW's management station area, and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Trisha Axelrod

Via Email: axclodes@aol.com

Dear Ms. Axelrod:

Subject: Kawaiui-Himākua Master Plan Project

Final Environmental Impact Statement Approval by Land Board

Kailua, O'ahu, Hawai'i

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiui-Himākua Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa'a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanuiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanuiki Stream.

2. Pōhakua to Nū Pōhaku O Haawaino Area
   a. Remove some segments of the pedestrian trail within this upland area. Only two trails would be supported.
   b. Reduce the total building floor area proposed at the lauhala complex at Pōhakua from about 8,250 sf to 6,500 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nū Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 8,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalāeho Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawaiui Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaiui Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kalāeho park site.
   b. Restrict canoe launch activities into Kawaiui Canal to only schools by permit.

5. Wa'a'aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW's management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Mary Babcock

Via Email: marybandito@yahoo.com

Dear Ms. Babcock:

Subject: Kauai-Hāmākua Master Plan Project Final Environmental Impact Statement Approval by Land Board
Kauai, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kauai-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kauai resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kauai by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale wa’a, and some buildings shown in the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaiki Stream.

2. Pīhakoa to Nā Pāhaku o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the Kaneholani compound at Pīhakoa from about 8,200 sf to 5,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an offstreet parking lot, restroom facility (150 sf), and open pavilion (150 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapaa Area
   a. Remove pedestrian trail section along Kapaa Quarry Road from Nā Pāhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapaa from about 6,600 sf to 5,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa to two instead of three.

4. Kapaa to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawaihui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai’aina to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
   c. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is not considered excessive and is reasonable and manageable especially with the reduction in project improvements. Impacts on natural resources or the quality of life for residents of Kauai would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – DDF Planners
Ms. Leona Bangarter
619 Hanale Place
Kailua, Hawai‘i 96734

Dear Ms. Bangarter:

Subject: Kawaihui-Hamakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approval submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hamakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Ms. Leona Bangarter
Page 2

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa’a and some buildings shown in the cultural context. Figure 7.6A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanuiki Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanuiki Stream.

2. Pihaka to Nā Pihaka o Haawahine Area
   a. Remove some segments of pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the launani complex at Pihaka from about 6,000 sf to 4,600 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pihaka to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 6,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Reduce canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai'āua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.
6. DOFAW Management Station to Mokulaua Area

- a. Remove two observation decks within DOFAW’s management station area.
- b. Remove pedestrian trail and two viewing pavilions at Mokulaua. Mokulaua peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
- c. Remove pedestrian trail from Mokulaua connecting to Kahanaiki pond area.

Although some improvements are being reinstated back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document published. The trail section fronting the Kawaunui Vista area was not changed by the BLNR’s action and remains no longer proposed under the project.

Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is not considered excessive and is reasonable and manageable especially with the reduction in project improvements. Impacts on natural resources or the quality of life for residents of Kauiha would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Aki Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Jennifer Barra

Via Email: jenniferkbarra@gmail.com

Dear Ms. Barra:

Subject: Kawaihui-Hāmākuah Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmākuah Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions used a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
 Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hale wā’a and some buildings shown on the cultural-sensitive figure 7.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Moku'ula peninsula and bridge over Kahanaiki Stream.

2. Pōhakea to Nā Pōhaku o Hauwhine Area
   - Remove some segments of the pedestrian trail within this upland area. Only foot traffic would be supported.
   - Reduce the total building floor area proposed at the lawn bowl complex at Pōhakea from about 3,140 sf to 1,200 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kap'a'a Area
   - Remove pedestrian trail section along Kap'a'a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   - Reduce the total building floor area proposed for the cultural center at Kap'a'a from about 9,000 sf to 7,300 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kap'a'a to two instead of three.

4. Kap'a'a to Kaliheo Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - Remove hale wā’a structure and canoe storage at the Kaliheo park site.
   - Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai'au'ia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOPAW Management Station to Moku'ula Area
   - Remove observation deck within DOPAW's management station area and the intermediate pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is not considered excessive and is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Kāhului would not be significant, as discussed in several sections of the Final EIS, and if necessary, measured to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOPAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HIF Planners
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalk and a bridge), and the Hale wa'a and some buildings at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahananui Area
   - Remove pedestrian trail leading to Hokule'a peninsula and bridge over Kahananui Stream.

2. Pāhakoa to Nā Pāhakoa O Hauwahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building area proposed at the Ko'olau Center at Pāhakoa from about 8,350 square feet to 5,600 square feet by reducing the number of proposed structures.
   c. DSP plans to provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapaa Area
   a. Remove pedestrian trail section along Kapaa's Queen Road from Nā Pāhakoa to the City Model Airplane Park.
   b. Reduce the total building area proposed for the cultural center at Kapaa from about 6,600 square feet to 5,200 square feet by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa's to two instead of three.

4. Kapaa to Kalaholo Area
   Changes proposed in improvements at this site to only those already approved by the City of Kapaa Nāi Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kalaholo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa'iau to Uluopu Heiau Area
   a. Remove pedestrian trail from the Levee to Uluopu Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW's management station area and the interpretive pavilion at the park site below southwest of the management station.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from proposed improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and ISP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by...
Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. The completed Final EIS includes those revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ari Jeffers-Faboo of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Cathy Chang
Via Email: mkch2@yahoo.com

Dear Ms. Chang:

Subject: Kawaihui-Hāmakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O’ahu, Hawai’i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by...
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’a, and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakii Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakii Stream.

2. Pōhakus to Nā Pōhakus o Hauwhaine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the hale and pavilion at Pōhakus from about 5,000 sq ft to 3,000 sq ft by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sq ft), and open pavilion (350 sq ft) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapaa Area
   a. Remove pedestrian trail section along Kapaa Quay, Road from its Pōhaku to City of Waimea Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapaa from about 0,600 sq ft to 0,300 sq ft by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa to two instead of three.

4. Kapaa to Kalihine Area
   Changes proposed result in improvements at this site to only those already approved by the City Kauai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kauai’u Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalihine park site.
   b. Restrict canoe launch activities into Kauai’u Canal to only schools by permit.

5. Wa’iaia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest of) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is not considered excessive and is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Kauai would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

[Signature]
David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Tomoko Coles  
530 John Carlyle Street, Unit 117  
Alexandria, Virginia 22314

Dear Ms. Coles:

Subject: Kawainui-Hämakua Master Plan Project  
Final Environmental Impact Statement Approval by Land Board  
Kailua, ʻOahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hämakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOPAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating those concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hele wa‘a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications has been incorporated into other pertinent sections of this chapter.

1. Kahananiki Area  
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahananiki Stream.

2. Pōhākena to Nā Pōhāku o Haawahine Area  
   a. Remove some segments of the pedestrian trail within the upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the lasohale complex at Pōhākena from about 8,250 sq ft to 5,500 sq ft by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area  
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhāku to City Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa’a from about 6,400 sq ft to 7,200 sq ft by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kålhåno Area  
   Changes proposed result in improvements at this site to only those already approved by the City Kawainui Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.  
   a. Remove halc wa’a structure and canoe storage at the Kålhåno park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai’alua to Ulupu Heiau Area  
   - Remove pedestrian trail from the levee to Ulupu Heiau, including the boardwalk.

6. DOPAW Management Station to Mokulana Area  
   a. Remove two observation decks within DOPAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Tomoko Coles

Page 3

- Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
- Remove pedestrian trail from Mokulana connecting to Kahanaiki tideland area.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

---

Ms. Lyn Cook
Via Email: hhlynncook@aol.com

Dear Ms. Cook:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai'i

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hale wa‘a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   • Remove pedestrian trail leading to Moku‘ula peninsula and bridge over Kahanaiki Stream.

2. Pāhākea to Nā Pāhāhu o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kūhala complex at Pāhākea from about 8,250 sf to 3,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   a. Remove pedestrian trail section along Kapa‘a’s Quarry Road from Nā Pāhāhu to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 9,000 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. Kapa‘a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the County Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may not implement construction of the approved pedestrian bridge across Kawai‘nui Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawai‘nui Canal to only schools by permit.

5. Wai‘aua to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Moku‘ula Area
   a. Remove two observation docks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

[Signature]

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
June 29, 2020

Ms. Marie Coudier
Via Email: marie@tikimaster.com

Dear Ms. Coudier:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigation measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wai and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakuli Area
   - Remove pedestrian trail leading to Mokuula peninsula and bridge over Kahanakuli Stream.

2. Pōhae to Nā Pōhaku o Hauwhine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the hale wai complex at Pōhae from about 8,366 sf to 6,525 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’ā from about 6,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kauai North Gateway Park project. The proposed (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridges across Kawainui Canal.
   a. Remove hale wai structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa‘iau to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokuula Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest of) the management station.
Ms. Marie Coudier
Page 3

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The project's level of public visitation and activities is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HII Planners

June 29, 2020

Ms. Christine Cabe
6711 West Wakefield Drive, B1
Alexandria, VA 22307

Dear Ms. Cabe:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai’i

This letter is to inform you that the State of Hawai’i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa'a and some buildings shown on the cultural contour. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaiki Stream.

2. Pāhakea to Nahahau Hauwahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the luauhele complex at Paniono from about 1,200 sf to 900 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (150 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapā'a Area
   a. Remove pedestrian trail section along Kapā'a Quarry Road from Nā Pāhakea to City Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapā'a from about 6,500 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapā'a to two instead of three.

4. Kapā'a to Kahīhee Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaiheimi Canal.
   a. Remove hale wa'a structure and canoe storage at the Kahīhee park site.
   b. Restrict canoe launch activities into Kawaiheimi Canal to only schools by permit.

5. Wai'a'aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove one observation deck within DOFAW’s management station area and the interactive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers Fabio of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Mapuana de Silva

Page 2

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale Wa'a and some buildings along the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanaiki Stream.

2. Pōhakua to Nā Pōhaku o Hāwahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the ikihale complex at Pahokah from about 5,250 sf to 2,250 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 4,000 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a by two instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DWP may not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove hale wa'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wai'a to Ulupo Heiau Area
   - Remove pedestrian trail from the levee to Ulupo Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW's management station near the interactive pavilion at the park site below (southwest) the management station.
Ms. Mapuana de Silva

Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOEFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

[Signature]

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Nola Healani Fairia
1250 Kupau Street
Kailua, Hawaii 96734

June 29, 2020

Dear Ms. Fairia:

Subject: Kawaiulani-Hāmāku Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai'i

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiulani-Hāmāku Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a "Red" double strikethrough format to identify portions eliminated by this change and a double underline in "Red" for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiulani resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOEFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiulani by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hike wa'a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   • Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaiki Stream.

2. Pōhakua to Nā Pōhakua o Ha'auhina Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the lomake complex at Pōhakua from about 6,350 sf to 4,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pōhakua to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 9,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai'aumia to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW's management station area, and the interpretive pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
   c. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabre of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – EHF Planners
June 29, 2020

Mr. R. Fensomacher, Ph.D.
1386 Manu Mele Street
Kailua, Hawai‘i 96734

Dear Mr. Fensomacher:

Subject: Kawaihui-Himakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Himakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project efforts. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the Pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalk, and a bridge, and the hale wa‘a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakuli Area
   - Remove pedestrian trail leading to Molokana peninsula and bridge over Kahanakuli Stream.

2. Pāhakenu to Nā Pāhaku o Haawahine Area
   - Remove some segments of the pedestrian trail within this upland area. Only foot-trails would be supported.
   - Reduce the total building-floor area proposed at the hale wa‘a complex at Pāhakenu from about 6,560 sf to 2,560 sf by reducing the number of proposed structures.
   - DSP plans to provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs in this area.

3. Kapo’s Area
   - Remove pedestrian trail section along Kapa’s Quarry Road from Na Pāhaku to City Model Airplane Park.
   - Reduce the total building-floor area proposed for the cultural center at Kapa’s from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’s to two instead of three.

4. Kapa’s to Kalihou Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihui Canal.
   - a. Remove Hale wa‘a structure and canoe storage at the Kalihou park site.
   - b. Restrict canoe launch activities into Kawaihui Canal to only schools by permit.

5. Wai‘a ‘aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Molokana Area
   - Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Mr. B. Fonstemacher, Ph.D.

Page 3

b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

c. Remove pedestrian trail from Mokulana connecting to Kahana Kai area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors, pedestrian trails, and public access to address concerns. The projected level of public visitation and activities is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Kailua would not be significant as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigative effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Carolyne Ferreira
1215 Manu Aloha Street
Kailua, Hawai‘i 96734

Dear Mr. Ferreira:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa'a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaikai Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaikai Stream.

2. Pōhākea to Nā Pōhāku o Hawa’i Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails will be supported.
   b. Reduce the total building floor area proposed at the Lumahai complex at Pōhākea from about 8,300 sf to 5,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhāku to City-Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa’ia’uia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Ka’u would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigative effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HIF Planners
Mr. Philip and Ms. Mollie Foti
1343 Mokaulani Drive
Kailua, Hawai‘i  96734

June 29, 2020

Dear Mr. and Ms. Foti:

Subject: Kawaihui-Hāmakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i’s, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

For example, modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the ha‘a’aina and some buildings shown in the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanani Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanani Stream.

2. Pōhakea to Nā Pōhaku o Haawaihine Area
   - Remove some segments of the pedestrian trail within this upland area. Only a foot path would be supported.
   - Remove the total building floor area proposed at the ha‘a‘aina complex at Pōhakea from about 8,250 sf to 4,100 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa ‘a Area
   - Remove pedestrian trail section along Kapa ‘a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   - Reduce the total building floor area proposed for the cultural center at Kapa ‘a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa ‘a to two instead of three.

4. Kapa‘a to Kalāheo Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihui Canal.
   - Restrict certain launch activities into Kawaihui Canal to only schools by permit.

5. Wai‘a‘au to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   - Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the site below (southwest) the management station.
Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

Remove pedestrian trail from Mokulana connecting to Kahanaiki spland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Maui would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigative effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers Faber of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. John Foti
1345 Mokulua Drive
Kailua, Hawaii’i 96734

Dear Mr. Foti:

Subject: Kawaihui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O’ahu, Hawaii’i

This letter is to inform you that the State of Hawaii’s, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addresed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks) and a bridge, and the hale we added some buildings down at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakai Stream.

2. Pēhakau to Nā Pēhaku o Hawa‘ina Area
   - a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - b. Reduce the total building floor area proposed for the cultural center at Pēhakau from about 8,250 sf to 8,200 sf by reducing the number of proposed structures.
   - c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   - a. Remove pedestrian trail section along Kapa‘a’s Quarry Road from Nā Pēhaku to City’s Model Airplane Park.
   - b. Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   - c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. Kapa‘a to Kālia‘a Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   - a. Remove hale wa‘a’s structure and canoe storage at the Kalabuee park site.
   - b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wai‘aula to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   - a. Remove one observation deck within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your general opposition to visitors to Kailua, desire to restrict public access to this resource, and corresponding concerns about changes that may attract more visitors.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawai‘ina would become a major sustainable tourist attraction to the extent you were concerned with. Adding back the pedestrian trail section along Kapa‘a’s Quarry Road from Nā Pēhaku to the City’s Model Airplane Park would not significantly change public use because the main trails used would likely be between Kahanakai and Nā Pēhaku with the education center. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawai‘ina is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restate some improvements reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffer-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Mr. Timothy Ghormley
Page 2

eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a
bridge) and the hale wa’a and some buildings shown at the cultural centers. Figure 2.4A
terminates these revisions and a summary is provided below. More information on these
modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanai'i Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over
     Kahanai'i Stream.

2. Pōhaku to Nā Pōhaku o Hauwhine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only
      foot trails would be supported.
   b. Reduce the total building floor area proposed at the hale _kauhale_ complex at
      Pōhaku from about 8,360 sf to 5,360 sf by reducing the number of proposed
      structures.
   c. DSP's plan to first provide an off-street parking lot, restroom facility (350 sf),
      and open pavilion (350 sf) to support programs either as an interim or
      permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pōhaku
      to Lili'uokalani Parkway.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a
      from about 6,600 sf to 7,200 sf by reducing the number of proposed
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural
      center at Kapa'a to two instead of three.

4. Kapa'a to Kahului Area
   Changes proposed result in improvements at this site to only those already
   approved by the City of Kauai Nāi Gateway Park proposal. The project (Proposed Action)
   does not include any new improvements to this site. DSP may also not implement
   construction of the approved pedestrian bridge across Kawaihui Canal.
   a. Remove hale wa'a structure and canoe storage at the Kahului park site.
   b. Restrict canoe launch activities into Kawaihui Canal to only schools by
      permit.

5. Wa'i'ana to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the
     boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW's management station area,
      and the interpretive pavilion at the park site below (southwest) the
      management station.
Mr. Timothy Ghormley

Page 3

- Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

- Remove pedestrian trail from Mokulana connecting to Kahanakai upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. Taylor Gray
Via Email: taylorwg@hawaii.edu

Dear Mr. Gray:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by...
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale wa’a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaik area
   - Remove pedestrian trail leading to Molokana peninsula and bridge over Kahanaik Stream.

2. Pōhaku to Nii Pōhaku o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the lauhale complex at Pōhaku from about 5,350 sf to 5,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’aa Quarry Road from Nii Pōhaku to City-owned Airport Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 4,650 sf to 4,650 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kauai Nai Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihulu Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaihulu Canal to only schools by permit.

5. Wai'anae to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Molokana Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce visitors and public access to address concerns. The projected level of public visitation and activities is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Kauai would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

[Signature]

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Les Haldane

Page 2

eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and he [the hale wa'a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Moku’ula peninsula and bridge over Kahanaiki Stream.

2. Pihaku to No Pihaku o Haawaining Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the lau‘ala komo’okai at Pihauka from about 8,350 sf to 6,400 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quay. Road from N Pihauka to City College of Asian Pacific.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 9,400 sf to 7,500 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalâhe Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalâhe park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Waia’ula to Ulu’u Heiau Area
   - Remove pedestrian trail from the levee to Ulu’u Heiau, including the boardwalk.

6. DOFAW Management Station to Moku’ula Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Lee Haldane

Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

bc. Remove pedestrian trail from Mokulana connecting to Kahanaiwi upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that would reduce the public access to address concerns. The projected level of public visitation and activities is reasonable and manageable especially with the remaining reductions in project improvements. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ath Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Nicole Harbottle

Via Email: nicole@islandhale.com

Dear Ms. Harbottle:

Subject: Kawaiui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions are not noted with “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiui by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalk and a bridge), and the Hale 'Wa'a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaiki Stream.

2. Pōhakue to Nā Pōhaku o Hawiwhine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot traffic would be supported.
   b. Reduce the total building floor area proposed at the inn site complex at Pōhakue from about 8,380 sf to 6,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 9,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kauai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kauai Nui Canal.
   a. Remove Hale 'Wa'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kauai Nui Canal to only schools by permit.

5. Wai'anae to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below south of the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your general opposition to visitors to Kailua, desire to restrict public access to this resource, and corresponding concerns about changes that may attract more visitors.

Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than that presently allowed under the City’s zoning standards for this site. The project level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kauai Nui would become a major sustainable tourist attraction to the extent you may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kauai Nui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restate some improvements into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OSEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OSEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’a and some buildings shown at the cultural contexts. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanākūi Area
   a. Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanākūi Stream.

2. Pōhaku to Nā Pōhaku o Hauawain Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed for the  local complex at Pōhaku from about 6,600 sq ft to 7,200 sq ft by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhaku to City Model Airport Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 6,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kilaiwai Area
   Changes proposed result in improvements at this site to only those already approved by the City Kilaiwai Nal Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaiwi Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalaiwai park site.
   b. Restrict canoe launch activities into Kawaiwi Canal to only schools by permit.

5. Waipu to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Linda Hennings

Page 3

Ms. Kirstin Hochart

Via Email: kirstin60@aol.com

Dear Ms. Hochart:

Subject: Kawaihui-Hamakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai'i

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hamakua Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a "Red" double strikethrough format to identify portions eliminated by this change and a double underline in "Red" for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOWA and DSP have decided to incorporate additional mitigations to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the halia wa'a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanalikai Area
   - Remove pedestrian trail leading to Moku’ula peninsula and bridge over Kahanalikai Stream.

2. Pohākea to Na Pōhākau Hawaihine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only one trail would be supported.
   b. Reduce the total building floor area proposed at the ikahele complex at Pōhākea from about 8,350 sf to 6,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an offstreet parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapaa Quarry Road from Na Pōhāku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapaa from about 5,600 sf to 7,800 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa to two instead of three.

4. Kapaa to Kahiko Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridges across Kawaiheui Canal.
   a. Remove halia wa’a structure and canoe storage at the Kahiko park site.
   b. Restrict canoe launch activities into Kawaiheui Canal to only schools by permit.

5. Wai’aia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Moku’ula Area
   a. Remove two observation docks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southeast) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Mr. Doug Kagawa

Page 2

eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wai'a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakai Stream.

2. Pāhakau to Nā Pāhakau o Haawashine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the cultural complex at Pāhakau from about 8,245 sf to 5,340 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pāhakau to City of Kauai Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa’a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a’s two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to those already approved by the City Kauai Nālei Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kauawai Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kauawai Canal to only schools by permit.

5. Wa’iia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southeast of the management station.)
Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your general concern with visitors to Kailua and desire to restrict public access to this resource.

Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sq ft), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas, and have a lower building area than that presently allowed under the City’s zoning standards for this site. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiini is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ryoald Sato – HHF Planners

Ms. Demetra Noble Kaulukukui
2625 Doris Place
Honolulu, Hawai‘i  96822

Dear Ms. Kaulukukui:

Subject: Kawaiini-Hämakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiini-Hämakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiini resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiini by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa’a, and some buildings shown at the cultural center. Figure 3.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   a. Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakai Stream.

2. Pōhakua to Nā Pōhaku o Hauwhaine Area
   a. Reduce the total building-floor area proposed at the lāhuihui complex at Pōhakua from about 4,300 sf to 3,500 sf by reducing the number of proposed structures.
   b. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapā’a Area
   a. Remove pedestrian trail section along Kapā’a Quayy Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapā’a from about 6,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapā’a to two instead of three.

4. Kapā’a ma Kalihau Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kalihau park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Waiʻanae to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalks.

6. DOPAW Management Station to Mokulana Area
   a. Remove two observation decks within DOPAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOPAW at 973-9788.

Sincerely,

David G. Smith, Administrator Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Lucinda Keller

Via Email: kellerkailua@gmail.com

Dear Ms. Keller,

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai'i

June 29, 2020

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalk and bridge); and the Hale wa’a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahana'i Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahana'i Stream.

2. Pōhakua to Nā Pōhaku o Hawawaine Area
   a. Remove some segment of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kahuku complex at Pōhakua from about 8,350 sf to 6,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a’s Area
   a. Remove pedestrian trail section along Kapa’a’s Ocean Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 6,000 sf to 3,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kaluhea Area
   a. Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
      a. Remove Hale wa’a structure and canoe storage at the Kaluhea park site.
      b. Reduce canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai’anae to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Luizina Keller

Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulua. Mokulua peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
bs. Remove pedestrian trail from Mokulua connecting to Kahanui upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kailua and public access to this resource. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and new Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihau is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabre of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Mr. Mike Kelso
Via Email: mikekelso@me.com

Dear Mr. Kelso:

Subject: Kawaihau-Hāmākua Master Plan Project Final Environmental Impact Statement Approval by Land Board Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihau-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihau resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihau by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa'a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   • Remove pedestrian trail leading to Moku'ula peninsula and bridge over Kahanaki Stream.

2. Pāhāoa to ʻNā Pāhāoa o Haunui Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the lauhala canoe pav. at Pāhāoa from about 4,350 sf to 4,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quay Road from ʻNā Pāhāoa to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 4,650 sf to 7,300 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawa'aua Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai'anae to Ulupalakua Area
   • Remove pedestrian trail from the levee to Ulupalakua, including the boardwalk.

6. DOFAW Management Station to Moku'ula Area
   a. Remove two observation decks within DOFAW's management station area and the interpretive pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Moku'ula. Moku'ula peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
   c. Remove pedestrian trail from Moku'ula connecting to Kahanaki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with the level of visitors to Kailua and public access to this resource. Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 86 acres of upland areas, and have a lower building area than that presently allowed under the City's zoning standards for this site.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaiulu to become a major sustainable tourist attraction to the extent you may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiulu is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR's action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.
Mr. Mike Kelso

Page 4

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Mr. Charles Koehl

Via Email: charles@etherscapes.com

Dear Mr. Koehl:

Subject: Kawaiul-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiul-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiul resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiul by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wia‘a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaka‘i Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaka‘i Stream.

2. Pōhakoa to Nī Pōhaku o Hauwaihine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kahale komo at Pōhakoa from about 1,250 sf to 600 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quary Road from Nī Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 1,000 sf to 300 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kālāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove Hale wia‘a structure and canoe storage at the Kālāheo park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wai‘aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your general opposition to visitors to Kailua, desire to restrict public access to this resource, and corresponding concerns about changes that may attract more visitors.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawai Nui would become a major sustainable tourist attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawai Nui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-5968.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – BSHF Planners
Mr. and Mrs. Lescak
Page 2

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the late waiwai and some buildings along the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanaki Stream.

2. Pāhāka to Nā Pāhāka o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the Kahua complex at Pāhāka from about 6,240 sf to 2,250 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pāhāka to City Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa'a from about 6,000 sf to 5,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kauai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai'anae to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove the observation deck and the interpretive pavilion at the park site below southwest the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulua. Mokulua peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
Mr. and Mrs. Lescault

Page 3

Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your general opposition to visitors to Kailua and concern with public access to this resource.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaikea would become a major sustainable tourist attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaikea is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

Ms. Laurel Leslie
223 Aikapa Street
Kailua, Hawai‘i 96734

Dear Ms. Leslie:

Subject: Kawaikea-Hamakua Master Plan Project Final Environmental Impact Statement Approval by Land Board Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaikea-Hamakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaikea resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaikea by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale w`a`a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. **Kahanaiki Area**
   - Remove pedestrian trail leading to Moku`ula peninsula and bridge over Kahanaiki Stream.

2. **Pohakea to Nā Pohaku o Hauwahine Area**
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the hale w`a`a complex at Pohakea from about 8,250 sf to 6,300 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. **Kapa`a Area**
   - Remove pedestrian trail section along Kapa`a Quarry Road from Nā Pohaku to City Model Airplane Park.
   - Reduce the total building floor area proposed at the cultural center at Kapa`a from about 6,600 sf to 7,300 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa`a to two instead of three.

4. **Kapa`a to Kalāheo Area**
   - Changes proposed in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - Remove hale w`a`a structure and canoe storage at the Kalāheo park site.
   - Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. **Wai`alu to Ulupō Heiau Area**
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. **DOFAW Management Station to Moku`ula Area**
   - Remove observation deck within DOFAW’s management station area and the interpretive pavilion at the park site below (southeast) the management station.
   - Remove pedestrian trail and two viewing pavilions at Moku`ula. Moku`ula peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

**Note:**

- **b.** Remove pedestrian trail from Moku`ula connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your general opposition to visitors to Kailua, desire to restrict public access to this resource, and corresponding concerns about changes that may attract more visitors.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawainui would become a major sustainable tourist attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Charlene Ka‘ōlua Luning
1015 Akoa Place, #234
Kailua, Hawai‘i 96734
Dear Ms. Luning:

Subject: Kawaihae-Hamakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihae-Hamakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihae resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOWAF and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihae by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Ms. Charlene Ka‘ōlua Luning

Page 2

Modifications include eliminating some sections of the pedestrian trail, boardwalks and a bridge, and he hale wa'a and some buildings shown on the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanuiki Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanuiki Stream.

2. Pāhakulo to Nā Pāhakulo Haawahi Area
   a. Remove some segments of the pedestrian trail within this upland area. Only feet trails would be supported.
   b. Reduce the total building floor area proposed at the wai‘a complex at Pāhakulo from about 4,200 sf to 2,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pāhakulo to City Model Airport Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 3,600 sf to 2,700 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaiulani Canal.
   a. Remove hale wa'a's structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaiulani Canal to only schools by permit.

5. Wai'alae to Ulufale Heiau Area
   - Remove pedestrian trail from the levee to Ulufale Heiau, including the boardwalk.

6. DOWAF Management Station to Mokulua Area
   a. Remove two observation decks within DOWAF's management station area and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Charlene Ka‘ōla Laning

Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaiki spind area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiu is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sano – HHF Planners

Ms. Mary Mack
44-309 Kāne‘ohe Bay Drive
Kāne‘ohe, Hawai‘i 96744

June 29, 2020

Dear Ms. Mack:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa'a and some buildings shown on the cultural contest. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahana'iki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahana'iki Stream.

2. Pāhakea to Nā Pāhaku o Hauwhine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails will be supported.
   b. Reduce the total building floor area proposed for the Nahele camp at Pāhakea from about 4,250 sf to 4,100 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pāhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 6,600 sf to 5,900 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalibue Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kalibue park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai'a'ua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove observation decks within DOFAW's management station area and the interpretive pavilion at the park site below (Southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

---

Mr. and Mrs. Lescak

Page 3

be. Remove pedestrian trail from Mokulana connecting to Kahana'iki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR's action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Saio – HIIP Planners
Ms. Melody Kapilialoha MacKenzie  
579 Kane'aapu Place  
Kailua, Hawai‘i 96734  

Dear Ms. MacKenzie:  

Subject:  Kawaihu-Hāmākua Master Plan Project  
Final Environmental Impact Statement Approval by Land Board  
Kailua, O‘ahu, Hawai‘i  

June 29, 2020  

This letter is to inform you that the State of Hawai‘i’s, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihu-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.  

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.  

Project Revisions Since Draft EIS  

Community concerns have been expressed associated with visitors to Kawaihu resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihu by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.  

Modification include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and halting wa'a and some buildings shown in the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.  

1. Kahanuiki Area  
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanuiki Stream.  

2. Pōhaihau to Nā Pōhaku o Hauwhine Area  
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.  
   b. Reduce the total building floor area proposed in the Kaneohe complex at Pōhaihau from above 8,350 sf to 5,300 sf by reducing the number of proposed structures.  
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.  

3. Kapaa’s Area  
   a. Remove pedestrian trail section along Kapaa’s Quarry Road from Nā Pōhaku to City of Kauai Airplane Park.  
   b. Reduce the total building floor area proposed for the cultural center at Kapaa from above 6,600 sf to 7,300 sf by reducing the number of proposed structures.  
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa to two instead of three.  

4. Kapaa’s to Kalihaua Area  
   Changes proposed result in improvements at this site to those already approved by the City Kauai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also implement construction of the approved pedestrian bridge across Kawaihu Canal.  
   a. Remove Hale wa’a structure and canoe storage at the Kalihaua park site.  
   b. Restrict canoe launch activities into Kawaihu Canal to only schools by permit.  

5. Wai’sau to Ulupō Heiau Area  
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.  

6. DOFAW Management Station to Mokulua Area  
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

b. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9786.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Pauline Mac Neil
Via Email: dearpauline@hotmail.com

Dear Ms. Mac Neil:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O’ahu, Hawai’i

June 29, 2020

This letter is to inform you that the State of Hawai’i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by
eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a
bridge), and the hale wa’a, and some buildings shown at the cultural centers. Figure 2.4A
identifies these revisions and a summary is provided below. More information on these
modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakilii Area
   • Remove pedestrian trail leading to Mokulana peninsula and bridge over
     Kahanakilii Stream.

2. Pōhaku to Nā Pōhaku o Huawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only
      foot trails would be supported.
   b. Reduce the total building floor area proposed at the hale complex on Pōhaku
      from about 5,200 sf to 3,200 sf by reducing the number of proposed
      structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf),
      and open pavilion (350 sf) to support programs either as interim or
      permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quay Road from Nā Pōhaku
      to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a
      from about 6,000 sf to 7,000 sf by reducing the number of proposed
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural
      center at Kapa’a to two instead of three.

4. Kapa’a to Kāhikinui Area
   Changes proposed result in improvements at this site to only those already approved
   by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does
   not include any new improvements to this site. DSP may not implement
   construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kāhikinui park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by
      permit.

5. Wait’alii to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the
     boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area,
      and the interpretive pavilion at the park site below (southeast) the
      management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s
action, impacts associated with these improvements were already addressed in the Draft EIS
document previously published. Several reductions to the project remain that address your
concerns with the level of visitors to Kailua and unregulated public access to this resource. Both
DOFAW and DSP do not want unregulated access at Kawauui and Section 2.2.5 of the DEIS
discussed several actions proposed to manage each access that do not change with the
reinstatement of some improvements by the BLNR.

Structures proposed within the built environment would total only about 1.2 acres in floor area
(approximately 52,000 sf), while the floor area for cultural centers added back by the BLNR.
These structures would also be dispersed over about 66 acres of upland areas and have a lower building
area than that presently allowed under the City’s zoning standards for this site. The projected level
of public visitation and activities are reasonable and manageable especially with the remaining
reductions in project improvements. Further, DOFAW and DSP management would include
monitoring activity levels, opening areas to public access when they are able to manage them, and
making changes to access and activities, if appropriate.

With remaining improvements included, we do not expect Kawauui would become a major tourist
attraction to the extent you were concerned with. Adding back the pedestrian trail section along
Kapa’a Quay Road from Nā Pōhaku to the City’s Model Airplane Park would not significantly
change public use because the main trails used would likely be between Kahanakilii and Nā Pōhaku
with the education center.

Supplemental information is provided in our response below based upon the BLNR’s action
addressing one of your comments (No. 14.b.).

14. Site of Riparian and Upland Areas. ( Likely incorrectly remembered as No. 14 again)
   b. What percentage of the non-wetland area will be environmentally altered by the
      construction of buildings, parking lots, restrooms, boardwalks, observation decks,
      interpretive structures, pavilions, ladders, and open space areas, septic systems, lagoons,
      and intensive use areas? What percentage of wetland area will be altered by the
      construction of building, boardwalks, observation decks, and extensive use areas?

Response: Revisions to the project reducing the level of improvements would reduce the
overall building area for structures (buildings, pavilions, etc.). Structures proposed within
the built environment would total about 1.2 acres in floor area (about 52,000 sf), while
the floor area for cultural centers added back by the BLNR. These structures would
also be dispersed over about 66 acres of upland areas and have a lower building area
than that presently allowed under the City’s zoning standards for this site. The hale
wa’a structure, some boardwalks, and a bridge have been removed from the project.
However, about 640 linear feet of boardwalk would continue to be required for the
pedestrian trail section from Nā Pōhaku to the City’s Model Airplane Park with the
BLNR’s action. Most sections of maintenance roads and foot trails would continue to utilize existing paths. About 15 acres may still require site improvements for construction of facilities, parking, etc. which is about 7% of non-wetland area.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigative effects are discussed. Kawaiulii is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Pauline Mac Neil
112 Haekoa Drive
Kailua, Hawai‘i 96734

Dear Ms. Mac Neil:

Subject: Kawaiulii-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This is a follow-up letter to your February 6, 2018 email to Chairperson Case on the Draft Environmental Impact Statement (EIS) and our August 8, 2019 response to your letter. This letter is to inform you that the State of Hawai‘i’s Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiulii-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge); and the Hale 'wa'a and some buildings shown at the cultural center. Table 2-4 identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahana'iki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahana'iki Stream.

2. Pāhakea to Nā Pāhakea o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot-trails would be supported.
   b. Reduce the total building floor area proposed at the kahalei center at Pāhakea from about 5,200 sf to 3,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pāhakea to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalihe'e Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Ni Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Ni Canal.
   a. Remove Hale 'wa'a structure and canoe storage at the Kalihe'e Park site.
   b. Restrict canoe launch activities into Kawai Ni Canal to only schools by permit.

5. Wa'ia'ia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW's management station area and the interpretive pavilion at the park site below southwest of the management station.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your concerns with the level of visitors to Kailua and unregulated public access to this resource. As stated in our August 3, 2010 response letter to you on the Draft EIS, we do not believe the Kawainui wetland would be "lost" by some improvements being included by the BLNR because they would be located within upland areas and would not have a significant adverse effect on the wetland. An important purpose for the project is to increase public access and provide for managed passive outdoor recreation for the public, which includes residents.

Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than that presently allowed under the City's zoning standards for this site. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

With remaining improvements included, we do not expect Kawainui would become a major tourist attraction to the extent you were concerned with. Adding back the pedestrian trail section along Kapa'a Quarry Road from Nā Pāhakea to the City's Model Airplane Park would not significantly change public use because the main trails used would likely be between Kahana'iki and Nā Pāhakea with the education center.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR's action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.
Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Leah Magana
1308 Mōkapu Boulevard
Kailua, Hawai‘i 96734

Dear Ms. Magana:

Subject: Kawainui-Hānākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hānākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating those concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hale wa’a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulau peninsula and bridge over Kahanaiki Stream.

2. Pōhakua to Nā Pōhakua o Hawaikauai Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kaukau center at Pōhakua from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (150 sf), and open pavilion (150 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quiver Road from Nā Pōhakua to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   a. Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihau Canal.
   b. Reduce hale wa’a’s size and canop storage at the Kalāheo park site.

5. Wai’alii to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOWFWS Management Station to Mokulau Area
   a. Remove two observation decks within DOWFWS’s management station area and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your concerns with the level of visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

Improvements that remain eliminated from the Proposed Action under the BLNR’s action include portions of the pedestrian trail and the hale wa’a at the Kalāheo site across from Kalāheo High School. This project is not proposing any new improvements to the Kalāheo site from that already approved and permitted. Therefore, this site can continue to be developed under the already permitted plans associated with the City’s Gateway Park project.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Pablos of DOWFWS at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – IHH Planners
Mr. Herman Ka’imiloa Marcie
437B Uluapain Street
Kailua, Hawai’i 96734

Dear Mr. Marcie:

Subject: Kawainui-Hamakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) has approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hamakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the Pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the Pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, OFA and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa‘a and some buildings shown at the cultural center. Figure 3.4A identifies these revisions and a summary is provided below. More information on these modifications has been incorporated into other pertinent sections of this chapter.

1. Kahanakui Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakui Stream.

2. Pōhakau to Nā Pōhaku o Hauwhaine Area
   - a. Remove some segments of the pedestrian trail within this upland area. Only foot-trails would be supported.
   - b. Reduce the total building floor area proposed at the hale wa‘a complex at Pōhakau from about 12,000 sf to 6,500 sf by reducing the number of proposed structures.
   - c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   - a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   - b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 6,000 sf to 2,900 sf by reducing the number of proposed structures.
   - c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - a. Reduce lake wa‘a structure and canoe storage at the Kalāheo park site.
   - b. Restrain canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa‘a‘a to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalks.

6. DOWA Management Station to Mokulua Area
   - Remove two-observation decks within DOWA’s management station area and the interactive pavilion at the park site below (southeast) the management station.
Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Mr. Daryl Matthews
Via Email: daryl.matthews@gmail.com

Dear Mr. Matthews:

Subject: Kawaiui-Hānāku Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O’ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i’s Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiui-Hānāku Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions are in “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (beachwalks and a bridge) and the hale wa’a and some buildings shown on the cultural section. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications has been incorporated into other pertinent sections of this chapter.

1. Kahananiki Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahananiki Stream.

2. Pōhakea to Nā Pōhaku o Hawaïwhine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only one foot trail would be supported.
   b. Reduce the total building floor area proposed at the luahale complex at Pōhakea from about 8,350 sf to 6,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an offstreet parking lot, restroom facility (350 sf), and open pavilion (550 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhaku to City Mānuala. No permanent bridge is planned.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 9,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wa’iau’ia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the beachwalk.

6. DOFAW Management Station to Mokulua Area
   - Remove two observation decks within DOFAW’s management station area, and the interprative pavilion at the park site below (southwest) the management station.
   - Remove pedestrian trail and two viewing pavilions at Mokulua. Mokulua peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your concerns with the level of visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawai Nui would become a major sustainable tourist attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawai Nui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Cynthia Merrick

1355 Akiaha Lane
Kailua, Hawaii 96734

Dear Ms. Merrick:

Subject: Kauai-Molokai Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, Oahu, Hawaii

June 29, 2020

This letter is to inform you that the State of Hawaii's Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kauai-Molokai Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kauai resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigation measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kauai by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modification include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale Wa'a and some building elements at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. **Kauai-Molokai Area**
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kauai Stream.

2. **Pahakea to Nii Pahaku o Hawa‘ina Area**
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building area proposed at the Kahului complex at Pahakea from about 3,245 sf to 2,160 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (150 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. **Kapa'a Area**
   - Remove pedestrian trail section along Kapa'a Quarry Road from Nii Pahaku to City Model Airplane Park.
   - Reduce the total building area proposed for the cultural center at Kapa'a from about 7,000 sf to 6,000 sf, reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. **Kapa'a to Kaliihau Area**
   - Changes proposed result in improvements at this site to only those already approved by the City Kauai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may or may not implement construction of the proposed pedestrian bridge across Kauai Canal.
   - Remove Hale Wa'a structure and canoe storage at the Kaliihau park site.
   - Restrict canoe launch activity into Kauai Canal to only schools by permit.

5. **Wai‘ua to Upolu Heiau Area**
   - Remove pedestrian trail from the levee to Upolu Heiau, including the boardwalk.

6. **DOFAW Management Station to Mokulana Area**
   - Remove two observation decks within DOFAW's management station area and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Cynthia Merrick

Page 3

- Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

- Remove pedestrian trail from Mokulana connecting to Kahanaikapunalu area.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your opposition to visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaunui would become a major sustainable tourist attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaunui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Judy Mick

Via Email: ppchawaii@yahoo.com

Dear Ms. Mick:

Subject: Kawaunui-Hamakua Master Plan Project Final Environmental Impact Statement Approval by Land Board Kailua, Oahu, Hawaii

June 29, 2020

This letter is to inform you that the State of Hawaii's, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaunui-Hamakua Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a "Red" double strikethrough format to identify portions eliminated by this change and a double underline in "Red" for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaunui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigating measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaunui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail/ boardwalks and a bridge, and the hale for some buildings shown at the cultural centers. Figure 2.4.A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaikei Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaikei Stream.

2. Pōhakua to Nā Pōhaku o Haouahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot-trail would be supported.
   b. Reduce the total building floor area proposed at the halepa kompa at Pōhakua from about 5,000 sq ft to 4,700 sq ft by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quay Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 5,000 sq ft to 4,700 sq ft by reducing the number of proposed structures.

4. Kapa'a to Kalahoe Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawaui Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Reduce hale wa'a structure and canoe storage at the Kalahoe park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Waialua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOPAW Management Station to Mokulana Area
   a. Remove two observation decks within DOPAW's management station area and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kapaa would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that would be shared with the public and the BLNR's action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOPAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – IHF Planners
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa‘a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanui Area
   - Remove pedestrian trail leading to Moku‘ula peninsula and bridge over Kahanui Stream.

2. Pohāhā‘e to Nā Pōhāhā‘e O Ka‘auwahi Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot-trails would be supported.
   b. Reduce the total building floor area proposed at the kūkui‘u hāna site from about 9,900 sf to 6,300 sf by reducing the number of proposed structures:
   ca. DSP plans to first provide an off-street parking lot, restroom facility (150 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhāhā‘e to City, Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 6,600 sf to 2,700 sf by reducing the number of proposed structures:
   ca. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a two instead of three.

4. Kapa’a to Kālahū‘ō Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa‘a structure and canopy storage at the Kālahū‘ō park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa‘a‘ula to Ulupō Heiau Area
   - Remove pedestrian trail from the levees to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Moku‘ula Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaihui to become a major sustainable tourism attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR's action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale wa'a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanaiki Stream.

2. Pōhakua to Nā Pōhaku o Hawa'ina Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the kahulu complex at Pōhakua from about 8,350 sf to 6,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an offstreet parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quary Road from Nā Pōhaku to City Model Airport Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa'a from about 5,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalāpea Area
   Changes proposed result in improvements at this site to only those already approved by the City Kāwai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihau Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kalāpea park site.
   b. Restrict canoe launch activities into Kawaihau Canal to only schools by permit.

5. Wai'anae to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW's management station area, and the interpretive pavilion at the park site below (southwest) the management station.
June 29, 2020

Ms. Merle Pak

Via Email: kiyopak@gmail.com

Dear Ms. Pak:

Subject: Kawainui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the project number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa‘a’s and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaxi Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaxi Stream.

2. Pōhaku to Nā Pāhaku o Hawai‘i Area
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the kahalei complex at Pohaku from about 8,300 sf to 4,500 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (150 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   - Remove pedestrian trail section along Kapa‘a’s Quarry Road from Nā Pāhaku to City of Kapa‘a
   - Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 9,600 sf to 7,000 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a’s two instead of three.

4. Kapa‘a to Kaliheō Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kaliheō Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - Remove hale wa‘a structure and canoe storage at the Kaliheō park site.
   - Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa‘ialua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   - Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the public site below (southwest) the management station.
Ms. Juliet Pearson

Via Email: juliet.ohns@mc.com

Dear Ms. Pearson:

Subject: Kawaiinti-Hāmkūa Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kālōa, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiinti-Hāmkūa Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiinti resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOWA and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiinti by...
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa’a and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahananiki Area
   a. Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahananiki Stream.

2. Pōhaku to Nā Pōhaku o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the Kauhale complex at Pōhākua from about 3,350 sf to 2,700 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail along Kapa’a’s Quarry Road from Nā Pōhaku to City Mill Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 5,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kākahoe Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nai Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale wa’a structure and canoe storage at the Kahakeh park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai’anae to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area and the interactive pavilion at the park site below (southwest) the management station.

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahananiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kala’au and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawainui would become a major sustainable tourist attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

[Signature]

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HBF Planners
Ms. Frances Rainin
188 North Kaliha Avenue
Kailua, Hawaii 96734

Dear Ms. Rainin:

Subject: Kawaihae-Hamakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai'i

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approval submitting the Final Environmental Impact Statement (EIS) document for the Kawaihae-Hamakua Master Plan Project to the Governor's Office for Acceptance determination at its October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the modifications to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihae resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have been incorporated into concept plans to further reduce public access within Kawaihae by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the halae wa'a and some buildings domes on the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanikau Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanikau Stream.

2. Pahakea to Nā Pihiku o Haawaino Area
   a. Remove some segments of the pedestrian trail within this upland area. Only 10 feet trails would be supported.
   b. Reduce the total building floor area proposed at the turnhale complex at Pahakea from approximately 2,250 to 2,125 sf by reducing the number of proposed structures.
   c. DSP plan to first provide an off-street parking lot, restroom facility (150 sf) and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail segment along Kapa'a Quarry Road from Nā Pihiku to City-County Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from approximately 6,000 to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa'a to Kalihiwai Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove hale wa'a structure and canoe storage at the Kalihiwai park site.
   b. Restrict canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Wai'aoa to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Makalapa Area
   - Remove two observation docks within DOFAW's management station area and the interpretive pavilion at the park site below (southeast) the management station.
Ms. Tadina Rice  
322 Aoloa Street, #601  
Kailua, Hawai'i 96734  

Dear Ms. Rice:  

Subject:  Kawainui-Hāmākua Master Plan Project  
Final Environmental Impact Statement Approval by Land Board  
Kailua, Oʻahu, Hawai‘i  

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Actions. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.  

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.  

Project Revisions Since Draft EIS  

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the he‘e‘e and some buildings shown at the cultural center. Figure 2-4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanai'ai Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanai'ai Stream.

2. Pēha‘ea to Nā Pēha‘ea o Ha‘awhine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the cultural center at Pēha‘ea from about 2,350 sf to 2,200 sf by reducing the number of proposed structures.
   c. Remove pedestrian trail from Kalāheo to Kahanai'ai Area.
   e. Remove the he‘e‘e structure and canoe storage at the Kalāheo park site.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pēha‘ea to City-Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa'a from about 9,600 sf to 7,000 sf by reducing the number of proposed structures.
   c. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

4. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks at the DOFAW’s management station and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigative effects are discussed. Kawaihui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jefferson of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Kate Righter

Via Email: righter.kate@gmail.com

Dear Ms. Righter:

Subject: Kawainui-Hānākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hānākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOPAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

**Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.**

1. **Kahanai Area**
   - Remove pedestrian trail leading to Mokuulena peninsula and bridge over Kahanai Stream.

2. **Pāhakea to Nī Pāhaku o Hawawihine Area**
   - a. Remove some segments of the pedestrian trail within this upland area. Only foot trail will be supported.
   - b. Reduce the total building floor area proposed at the hānai complex at Pāhakea from about 8,250 sf to 6,300 sf by reducing the number of proposed structures.
   - c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. **Kapa’a Area**
   - a. Remove pedestrian trail section along Kapaa Quary Road from Ni Pāhaku to City Model Airplane Park.
   - b. Reduce the total building floor area proposed for the cultural center at Kapaa from about 6,600 sf to 7,200 sf by reducing the number of proposed structures.
   - c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa to two instead of three.

4. **Kapa’a to Kalāheo Area**
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements at this site. DOPA may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - a. Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   - b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. **Wai‘ai‘au to Ulupō Heiau Area**
   - Remove pedestrian trail from the levee to Uluhō Heiau, including the boardwalk.

6. **DOPA W Management Station to Mokuulena Area**
   - Remove two observation decks within DOPA W’s management station area, and the interpretive pavilion at the park site below southwest the management station.
Ms. Ka‘e Righter

Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

bc. Remove pedestrian trail from Mokulana connecting to Kahanaikapu sandle area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiulani is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Phaedra E. Robinson, Ph.D.

Via Email: phsecra_robinson@hokulani.k12.hi.us

Dear Ms. Robinson:

Subject: Kawaiulani-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiulani-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiulani resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigation measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiulani by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalk and a bridge) and the hale wa'a and some buildings shown at the cultural center, Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   - Remove pedestrian trail leading to Molukana peninsula and bridge over Kahanakai Stream.

2. Pāhakea to Nā Pūhaku o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the luauhe concept at Pāhakea from about 9,300 sq ft to 8,300 sq ft by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sq ft), and open pavilion (350 sq ft) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kupa'a Area
   a. Remove pedestrian trail section along Kupa'a Quay Road from Nā Pūhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kupa'a from about 9,600 sq ft to 7,800 sq ft by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kupa'a to two instead of three.

4. Kupa'a to Kalāheo Area
   Changes proposed result in improvements at this site to those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove hale wa'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa'a'aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Molukana Area
   a. Remove two observation decks within DOFAW's management station area, and the interpretive pavilion at the park site below (southwest) the management station.
   b. Remove pedestrian trail and two viewing pavilions at Molukana. Molukana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

---

be. Remove pedestrian trail from Molukana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR's action, impacts associated with these improvements were already addressed in the EIS document previously published. Several reductions to the project remain that address your concerns with visitors to Kailua and public access to this resource. We do not believe the Kawainui wetland and resources would be significantly impacted by some improvements being included back by the BLNR because they would be located within upland areas. An important purpose for the project is to increase public access and provide for managed passive outdoor recreation for the public, which includes residents.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate. With remaining improvements included, we do not expect Kawainui would become a major tourist attraction to the extent you were concerned with.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR's action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – IHF Planners
Ms. Cynthia Rubinstein

Via Email: cynthia.beachfront@gmail.com

Dear Ms. Rubinstein:

Subject: Kawaihui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visibility to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa'a and some buildings discussed in the cultural center. Figure 3.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. **Kahahiki Area**
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakiki Stream.

2. **Pōhaku o Nā Pōhaku o Haэwahine Area**
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the kanaii complex at Pōhaku from about 8,200 sf to 6,250 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. **Ka‘apana Area**
   - Remove pedestrian trail section along Ka‘apana Quarry Road from Nā Pōhaku to Ka‘apana to Ka‘apana to Mokule‘ia State Park.
   - Reduce the total building floor area proposed for the cultural center at Ka‘apana from about 6,600 sf to 4,700 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Ka‘apana to two instead of three.

4. **Ka‘apana to Kāliehe Area**
   - Changes proposed result in improvements at this site to only those already approved by the City Kawaihui Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihui Canal.
   - Remove Hale wa’a structure and canoe storage at the Kāliehe park site.
   - Restric canoe launch activities into Kawaihui Canal to only schools by permit.

5. **Wai‘aua to Ulupu Heiau Area**
   - Remove pedestrian trail from the levee to Ulupu Heiau, including the boardwalk.

6. **DOFAW Management Station to Mokulua Area**
   - Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.
a. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

b. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your opposition to and concerns with the level of visitors to Kahanaiki and public access to this resource. Section 2.2.5 of the DEIS discussed several actions proposed to manage such access that do not change with the reinstatement of some improvements by the BLNR.

We do not believe the Kawainui wetland and resources would be significantly impacted by some improvements being included by the BLNR because they would be located within upland areas. An important purpose for the project is to increase public access and provide for managed passive outdoor recreation for the public, which includes residents. Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than that presently allowed under the City’s zoning standards for this site.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate. With remaining improvements included, we do not expect Kawainui would become a major tourist attraction to the extent you were concerned with.

Impacts on natural resources or the quality of life for residents of Kahului would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 971-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Saffery

Page 2

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the hale wa’a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanai'i Area
   - Remove pedestrian trail leading to Molulau peninsula and bridge over Kahanai'i Stream.

2. Pōhaku to Nā Pōhaku o Haawihine Area
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the lançón complex at Pōhaku from about 9,250 sf to 6,350 sf by reducing the number of proposed structures.
   - DSP plans to provide an offstreet parking lot, a restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent facility before proceeding with the education center.

3. Kapa'a Area
   - Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pōhaku to Civic Model Airplane Park.
   - Reduce the total building floor area proposed for the cultural center at Kapa'a from about 6,600 sf to 7,000 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalalau Area
   - Changes proposed result in improvements at this site to only those already approved by the City Law Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the proposed pedestrian bridge across Kawainui Canal.
   - Remove hale wa’a structure and canoe storage at the Kalalau park site.
   - Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wa'a'ai to Ulu'pō Heiau Area
   - Remove pedestrian trail from the levee to Ulu'pō Heiau, including the boardwalk.

6. DOFAW Management Station to Molulau Area
   - Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Maya Saffey

Page 3

- Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

- Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ahi Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. Kalani Schrader
925 Kaipii Street
Kailua, Hawai‘i 96744

Dear Mr. Schrader:

Subject: Kawainui-Hānākūa Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hānākūa Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSIP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by
eliminating some improvements. Reducing some areas prepared for public access and
casual outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a
bridge) and the hale wa’a and some buildings shown at the cultural centers. Figure 2.4A
identifies these revisions and a summary is provided below. More information on these
modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakai Stream.

2. Pōhakau to Nā Pōhakau o Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only
      foot-trails would be supported.
   b. Reduce the total building floor area proposed at the luana‘ena complex at
      Pōhakau from about 8,250 sf to 6,200 sf by reducing the number of proposed
      structures.
   c. DSP to select one land-based parking lot, restroom facility (350 sf),
      and open pavilion (350 sf) to support programs either as an interim or
      permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhakau
to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a
      from about 6,000 sf to 5,200 sf by reducing the number of proposed
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural
       center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved
   by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does
   not include any new improvements to this site. DSP may also not implement
   construction of the approved pedestrian bridge across Kawaihui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaihui Canal to only schools by
      permit.

5. Wai‘alu to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the
      boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area
      and the interpretive pavilion at the park site below (southwest of the
      management station).

Although some improvements are being added back into the Proposed Action by the BLNR’s
action, impacts associated with these improvements were already addressed in the Draft EIS
document previously published. Several reductions to the project remain that address your
concerns with visitors to Kailua and public access to this resource. We do not believe the Kawaihui
wetland and resources would be significantly impacted by some improvements being included by
the BLNR because they would be located within upland areas. An important purpose for the project
is to increase public access and provide for managed passive outdoor recreation for the public,
which includes residents.

The projected level of public visitation and activities are reasonable and manageable especially
with the remaining reductions in project improvements. Further, DOFAW and DSP management
would include monitoring activity levels, opening areas to public access when they are able to
manage them, and making changes to access and activities, if appropriate. With remaining
improvements included, we do not expect Kawaihui would become a major tourist attraction to
the extent you were concerned with.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant,
as discussed in several sections of the Final EIS, and if necessary, measures to minimize or
mitigate effects are discussed. Kawaihui is a State resource that should be shared with the public
and the State needs to consider the broader public interest. The BLNR’s action to add some
improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of
Environmental Quality Control (OEQC) for publication and notification that it has been submitted
to the Governor’s Office for Acceptance. Notification will be provided to you once publication of
the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati
Jeffers-Fabro of DOFAW at 973-8788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
June 29, 2020

Mr. Rick Kaimi Scudder
Ka‘imi Ventures
P.O. Box 751
Honolulu, Hawai‘i 96808

Dear Mr. Scudder:

Subject: Kawaiina-Hānākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiina-Hānākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions are a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiina resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiina by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks) and a bridge; and the hale wa‘a and some buildings shown at the cultural center. Figure 2.4.A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   a. Remove pedestrian trail leading to Moku‘ula peninsula and bridge over Kahanaki Stream.

2. Pāhāka to Nā Pāhāku a Hawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kauluhale complex at Pāhāku from about 3,350 sf to 5,350 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapaa’s Area
   a. Remove pedestrian trail section along Kapaa’s Quarry Road from Nā Pāhāku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapaa from about 5,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapaa’s to two instead of three.

4. Kapaa’s to Kalitheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kapaa Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also implement construction of the approved pedestrian bridge across Kawaiina Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kalitheo park site.
   b. Restrict canoe launch activities into Kawaiina Canal to only schools by permit.

5. Wai‘aua to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Moku‘ula Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.
Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Draft and now Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiui is a State resource that would be shared with the public and the BLNR’s action to restore some improvements back into the Proposed Action reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. Darel Shea
Via Email: dshea40@yahoo.com

Dear Mr. Shea:

Subject: Kawaiui-Hämãkua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiui-Hämãkua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawaiui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale waa and some buildings shown on the cultural aspect. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakaii Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakaii Stream.

2. Pāhakea to Nā Pāhaku o Haawainie Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building-floor area proposed at the kahuku complex at Pāhakea from about 8,340 sf to 4,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pāhaku to City Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa'a from about 9,690 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kaliiheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove Hale waa structure and canoe storage at the Kaliiheo park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai'auia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOPAW Management Station to Mokulana Area
   a. Remove two observation decks within DOPAW's management station area and the interactivi pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain to address your concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area; they should be phased over time, are modest, and planned to be environmentally sustainable, and supported increased stewardship and native Hawaiian cultural practices.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate these effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some modifications back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Saio – HIFF Planners
Ms. Carol Shibata
44-220 Malae Place
Kāne‘ohe, Hawai‘i 96744

Dear Ms. Shibata:

Subject: Kawainui-Hanākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

Ms. Carol Shibata

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the Hale wa‘a and some buildings shown at the cultural section. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakai Stream.

2. Pāhakea to Nī Pāhake o Haswaine Area
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the Kahanakai complex at Pāhakea from about 5,250 sf to 5,500 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (500 sf), and open pavilion (500 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   - Remove pedestrian trail section along Kapa’a’s Garey Road from Nī Pāhakea to Kapa’a Model Airplane Park.
   - Reduce the total building floor area proposed for the cultural center at Kapa’a from about 5,600 sf to 7,000 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kaliiheo Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   - a. Remove Hale wa‘a structure and canoes storage at the Kaliiheo park site.
   - b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai‘aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   - Remove one observation deck within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.
Ms. Carol Shibata

Page 3

Ok. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

bk. Remove pedestrian trail from Mokulana connecting to Kahanaiki aplan area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The project level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawainui would become a major sustainable tourist attraction. Further, DOFAW and DFP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
115 PUNCHBOWL STREET, ROOM 725
HONOLULU, HAWAII 96813

June 29, 2020

Mr. David Shibata, Esq.
44-220 Malae Place
Kīhei, Maui 96744

Dear Mr. Shibata:

Subject: Kawainui-Hānākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawainui-Hānākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawainui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DFP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawainui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wā'a and some buildings shown on the cultural context. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   a. Remove pedestrian trail leading to Molokana peninsula and bridge over Kahanakai Stream.

2. Pāhaku to Nī Pāhaku o Hawa‘ina Area
   a. Remove some segments of the pedestrian trail within this upland area. Onlya foot-bridge would be supported.
   b. Reduce the total building floor area proposed at the kahupule a pāhaku from about 9,200 sf to 3,200 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quay Road from Nī Pāhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 9,600 sf to 3,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalākaua Area
   a. Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Waiʻanae to Ulupō Heiau Area
   a. Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOWA Management Station to Molokana Area
   a. Remove two observation decks within DOWA's management station area and the interactive pavilion at the park site below southwest the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your opposition and concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawainui would become a major sustainable tourist attraction. Further, DOWA and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back effects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor's Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOWA at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

ce: Ronald Sato – HHF Planners
June 29, 2020

Ms. Rachael Siciliano

Via Email: r_siciliano@yahoo.com

Dear Ms. Siciliano:

Subject: Kawaihui-Hāmāku Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmāku Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigation measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the Hale wa‘a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   - Remove pedestrian trail leading to Mokulau peninsula and bridge over Kahanakai Stream.

2. Pāhakoa to Nā Pāhakoa o Hawahine Area
   a. Remove some segments of the pedestrian trail within this area. Only a few trails would be supported.
   b. Reduce the total building-floor area proposed at the kanaka complex at Pāhakoa from about 8,245 sf to 4,345 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   a. Remove pedestrian trail section along Kapa‘a’s Quarry Road from Nā Pāhakoa to City Model Airplane Park.
   b. Reduce the total building-floor area proposed for the cultural center at Kapa‘a from about 5,400 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. Kapa‘a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawailoa Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihui Canal.
   a. Remove Hale wa‘a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaihui Canal to only schools by permit.

5. Wa‘u‘a to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulau Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest of the management station).
Ms. Raahael Siciliano
Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaihui to become a major sustainable tourist attraction. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Mr. John Stimson
1113 Hui Street
Kailua, Hawai‘i 96734

Dear Mr. Stimson:

Subject: Kawaihui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’s and some buildings shown at the cultural centers. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. **Kahanakai Area**
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanakai Stream.

2. **Pāhakea to Nā Pāhakea o Hawaïaina Area**
   - Remove some segments of the pedestrian trail within this upland area. Only foot-trails would be supported.

3. **Kapa’a Area**
   - Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pāhakea to City Model Airplane Park.
   - Reduce the total building-floor area proposed for the cultural center at Kapa’a from about 6,000 sq ft to 7,000 sq ft by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. **Kapa’a to Kālāheo Area**
   - Changes proposed result in improvements at this site to only those already approved by the City Kawaiaha’o Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.

5. **Wai’alae to Ulupō Heiau Area**
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. **DOFAW Management Station to Mokulana Area**
   - Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with the level of visitor access to Kailua and public access to this resource.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawainui would become a major sustainable tourist attraction that some may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahvo of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Paulette Tam

Page 2

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa‘a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakoi Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakoi Stream.

2. Pōhaku to Nā Pāhau o Hawsahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the hale wa‘a complex at Pōhaku from about 8,950 sf to 6,950 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa‘a Area
   a. Remove pedestrian trail section along Kapa‘a Quarry Road from Nā Pāhau to City Model Aerospace Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa‘a from about 2,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa‘a to two instead of three.

4. Kapa‘a to Kalibea Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawaihi Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihi Canal.
   a. Remove hale wa‘a structure and canoe storage at the Kalibea park site.
   b. Restrict canoe launch activities into Kawaihi Canal to only schools by permit.

5. Wai‘alua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest) the management station.

June 29, 2020

Ms. Paulette Tam

Via Email: tampaulette@gmail.com
Dear Ms. Tam:

Subject: Kawaihi-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kalihi, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihi-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihi resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have not been incorporated into concept plans to further reduce public access within Kawaihi by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Ms. Paulette Tain

Page 3

Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

Remove pedestrian trail from Mokulana connecting to Kahanakai upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihau is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Mr. Michael Līola Tamālī'i

Via Email: ckentl414@gmail.com

Dear Mr. Tamālī'i:

Subject: Kawaihau-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihau-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawaihau resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihau by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa'a, and some buildings shown at the cultural center. Figure 2-4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaiki Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaiki Stream.

2. Pōhakea to Nā Pōhaku o Hauwhine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only two trail heads would be supported.
   b. Reduce the total building floor area proposed at the kapuhalo complex at Pōhakea from about 8,250 sf to 4,250 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an on-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pōhaku to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 6,600 sf to 2,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’u to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaipu Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaipu Canal to only schools by permit.

5. Wai’aua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kaua‘i and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kaua‘i would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kauai is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ari Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners
Ms. Malia Thurman  

June 29, 2020

Via Email: davemalia@gmail.com

Dear Ms. Thurman:

Subject: Kualii-Honakaa Master Plan Project  
Final Environmental Impact Statement Approval by Land Board  
Kailua, O'ahu, Hawai'i

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submittal of the Final Environmental Impact Statement (EIS) document for the Kaunale-Hanakaa Master Plan Project to the Governor's Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR's action. Additional revisions use a “Red” double strike-through format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kualii resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigation measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kualii by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the kahakoa and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area  
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakai Stream.

2. Pōhakoa to Nā Pōhakoa (Haswalho) Area  
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the kumaha-he'ele'ale at Pōhakoa from about 8,250 sq. ft, to 4,200 sq. ft. by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (50 sq. ft), and open pavilion (150 sq. ft) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa'a Area  
   a. Remove pedestrian trail section along Kapa'a Quarry Road from Nā Pōhakoa to Civil-Motorway Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 6,000 sq. ft to 3,500 sq. ft. by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kahului Area  
   Changes proposed result in improvements at this site to only those already approved by the Civil-Motorway-Boer at Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kualii Canal.
   a. Remove Hale wa'a structure and canoe storage at the Kahului park site.
   b. Restrict canoe launch activities into Kualii Canal to only schools by permit.

5. Wai'alea to Ulupō Heiau Area  
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area  
   a. Remove two observation decks within DOFAW's management station area, and the interpretive pavilion at the park site below southwest the management station.
Ms. Malia Thurman
Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanaki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, they would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaiulani is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

Ms. Malia Tom
Via Email: avocadosaredelicious@gmail.com

Dear Ms. Tom:

Subject: Kawaiulani-Hānākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

June 29, 2020

This letter is to inform you that the State of Hawai‘i’s, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaiulani-Hānākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of some project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaiulani resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaiulani by
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale 'wā'a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaihi Area
   - Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaihi Stream.

2. Pōhaku to Nā Pōhaku o Hawaihine Area
   a. Remove some_segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the luakaha complex at Pōhaku from about 4,320 sf to 4,100 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kap'a's Area
   a. Remove pedestrian trail section along Kap'a's Quarry Road from Nā Pōhaku to City Model Airport Park.
   b. Reduce the total building floor area proposed for the cultural center at Kap'a from about 6,600 sf to 7,600 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kap'a to two instead of three.

4. Kap'a's to Kalāheo Area
   a. Changes proposed result in improvements at this site to only those already approved by the City Kaunālani Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihina Canal.
   b. Restrict canoe launch activities into Kawaihina Canal to only schools by permit.

5. Wa'alua to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulana Area
   a. Remove two observation decks within DOFAW's management station area, and the interactive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with the level of visitors to Kahului and public access to this resource. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaihina would become a major sustainable tourist attraction that some may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kahului would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihina is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ahi Jeffers-Fabio at 973-8788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – IHIF Planners
Ms. Cindy Turner
1460 Kukue Place
Kailua, Hawai'i 96734

Dear Ms. Turner:

Subject: Kawaihau-Hamakua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O'ahu, Hawai'i

June 29, 2020

This letter is to inform you that the State of Hawai'i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihau-Hamakua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions elimnated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihau resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihau by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa'a and some buildings shown on the cultural overlay. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaki Area
   • Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanaki Stream.

2. Phake to NE Phake o Haawahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the luakahi complex at Phake from about 3,250 sf to 5,296 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis prior to proceeding with the education center.

3. Kapa'a Area
   a. Remove pedestrian trail section along Kapa'a Quay Road from Na Pua Upolu to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa'a from about 5,902 sf to 7,290 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa'a to two instead of three.

4. Kapa'a to Kalalau Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawai Nui Canal.
   a. Remove hale wa'a structure and canoe storage at the Kalalau park site.
   b. Restrain canoe launch activities into Kawai Nui Canal to only schools by permit.

5. Waiaina to Upolu Heiau Area
   • Remove pedestrian trail from the levee to Upolu Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove the observation deck within DOFAW's management station area and the interactive pavilion at the park site below (southwest) the management station.
Ms. Cindy Turner
Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOPAW management activities and authorized educational and cultural programs.

be. Remove pedestrian trail from Mokulana connecting to Kahanakii upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with the level of visitors to Kailua and public access to this resource. Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than that presently allowed under the City’s zoning standards for this site.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaihau would become a major sustainable tourist attraction to the extent you may be concerned with. Further, DOPAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihau is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOPAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHIF Planners

June 29, 2020

Mr. Albert Ueligitone
Via Email: storyboardal@gmail.com

Dear Mr. Ueligitone:

Subject: Kawaihau-Hāmākua Master Plan Project Final Environmental Impact Statement Approval by Land Board Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihau-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with viewers to Kawaihau resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOPAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihau by eliminating same improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.
Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the halo wa’a and some buildings along at the cultural center. Figure 2.4.A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanaikai Area
   • Remove pedestrian trail leading to Mokulana peninsula and bridge over Kahanaikai Stream.

2. Pōhakua to Nā Pōhaku o Hawa‘ine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the luahale complex at Pōhakua from about 4,200 ft^2 to 3,200 ft^2 by reducing the number of proposed structures.
   c. DSP plan to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quary Road from Nā Pōhaku to City-Mall Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 6,600 ft^2 to 5,400 ft^2 by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kape’sa Kalalāhe Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawa’i Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawainui Canal.
   a. Remove halo wa’a structure and canoe storage at the Kalalâne park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Waiauia to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOPFW Management Station to Mokulana Area
   • Remove two observation decks in the DOPFW’s management station area and the interpretive pavilion at the park site below (southwest) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with visitors to Kailua and public access to this resource. Proposed improvements remaining are appropriate for the area, would be phased over time, are modest, are planned to be environmentally sustainable, and support increased stewardship and native Hawaiian cultural practices. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOPFW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawainui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ait Jeffers-Fabio of DOPFW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HF Planners
The Wadas Ohana

1316 Mākakilo Boulevard
Kailua, Hawai`i 96734

Dear Wadas Ohana:

Subject: Kawainui-Hamākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O`ahu, Hawai`i

June 29, 2020

The Wadas Ohana

 Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge) and the half way and some buildings shown at the cultural section. Figure 2:4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakai Area
   • Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanakai Stream.

2. Pāhakea to Nā Pāhakea o Hawawâine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only.
   b. foot trails would be supported.
   c. Reduce the total building floor area proposed at the inahake component at Pāhakea from about 8,250 sf to 5,700 sf by reducing the number of proposed structures.
   d. DSP plans to first provide an off-street parking lot, rest room facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa`a Area
   a. Remove pedestrian trail section along Kapa`a Quarry Road from Nā Pāhakea to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa`a from about 4,620 sf to 3,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa`a to two instead of three.

4. Kapena to Līhau Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of t he approved pedestrian bridge across Kawainui Canal.
   a. Remove the Hale wa’a structure and canoe storage at the Kalihine park site.
   b. Restrict canoe launch activities into Kawainui Canal to only schools by permit.

5. Wai`aia to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove observation deck within DOFAW’s management station area and the interpretive panel at the park site below southwest the management station.
Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities or authorized educational and cultural programs.

- Remove pedestrian trail from Mokulana connecting to Kahanaiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address your concern with the level of visitors to Kailua and public access to this resource. Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas and have a lower building area than was previously allowed under the City’s zoning standards for this site.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kawaihui would become a major sustainable tourist attraction to the extent you may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihui is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fahro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HHF Planners

June 29, 2020

Ms. Eileen Hilton, President
Ms. Kim Tomey, Secretary
Windward Coalition Executive Board
P.O. Box 342102
Kailua, Hawai‘i 96734

Dear Ms. Hilton and Ms. Tomey:

Subject: Kawaihui-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by.
eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa’a, and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahananaki Area
   - Remove pedestrian trail leading to Molokana peninsula and bridge over Kahananaki Stream.

2. Pōhaku to Nā Pōhaku o Hawawini Area
   a. Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the lauhala component at Pōhaku from about 8,500 sf to 5,500 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhaku to City Model Apeaino Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 5,000 sf to 2,000 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalāheo Area
   a. Changes proposed result in improvements at this site and to those already approved by the City Kapa’a Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements at this site. DSP may also not implement construction of the approved pedestrian bridge across Kauaihi Canal.
   b. Restrict canoe launch activities into Kauaihi Canal to only schools by permit.

5. Wa’au to Ulu‘pō Heiau Area
   - Remove pedestrian trail from the levee to Ulu‘pō Heiau, including the boardwalk.

6. DOFAW Management Station to Molokana Area
   a. Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southeast) the management station.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with the level of visitors to Kauai and public access to this resource. Structures proposed within the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with the floor area for cultural centers added back by the BLNR. These structures would also be dispersed over about 66 acres of upland areas, and have a lower building area than that presently allowed under the City’s zoning standards for this site.

The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. With remaining improvements included, we do not expect Kauai to become a major sustainable tourist attraction to the extent you may be concerned with. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kauai would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate risks are discussed. Kauai is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati Jeffers-Fabio of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HF Planning
Ms. Lara Wilcox  

June 29, 2020

Via Email: larawilcox808@gmail.com

Dear Ms. Wilcox:

Subject: Kawaihui-Hāmākua Master Plan Project  
Final Environmental Impact Statement Approval by Land Board  
Kailua, Oʻahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the redactions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

**Project Revisions Since Draft EIS**

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigation measures identified, DOFAW and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a bridge), and the hale wa‘a and some buildings shown at the cultural center, Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanalii Area
   - Remove pedestrian trail leading to Mukulana peninsula and bridge over Kahanalii Stream.

2. Pāhaku to Nā Pāhaku o Hawawhine Areas
   - Remove some segments of the pedestrian trail within this upland area. Only foot trails would be supported.
   - Reduce the total building floor area proposed at the hatchet campsite at Pāhuku from about 8,250 sf to 5,500 sf by reducing the number of proposed structures.
   - DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapua’s Area
   - Remove pedestrian trail section along Kapua’s Quarry Road from Nā Pāhaku to Civic Model Airplane Park.
   - Reduce the total building floor area proposed for the cultural center at Kapua from about 0,600 sf to 7,200 sf by reducing the number of proposed structures.
   - Reduce the number of vehicle driveway access locations serving the cultural center at Kapua’s to two instead of three.

4. Kapua’s to Kalāhau Area
   - Changes proposed result in improvements at this site to only those already approved by the City Kawai Nai Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaihui Canal.
   - Remove hale Wa‘a structure and canoe storage at the Kalāhau park site.
   - Restrict canoe launch activities into Kawaihui Canal to only schools by permit.

5. Wai’aia to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mukulana Area
   - Remove two observation decks within DOFAW’s management station area, and the interpretive pavilion at the park site below (southwest of the management station).
Ms. Lanai Wilcox

Page 3

ab. Remove pedestrian trail and two viewing pavilions at Mokuana. Mokuana peninsula would only be used for DOFAW management activities and provide educational and cultural programs.

bc. Remove pedestrian trail from Mokuana connecting to Kahanaii upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with the level of visitors to Kailua and public access to this resource. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSFS management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigate effects are discussed. Kawaihau is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Atri Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato – HIF Planners

June 29, 2020

Ms. Theresa Paulette Winn, Vice President
Kawaihau Vista Association
628 Hanalei Place
Kailua, Hawai‘i 96734

Dear Ms. Winn:

Subject: Kawaihau-Hāmākua Master Plan Project
Final Environmental Impact Statement Approval by Land Board
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i’s, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihau-Hāmākua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihau resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DOFAW and DSFS have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have now been incorporated into concept plans to further reduce public access within Kawaihau by
eliminating some improvements. Reducing some areas proposed for public access and
passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks and a
bridge), and the hale w'a, and some buildings shown at the cultural centers. Figure 2.4A
identifies these revisions and a summary is provided below. More information on these
modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanakiki Area
   • Remove pedestrian trail leading to Molokalua peninsula and bridge over
     Kahanakiki Stream.

2. Pōhakea to Na Pōkulu o Hauwahine Area
   a. Remove some segments of the pedestrian trail within this upland area. Only
      foot trails would be supported.
   b. Reduce the total building floor area proposed at the hauhale complex at
      Pōhakea from about 8,250 sf to 6,200 sf by reducing the number of proposed
      structures.
   c. DSP plans to first provide an offstreet parking lot, restroom facility (350 sf),
      and open pavilion (350 sf) to support programs either as an interim or
      permanent basis before proceeding with the education center.

3. Kap'a'a Area
   a. Remove pedestrian trail section along Kap'a'a Quarry Road from Na Pōkulu
      to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kap'a'a
      from about 5,600 sf to 7,300 sf by reducing the number of proposed
      structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural
      center at Kap'a'a to two instead of three.

4. Kap'a'a to Kalāheo Area
   Changes proposed result in improvements at this site to only those already approved
   by the City Kawailoa Niihau Gateway Park proposal. The project (Proposed Action) does
   not include any new improvements to this site. DSP may also not implement
   construction of the approved pedestrian bridge across Kawaihau Canal.
   a. Remove hale w'a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaihau Canal to only schools by
      permit.

5. Wai'a'ina to Ulupō Heiau Area
   • Remove pedestrian trail from the levee to Ulupō Heiau, including the
     boardwalk.

6. DOFAW Management Station to Molokalua Area
   a. Remove two observation decks within DOFAW's management station area
      and the interpretive pavilion at the park site below (southwest) the
      management station.

Ab. Remove pedestrian trail and two viewing pavilions at Molokalua. Molokalua
peninsula would only be used for DOFAW management activities and
authorized educational and cultural programs.

be. Remove pedestrian trail from Molokalua connecting to Kahanakiki upland area.

Although some improvements are being added back into the Proposed Action by the BLNR's
action, impacts associated with these improvements were already addressed in the Draft EIS
document previously published. Several reductions to the project remain that address concerns
with the level of visitors to Kauhau and public access to this resource. Structures proposed within
the built environment would total only about 1.2 acres in floor area (about 52,000 sf), even with
the floor area for cultural centers added back by the BLNR. These structures would also be
dispersed over about 66 acres of upland areas and have a lower building area than that presently
allowed under the City's zoning standards for this site.

The projected level of public visitation and activities are reasonable and manageable especially
with the remaining reductions in project improvements. With remaining improvements included,
we do not expect Kauhau to become a major sustainable tourist attraction to the extent you
may be concerned with. Further, DOFAW and DSP management would include monitoring
activity levels, opening areas to public access when they are able to manage them, and making
changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kauhau would not be significant,
as discussed in several sections of the Final EIS, and if necessary, measures to minimize or
mitigative effects are discussed. Kauhau is a State resource that should be shared with the public
and the State needs to consider the broader public interest. The BLNR's action to add some
improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of
Environmental Quality Control (OEQC) for publication and notification that it has been submitted
to the Governor's Office for Acceptance. Notification will be provided to you once publication of
the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ati
Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sato — IHE Planners
Mr. Bert Kaleomanuwa Wong  

Via Email: kaleomanuwa@gmail.com

Dear Mr. Wong:

Subject: Kawaihui-Hâmåkua Master Plan Project  
Final Environmental Impact Statement Approval by Land Board  
Kailua, O‘ahu, Hawai‘i

This letter is to inform you that the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved submitting the Final Environmental Impact Statement (EIS) document for the Kawaihui-Hâmåkua Master Plan Project to the Governor’s Office for Acceptance determination at their October 25, 2019 Board meeting. As a condition of that approval, the BLNR recommended that some of the reductions to project improvements identified in the pre-Final EIS be added back into the Proposed Action. The BLNR believed it was better to include them to provide a more comprehensive evaluation of project effects. The Final EIS is a disclosure document. Review of these project elements for environmental effects does not necessarily mean that the elements will be part of the project as built.

A portion of Section 2.2 from the pre-Final EIS identifying project revisions from the Draft EIS is provided below. This section has been updated to identify additional revisions being made based upon the BLNR’s action. Additional revisions use a “Red” double strikethrough format to identify portions eliminated by this change and a double underline in “Red” for additions.

Project Revisions Since Draft EIS

Community concerns have been expressed associated with visitors to Kawaihui resulting from project improvements which increase public access. Although such concerns were addressed in the Draft EIS and mitigative measures identified, DPAP and DSP have decided to incorporate additional modifications to the project (Proposed Action) after evaluating these concerns. Revisions to proposed improvements have been incorporated into concept plans to further reduce public access within Kawaihui by eliminating some improvements. Reducing some areas proposed for public access and passive outdoor recreation would subsequently reduce the projected number of visitors.

Modifications include eliminating some sections of the pedestrian trail (boardwalks) and a bridge; and the hoa wa’a and some buildings shown at the cultural center. Figure 2.4A identifies these revisions and a summary is provided below. More information on these modifications have been incorporated into other pertinent sections of this chapter.

1. Kahanui Area
   - Remove pedestrian trail leading to Mokulua peninsula and bridge over Kahanui Stream.

2. Pōhai‘ae to Nā Pōhai‘ae o Haawahine Area
   a. Remove some segments of the pedestrian trail within this upsized area. Only foot trails would be supported.
   b. Reduce the total building floor area proposed at the ka‘au‘ilani complex at Pōhai‘ae from about 8,150 sf to 4,300 sf by reducing the number of proposed structures.
   c. DSP plans to first provide an off-street parking lot, restroom facility (350 sf), and open pavilion (350 sf) to support programs either as an interim or permanent basis before proceeding with the education center.

3. Kapa’a Area
   a. Remove pedestrian trail section along Kapa’a Quarry Road from Nā Pōhai‘ae to City Model Airplane Park.
   b. Reduce the total building floor area proposed for the cultural center at Kapa’a from about 5,600 sf to 7,200 sf by reducing the number of proposed structures.
   c. Reduce the number of vehicle driveway access locations serving the cultural center at Kapa’a to two instead of three.

4. Kapa’a to Kalâheo Area
   Changes proposed result in improvements at this site to only those already approved by the City Kawai Nui Gateway Park proposal. The project (Proposed Action) does not include any new improvements to this site. DSP may also not implement construction of the approved pedestrian bridge across Kawaiui Canal.
   a. Remove hale wa’a structure and canoe storage at the Kalāheo park site.
   b. Restrict canoe launch activities into Kawaiui Canal to only schools by permit.

5. Wa‘au‘a to Ulupō Heiau Area
   - Remove pedestrian trail from the levee to Ulupō Heiau, including the boardwalk.

6. DOFAW Management Station to Mokulua Area
   a. Remove two observation decks within DOFAW’s management station area, and the interactive pavilion at the park site below southwest the management station.
Mr. Bert Kaloeamanuwa Wong

Page 3

- Remove pedestrian trail and two viewing pavilions at Mokulana. Mokulana peninsula would only be used for DOFAW management activities and authorized educational and cultural programs.
- Remove pedestrian trail from Mokulana connecting to Kahanakai upland area.

Although some improvements are being added back into the Proposed Action by the BLNR’s action, impacts associated with these improvements were already addressed in the Draft EIS document previously published. Several reductions to the project remain that address concerns with the level of visitors to Kailua and public access to this resource. The projected level of public visitation and activities are reasonable and manageable especially with the remaining reductions in project improvements. Further, DOFAW and DSP management would include monitoring activity levels, opening areas to public access when they are able to manage them, and making changes to access and activities, if appropriate.

Impacts on natural resources or the quality of life for residents of Kailua would not be significant, as discussed in several sections of the Final EIS, and if necessary, measures to minimize or mitigative effects are discussed. Kawaikini is a State resource that should be shared with the public and the State needs to consider the broader public interest. The BLNR’s action to add some improvements back reflects this.

The completed Final EIS includes these revisions and will be filed with the State Office of Environmental Quality Control (OEQC) for publication and notification that it has been submitted to the Governor’s Office for Acceptance. Notification will be provided to you once publication of the Final EIS is issued by OEQC.

Thank you for your participation in this process. If you have any questions, please contact Mr. Ahi Jeffers-Fabro of DOFAW at 973-9788.

Sincerely,

David G. Smith, Administrator
Division of Forestry and Wildlife

cc: Ronald Sano – HHF Planners
APPENDIX

BOTANICAL RESOURCES ASSESSMENT FOR THE KAWAINUI-HĀMĀKUA MARSH COMPLEX MASTER PLAN KAILUA, OAHU, HAWAII - October 2017
Prepared by: LeGrande Biological Surveys Inc
Table of Contents

Table of Contents 2
Introduction 3
Site Description 3
Survey Methods 3
Description of Vegetation 4
Discussion & Recommendations 6
Literature Cited 8

Appendices

Appendix A – Site Photographs 9
Appendix B – List of Plant Species 14
INTRODUCTION

This report includes the findings of a plant and animal inventory conducted for the Kawainui Marsh Complex Master Plan Update, Kailua, Oahu, LeGrande Biological Surveys Inc. 1-2014. The primary objectives of the field studies were to:

1) describe the principal characteristics of the vegetation on the project site;
2) search for threatened and endangered species and provide recommendations regarding potential impacts to the plant resources of the area in regards to the survey area;
3) provide a general description of the vegetation on the project site; and
4) provide recommendations regarding potential impacts to the plant resources of the area in regards to the survey area.

SITE DESCRIPTION

The survey area is located on the east shore of Oahu in Kailua. The main town lies makai or seaward of the Marsh. The project area includes the entire circumference of Punalu'u above the marsh. The survey area has been historically utilized for various agricultural uses, such as rice and cattle pastures, and road development over time. As with most urban areas in the Hawaiian Islands, the natural habitat has been altered and is dominated by introduced plant and animal species.

SURVEY METHODS

Prior to undertaking the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical studies conducted in the general area. Topographic maps were examined to determine the location of the marsh complex. Therefore, the survey area was determined to be within the Kawainui Marsh Complex. The survey area was also within the proposed path that was mapped to the entire survey area. Therefore, the survey area was considered to be within the proposed path. The survey area was then subdivided into seven main areas along the proposed project subareas. The survey area was also determined to be within the proposed path. The survey area was then subdivided into seven main areas along the proposed project subareas. The survey area was then subdivided into seven main areas along the proposed project subareas. The survey area was then subdivided into seven main areas along the proposed project subareas.

DESCRIPTION OF VEGETATION

The survey area consists of the permanent wetland complex, a flooded tidal marsh, and a wetland fringe. The wetland fringe comprises the salt marsh, the upper limit of which is approximately 150 feet above mean high water. The width of the wetland fringe is approximately 200 feet.

The wetland fringe is dominated by a monkeypod forest with a canopy of light brown monkeypod trees. The understory consists of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The salt marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The tidal marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The salt marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The tidal marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The salt marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The tidal marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The salt marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.

The tidal marsh is dominated by a monkeypod forest with an understory of scattered Java plum, koa haole, and Basella alba. Understory species include Guinea grass (Panicum maximum), Merremia tuberosa, and Amaranthus spinosus.
DISCUSSION & RECOMMENDATIONS

Solanum seaforthianum, and Solanum aspera (Achyranthes aspera) were observed growing into the canopy of many of the trees. Thickets of hau (Hibiscus tiliaceus) and coconut (Cocos nucifera) were also observed in the area.

MOKULANA PENINSULA Currently unoccupied for use, the peninsula appears to have been utilized as an opportunistic dumping area for various debris including construction waste. The tree canopy is composed of monkeypod (Scaevola coriacea) and mango (Samanea saman) trees with various other tree species mixed in with the canopy including; Artocarpus altilis, Cocos nucifera, and Cocos vallisneriifolia. Shrubs include naupaka (Citharexylum caudatum), Melaleuca quinquenervia, and Commelina diffusa.

ULUPO HEIAU & PATHWAYS TO NORTH AND SOUTH ALONG MARSH

The Ulupo Heiau site is actively being maintained and dominated by invasive Guineagrass and native koa haole (Oxalis purpurea). Ponds, ponds, ponds, and ponds. The only native species observed in the area was `uhaloa (Leucaena leucocephala) with other invasive species including; Chinese banyan (Ficus variegata), pluchea indica (Pluchea indica), and Cenchrus ciliaris (Bajra).

KAILAHEO PARK: CANOE LAUNCH AND HALE

The area proposed for the Hawaiian Cultural Complex is located at the former City Maintenance Yard. Several large push piles or dump sites are evident in the area. The vegetation is characterized by an overgrown monkeypod (Scaevola utricularis) community with microbial and IBM. The only native species observed in the area was `uhaloa (Leucaena leucocephala) with other invasive species including; Chinese banyan (Ficus variegata), pluchea indica (Pluchea indica), and Cenchrus ciliaris (Bajra).
vegetation when a more specific plan for exact placement of footpaths and buildings has been determined.

Reforestation restoration in the upland areas of Kawainui Marsh and Puuoehu with native plant species would help to support native bird and invertebrate habitat as well as improve erosion control. Management of the extant wetlands, elimination of invasive plant species along with replacement with appropriate native taxa would help to support a healthy waterbird habitat.

ACKNOWLEDGEMENTS

We would like to thank Ronald Sato (HHF) and Martha Yent (DSP) for logistical planning and Jim Cogswell & Katie Doyle (DOFAW) for escorting us during portions of the field survey portion of the project.

LITERATURE CITED


APPENDIX A
SITE PHOTOGRAPHS

Fig 1. View of Puuehu with Hamakua Marsh in foreground.

Fig 2. Large canopy of albizia and monkeypod trees characterize much of the Kapaa Quarry Road sections.

Fig 3. Open areas of maintained grassy areas are interspersed with the alien forest.

Fig 4. Slope from Cash Ranch to marsh dominated by alien species.
Fig 5. View of abandoned City Maintenance Yard from Na Pohaku O Hauwahine.

Fig 6. Guinea grass dominated strip proposed for Canoe launch and hale.

Fig 7. Wai`auia dominated by maintained lawns and street plantings.

Fig 8. Much of the vegetation around Ulupo Heiau is maintained ornamentals.
APPENDIX B
PLANT SPECIES LIST

The following checklist is an inventory of all the plant species observed within the survey areas for the proposed Kawainui-Hamakua Marsh Complex Master Plan Update. The plant names are arranged alphabetically by family and then by species into each of three groups: Pteridophytes, Monocots and Dicots. The taxonomy and nomenclature of the Ferns and Fern Allies follow Palmer (2002), flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1990), Wagner and Herbst (1999) and Staples and Herbst (2005). Recent name changes are those recorded in the Hawaii Biological Survey series (Evehuis and Eldredge, eds., 1999-2002).

For each species, the following name is provided:
1. Scientific name with author citation.
2. Common English and/or Hawaiian name(s), when known.
3. Biogeographic status. The following symbols are used:

A = Alien species introduced to the Hawaiian Islands by humans, intentionally or accidentally.
I = Indigenous species native to the Hawaiian Islands and also found elsewhere in the world.
E = Endemic species found only in the Hawaiian Islands.

<table>
<thead>
<tr>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLECHNACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blechnum appendiculatum Willd.</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>LINDSEAEACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sphenomeris chinensis (L.) Maxon</td>
<td>pala’a</td>
<td>I</td>
</tr>
<tr>
<td>NEPHROLEPIDACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neprolepis brownii (Desv.) Hovemkamp &amp; Miyam.</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>THELYPTERIDACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christella dentata (Forsk.) Brownsey &amp; Jermy</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>POLYPODIACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phlymatorus grossus (Langsd. &amp; Fisch.) Brownlie</td>
<td>laua'e, maile-scented fern</td>
<td>A</td>
</tr>
<tr>
<td>PTERIDACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adiantum hispidulum Sw.</td>
<td>rough maidenhair fern</td>
<td>A</td>
</tr>
<tr>
<td>SCIENTIFIC NAME</td>
<td>COMMON NAME</td>
<td>STATUS</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>MONOCOTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agavaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cordyline fruticosa (L.) A. Chev.</td>
<td>ti, ki</td>
<td>A</td>
</tr>
<tr>
<td>Araceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alocasia macrorrhiza (L.) G. Don</td>
<td>ape, elephant’s ear</td>
<td>A</td>
</tr>
<tr>
<td>Aracaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocos nucifera L.</td>
<td>coconut</td>
<td>A</td>
</tr>
<tr>
<td>Cyperaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyperus involucratus Rottb.</td>
<td>umbrella sedge</td>
<td>A</td>
</tr>
<tr>
<td>Maceaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Musa xparadisica L.</td>
<td>banana, mai’a</td>
<td>A</td>
</tr>
<tr>
<td>Pandanaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pandanus tectorius Parkinson ex Z</td>
<td>hala</td>
<td>I</td>
</tr>
<tr>
<td>Zingiberaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zingiber zerumbet (L.) Sm.</td>
<td>awapuhi, shampoo ginger</td>
<td>A</td>
</tr>
<tr>
<td>Poaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andropogon virginicus L. var. virginicus</td>
<td>broomsedge</td>
<td>A</td>
</tr>
<tr>
<td>Axonopus fissifolius (Raddi) Kuhl.</td>
<td>narrow-leaved carpe grass</td>
<td>A</td>
</tr>
<tr>
<td>Cenchrus ciliaris L.</td>
<td>buffalo grass</td>
<td>A</td>
</tr>
<tr>
<td>Cenchrus echinatus L.</td>
<td>common sandbur</td>
<td>A</td>
</tr>
<tr>
<td>Cynodon dactylon (L.) Pers</td>
<td>manienie</td>
<td>A</td>
</tr>
<tr>
<td>Digitaria insulata (L.) Mez ex Ekman</td>
<td>sourgrass</td>
<td>A</td>
</tr>
<tr>
<td>Erigeron amabilis (L.) Wigg &amp; Am. ex Nees</td>
<td>lovegrass</td>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melinis minutiflora P. Beauv.</td>
<td>molasses grass</td>
<td>A</td>
</tr>
<tr>
<td>Oplismenus hirtellus (L.) P. Beauv. subsp. hirtellus</td>
<td>basketgrass, honohono</td>
<td>A</td>
</tr>
<tr>
<td>Panicum maximum L.</td>
<td>Guinea grass</td>
<td>A</td>
</tr>
<tr>
<td>Paspalum flavidum Kunth</td>
<td>flammable paspalum</td>
<td>A</td>
</tr>
<tr>
<td>Pennisetum purpureum Schumach</td>
<td>napier grass</td>
<td>A</td>
</tr>
<tr>
<td>Saccharolepis indica (L.) Chase</td>
<td>glennon grass</td>
<td>A</td>
</tr>
<tr>
<td>Setaria palmera</td>
<td>palmgrass</td>
<td>A</td>
</tr>
<tr>
<td><strong>DICOTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acanthaceae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asystasia gangetica (L.) T. Anderson</td>
<td>Chinese violet</td>
<td>A</td>
</tr>
<tr>
<td>Justicia betonica L.</td>
<td>white shrimp plant</td>
<td>A</td>
</tr>
<tr>
<td><strong>AMARANTHACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternanthera pendula</td>
<td>khaki weed</td>
<td>A</td>
</tr>
<tr>
<td>Amarantus spinosus L.</td>
<td>spiny amaranth</td>
<td>A</td>
</tr>
<tr>
<td><strong>ANACARDIACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mangifera indica L.</td>
<td>mango</td>
<td>A</td>
</tr>
<tr>
<td>Schinus terebinthifolius Raddi</td>
<td>Christmas berry</td>
<td>A</td>
</tr>
<tr>
<td><strong>ARALIACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schefflera actinophylla (Endl.) Harms</td>
<td>octopus tree, umbrella tree</td>
<td>A</td>
</tr>
<tr>
<td><strong>ASTERACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bidens alba L.</td>
<td>beggar tick</td>
<td>A</td>
</tr>
<tr>
<td>Bidens pilosa L.</td>
<td>Spanish needle</td>
<td>A</td>
</tr>
<tr>
<td>Conyza bonariensis (L.) Cronq.</td>
<td>hairy horseweed</td>
<td>A</td>
</tr>
<tr>
<td>Echipta prostrata (L.) L.</td>
<td>false daisy</td>
<td>A</td>
</tr>
<tr>
<td>Erodium souchesii (L.) DC.</td>
<td>Flora’s paintbrush</td>
<td>A</td>
</tr>
<tr>
<td>Pluchea carolinensis (Jacq.) G. Don</td>
<td>sourbush</td>
<td>A</td>
</tr>
<tr>
<td>Pluchea indica (L.) Less.</td>
<td>Indian fleabane</td>
<td>A</td>
</tr>
<tr>
<td>Pluchea nutans x fosbergii Cooperr. &amp; Galang</td>
<td>marsh fleabane</td>
<td>A</td>
</tr>
<tr>
<td>SCIENTIFIC NAME</td>
<td>COMMON NAME</td>
<td>STATUS</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Sphagneticola trilobata (L.) Pruski</td>
<td>wedelia</td>
<td>A</td>
</tr>
<tr>
<td>Synadrella nodiflora (L.) Gaertn.</td>
<td>nodeweed</td>
<td>A</td>
</tr>
<tr>
<td>Tridax procumbens L.</td>
<td>coat buttons</td>
<td>A</td>
</tr>
<tr>
<td>Verbesina encelioides (Cav.) Benth.&amp;Hook.</td>
<td>golden crown-beard</td>
<td>A</td>
</tr>
<tr>
<td>Youngia japonica (L.) DC.</td>
<td>oriental hawksbeard</td>
<td>A</td>
</tr>
<tr>
<td><strong>BASELLACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basella alba L.</td>
<td>Ceylon spinach</td>
<td>A</td>
</tr>
<tr>
<td><strong>BEGONIACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Begonia hirtella</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td><strong>BIGNONIACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spathodea campanulata P. Beauv.</td>
<td>African tulip tree</td>
<td>A</td>
</tr>
<tr>
<td><strong>BRASSICACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lepidium virginicum L.</td>
<td>pepperwort</td>
<td>A</td>
</tr>
<tr>
<td><strong>BORAGINACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cordia subcordata Lam.</td>
<td>Kou</td>
<td>I</td>
</tr>
<tr>
<td><strong>CACTACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opuntia ficus-indica (L.) Mill.</td>
<td>panini</td>
<td>A</td>
</tr>
<tr>
<td><strong>CARYOPHYLLACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arenaria serpyfolia L.</td>
<td>thyme-leaved sandwort</td>
<td>A</td>
</tr>
<tr>
<td>Drymaria cordata var. pacifica M.Mizush.</td>
<td>pipili</td>
<td>A</td>
</tr>
<tr>
<td><strong>CASUARINACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casuarina equisetfolia L.</td>
<td>common ironwood</td>
<td>A</td>
</tr>
<tr>
<td><strong>CLUSIACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clusia rosea Jacq.</td>
<td>autograph tree</td>
<td>A</td>
</tr>
<tr>
<td><strong>COMBRETACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminalia catappa L.</td>
<td>tropical almond</td>
<td>A</td>
</tr>
<tr>
<td><strong>COMMELINACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commelina benghalensis L.</td>
<td>hairy honohono</td>
<td>A</td>
</tr>
<tr>
<td>Commelina diffusa Burm.f.</td>
<td>honohono</td>
<td>A</td>
</tr>
<tr>
<td><strong>CONVOLVULACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ipomoea obscura (L.) Ker Gawl.</td>
<td>little bell</td>
<td>A</td>
</tr>
<tr>
<td>Ipomoea triloba L.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merremia tuberosa Rendle</td>
<td>wood rose</td>
<td>A</td>
</tr>
<tr>
<td><strong>CUCURBITACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocinea grandis (L.) Voigt</td>
<td>ivy gourd</td>
<td>A</td>
</tr>
<tr>
<td>Momordica charantia L.</td>
<td>balsam pear</td>
<td>A</td>
</tr>
<tr>
<td><strong>EUPHORBIACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aleurites moluccana (L.) Wild.</td>
<td>kukui, candle nut</td>
<td>A</td>
</tr>
<tr>
<td>Chamaesyce hirsuta (L.) Millsp.</td>
<td>hairy spurge, garden spurge</td>
<td>A</td>
</tr>
<tr>
<td>Chamaesyce prostrata (Aiton) Small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macaranga mappea (L.) Mill.Arg.</td>
<td>bingabing</td>
<td>A</td>
</tr>
<tr>
<td>Ricinus communis L.</td>
<td>castor bean</td>
<td>A</td>
</tr>
<tr>
<td><strong>FABACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bauhinia x blakeana</td>
<td>Hong Kong orchid tree</td>
<td>A</td>
</tr>
<tr>
<td>Cascaipinia decapetala (Roth) Aiston</td>
<td>mysore thorn</td>
<td>A</td>
</tr>
<tr>
<td>Canavalia cathartica Thouars</td>
<td>naunualu</td>
<td>A</td>
</tr>
<tr>
<td>Crotalaria incana L.</td>
<td>fuzzy rattlepod</td>
<td>A</td>
</tr>
<tr>
<td>Crotalaria pallida Aiton</td>
<td>smooth rattlepod</td>
<td>A</td>
</tr>
<tr>
<td>Erythrina variegata</td>
<td>Indian coral tree</td>
<td>A</td>
</tr>
<tr>
<td>Falcataia moluccana (Miq.) Barneby J.W. Grimes</td>
<td>albizia</td>
<td>A</td>
</tr>
<tr>
<td>Indigofera heneclphylla Jacq.</td>
<td>creeping indigo</td>
<td>A</td>
</tr>
<tr>
<td>Lecanema leucocephala (Lam.) de Wit</td>
<td>koa haole</td>
<td>A</td>
</tr>
<tr>
<td>Macroptilium lathyroides (L.) Urb.</td>
<td>wild bean</td>
<td>A</td>
</tr>
<tr>
<td>Mimosa pudica L. var. unijuga (Duchass. &amp; Walp.) Griseb.</td>
<td>sleeping grass, sensitive plant</td>
<td>A</td>
</tr>
<tr>
<td>Prosopis pallida Kunth</td>
<td>kiawe, mesquite</td>
<td>A</td>
</tr>
<tr>
<td>SCIENTIFIC NAME</td>
<td>COMMON NAME</td>
<td>STATUS</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Samanea saman L.</td>
<td>monkeypod</td>
<td>A</td>
</tr>
<tr>
<td>Senna surattensis (Burm.f.) H.S.Irwin</td>
<td>kolomona</td>
<td>A</td>
</tr>
<tr>
<td>GOODENIACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scaevola toucada (Gaertn.) Roxb.</td>
<td>naupaka</td>
<td>I</td>
</tr>
<tr>
<td>MALVACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abutilon grandifolium (Willd.) Sweet</td>
<td>hairy abutilon</td>
<td>A</td>
</tr>
<tr>
<td>Hibiscus tiliaceus L.</td>
<td>hau</td>
<td>I?</td>
</tr>
<tr>
<td>Sida ciluris L.</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Sida cordifolia L.</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Sidastrum micranthum Fryxell</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Theopistha popuinea L.</td>
<td></td>
<td>I?</td>
</tr>
<tr>
<td>MELASTOMATACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clidemia hirta (L.) D.Don var. hirta</td>
<td>Koster's curse</td>
<td>A</td>
</tr>
<tr>
<td>MORACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ficus microcarpa L. f.</td>
<td>Chinese banyan</td>
<td>A</td>
</tr>
<tr>
<td>MYRSINACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ardisia elliptica Thunb.</td>
<td>shoebotn ardisia</td>
<td>A</td>
</tr>
<tr>
<td>MYRTACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psidium cattleanum Sobine</td>
<td>strawberry guava</td>
<td>A</td>
</tr>
<tr>
<td>Syzygium cumini (L.) Skeels</td>
<td>java plum</td>
<td>A</td>
</tr>
<tr>
<td>Syzygium jambos (L.) Alston</td>
<td>rose apple</td>
<td>A</td>
</tr>
<tr>
<td>Syzygium malaccense L. Merr. &amp; L.M.Perry</td>
<td>mountain apple</td>
<td>A</td>
</tr>
<tr>
<td>NYCTAGINACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boerhavia coccinea Mill.</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Bougainvillea sp.</td>
<td>bougainvillea</td>
<td></td>
</tr>
<tr>
<td>ONAGRACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ludwigia octovalvis (Jacq.) P.H.Raven</td>
<td>primrose willow</td>
<td>A</td>
</tr>
<tr>
<td>OXALIDACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxalis corniculata L.</td>
<td>yellow wood sorrel</td>
<td>A</td>
</tr>
<tr>
<td>PASSIFLORACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passiflora foetida L.</td>
<td>Love-in-a-mist</td>
<td>A</td>
</tr>
<tr>
<td>Passiflora suber zona L.</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>PHYTOLACCACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phytoecia octandra L.</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>PLANTAGINACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantago lanceolata L.</td>
<td>narrow-leaved plantain</td>
<td>A</td>
</tr>
<tr>
<td>Plantago major L.</td>
<td>broad-leaved plantain</td>
<td>A</td>
</tr>
<tr>
<td>POLYGALACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polygala paniculata L.</td>
<td>milkwort</td>
<td>A</td>
</tr>
<tr>
<td>PROTEACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grevillea robusta A.Cunn. ex R.Br.</td>
<td>silk oak, silver oak</td>
<td>A</td>
</tr>
<tr>
<td>RUBIACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coffea arabica L.</td>
<td>Arabian coffee</td>
<td>A</td>
</tr>
<tr>
<td>Morinda citrifolia L.</td>
<td>noni</td>
<td>A</td>
</tr>
<tr>
<td>Paedlera foetida L.</td>
<td>maile pilau</td>
<td>A</td>
</tr>
<tr>
<td>SAPINDACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ficus decipiens (Wight&amp;Am.) Thwaites</td>
<td>fern leaf tree</td>
<td>A</td>
</tr>
<tr>
<td>SOLANACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solanum americanum Mill.</td>
<td>popolo</td>
<td>I?</td>
</tr>
<tr>
<td>Solanum lycopersicum var. cerasiforme</td>
<td>cherry tomato</td>
<td>A</td>
</tr>
<tr>
<td>Solanum seafortiorum Andrews</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>RUTACEAE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murraya paniculata (L.) Jack</td>
<td>mock orange</td>
<td>A</td>
</tr>
<tr>
<td>SCIENTIFIC NAME</td>
<td>COMMON NAME</td>
<td>STATUS</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>ULMACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trema orientalis (L.) Blume</td>
<td>gunpowder tree</td>
<td>A</td>
</tr>
<tr>
<td><strong>VERBENACEAE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citharexylum caudatum L.</td>
<td>fiddlewood</td>
<td>A</td>
</tr>
<tr>
<td>Clerodendrum chinense (Osbeck) Mabb.</td>
<td>pikake hohono</td>
<td>A</td>
</tr>
<tr>
<td>Stachytarpheta australis Moldenke</td>
<td>owi</td>
<td>A</td>
</tr>
</tbody>
</table>
APPENDIX

AVIAN AND TERRESTRIAL MAMMALIAN SURVEYS CONDUCTED FOR THE KAWAINUI-HĀMĀKUA MARSH COMPLEX MASTER PLAN UPDATE, MŪKAPU DISTRICT, ISLAND OF O‘AHU - August 2017

Prepared by: Rana Biological Consulting
Table of Contents

Introduction ........................................................................................................... 3
General Site Description ..................................................................................... 3

Methods ................................................................................................................ 6
Avian Survey Methods .......................................................................................... 6
Mammalian Survey Methods .............................................................................. 6

Results .................................................................................................................. 6
Avian Survey ......................................................................................................... 6
Mammalian Survey ............................................................................................... 9

Discussion ............................................................................................................. 10
Avian Resources .................................................................................................. 13
Mammalian Resources ......................................................................................... 14

Potential Impacts to Protected Species ............................................................... 14
Waterbirds ............................................................................................................. 14
Seabirds ................................................................................................................ 15
Hawaiian hoary bat ............................................................................................... 15

Critical Habitat .................................................................................................... 15

Recommendations ................................................................................................. 15

Glossary .................................................................................................................. 17

Literature Cited ..................................................................................................... 18

Avian and Terrestrial Mammalian Surveys Conducted for
the Kawainui-Hāmākua Marsh Complex Master Plan
Update, Mōkapu District, Island of O‘ahu

Prepared by:
Reginald E. David
Rana Biological Consulting
P.O. Box 1371
Kailua-Kona, Hawaii 96745

Prepared for:
Helber Hastert & Fee Planners
733 Bishop Street, Suite 2590
Honolulu, HI 96813

August 18, 2017
Introduction

The State of Hawai‘i (State), Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW), in partnership with the Division of State Parks (DSP), is preparing an updated Master Plan for the Kawaihui-Hāmākua complex of wetlands which encompasses 986.02 acres of State-owned property located in the ahupua‘a of Ka'ūka on the island of O‘ahu (Figure 1). The overarching goals of the Master Plan are to: a) improve and restore the primary function of the wetland as a flood control mechanism; b) continue to enhance and expand restoration of habitat for endangered waterbirds in selected areas within the wetlands; c) conserve and interpret archeological and cultural resources present within the upland areas; d) improve public access in a controllable fashion to appropriate areas on the exterior of the wetlands.

This report describes the methods used and the results of the avian and terrestrial mammalian surveys conducted on the subject property as part of the environmental disclosure process associated with the proposed project.

The primary purpose of the surveys was to determine if there are any avian or mammalian species currently listed, or proposed for listing under either federal or State of Hawai‘i endangered species statutes within or adjacent to the study area. The federal and State of Hawai‘i listed species status follows species identified in the following referenced documents, (Department of Land and Natural Resources (DLNR) 1998; U. S. Fish & Wildlife Service (USFWS) 2016). Fieldwork was conducted on April 16 and 17, 2014.

Hawaiian and scientific names are italicized in the text. A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text.

General Site Description

The approximately 986-acre project area generally includes, a) Kawaihui Wildlife Sanctuary along with other wetlands and surrounding upland areas not within this sanctuary; b) Ulupō Heiau State Historical Park (SHP); c) Kawaihui State Park Reserve (SPR); d) Hāmākua Marsh Wildlife Sanctuary (referred to as Hāmākua); and e) Pu‘u‘oe‘oe hillside (Figure 2).

Vegetation within the areas surveyed have been highly altered over time, introduced non-native plants dominate the entire survey area. The once exception is within the Nā Pāhaku O Hauwhaine native plant restoration site located along Kapa’a Quarry Road, which is a community led native plants restoration site. During the course of the botanical surveys of the project site no plants listed as threatened or endangered under either the federal or state of Hawai‘i endangered species statutes were observed (LeGrande, 2014).
Methods


Avian Survey Methods

Eighteen count stations were sited approximately 500 meters apart, roughly equidistant from each other within the project site. In siting the count stations care was taken to include a count station in each of the different sub-categories of vegetation around the exterior of the wetlands. A single eight-minute avian point count was made at each count station. Field observations were made with the aid of Leica 8 X 42 binoculars and by listening for vocalizations. The point counts were conducted between 7:00 am and 10:30 am, the period when birds are most active and vocal. Time not spent counting the point count stations was used to search the rest of the site for species and habitats not detected during the point counts.

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasius cinereus semotus*), or 'ōpe'a as it is known locally, all terrestrial mammals currently found on the Island of O‘ahu are alien species, and most are ubiquitous. The survey of mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all terrestrial vertebrate mammalian species detected within the project area during the time spent on the site.

Results

A total of 1448 individual birds of 34 species, representing 18 separate families, were recorded during point counts. Four of the species recorded, Hawaiian Duck (*Anas wyvilliana*), the Hawaiian sub-species of both the Common Gallinule (*Gallinula galeata sandvicensis*) and Black-necked Stilt (*Himantopus mexicanus knudseni*) as well as the Hawaiian Coot (*Fulica ala*) are endemic to the Hawaiian Islands and are listed as endangered under both federal and State of Hawai‘i endangered species statutes. One species, Black-crowned Night-Heron (*Nycticorax nycticorax hoactli*) is an indigenous, resident, water obligate, breeding species, and four species, Pacific Golden-Plover (*Pluvialis fulva*), Wandering tattler (*Tringa incana*), Ruddy Turnstone (*Arenaria interpres*) and Long-
billed Dowitcher (*Limnodromus scolopaceus*) are indigenous migratory shorebird species. The remaining 25 species recorded are alien to the Hawaiian Islands (Table 1).

Avian diversity and densities were in keeping with the location and predominately alien vegetation present on the site. Five introduced species, Zebra Dove (*Geopelia striata*), house Finch (*Haemorhous mexicanus*), Common Myna (*Acridotheres tristis*), Japanese White-eye (*Zosterops japonicus*) and Common Waxbill (*Estrilda astrild*) accounted for 45 percent of the total number of birds recorded. Zebra Dove was the most commonly tallied species, which accounted for 12 percent of the birds recorded during point counts.

### Table 1 – Avian Species Detected During Point Counts Kawaiulani Complex Master Plan

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>ST</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscovy</td>
<td>Corina moschata</td>
<td>A</td>
<td>0.52</td>
</tr>
<tr>
<td>Hawaiian Duck</td>
<td>Anas wylivillana</td>
<td>EE</td>
<td>0.20</td>
</tr>
<tr>
<td>Hawaiian Duck x Mallard</td>
<td>Anas wylivillana x A. platyrhynchos</td>
<td>A</td>
<td>2.00</td>
</tr>
<tr>
<td>Gray Francolin</td>
<td>Francolin pondorinorius</td>
<td>A</td>
<td>0.36</td>
</tr>
<tr>
<td>Domestic Chicken</td>
<td>Gallus sp</td>
<td>A</td>
<td>1.52</td>
</tr>
<tr>
<td>Indian Peafowl</td>
<td>Pavo cristatus</td>
<td>A</td>
<td>0.12</td>
</tr>
<tr>
<td>Rock Pigeon</td>
<td>Columba livia</td>
<td>A</td>
<td>1.16</td>
</tr>
<tr>
<td>Spotted Dove</td>
<td>Streptopelia chinensis</td>
<td>A</td>
<td>1.84</td>
</tr>
<tr>
<td>Zebra Dove</td>
<td>Geopelia striata</td>
<td>A</td>
<td>6.92</td>
</tr>
<tr>
<td>Common Gallinule</td>
<td>Gallinula gallinula sandvicensis</td>
<td>EE</td>
<td>0.89</td>
</tr>
<tr>
<td>Hawaiian Coot</td>
<td>Fulica ala</td>
<td>EE</td>
<td>1.48</td>
</tr>
<tr>
<td>Black-necked Stilt</td>
<td>Himantopus mexicanus kmudeni</td>
<td>EE</td>
<td>0.76</td>
</tr>
<tr>
<td>Pacific Golden-Plover</td>
<td>Ploceus fusces</td>
<td>IM</td>
<td>1.08</td>
</tr>
<tr>
<td>Black-faced Ibis</td>
<td>Pycnonotus sinensis</td>
<td>A</td>
<td>4.44</td>
</tr>
<tr>
<td>White-billed Cuckoo</td>
<td>Cuculus canorus</td>
<td>A</td>
<td>0.56</td>
</tr>
<tr>
<td>Japanese Bush-Tyrant</td>
<td>Zosterops japonicus</td>
<td>A</td>
<td>1.08</td>
</tr>
<tr>
<td>Northern Mockingbird</td>
<td>Mimia polygnatias</td>
<td>A</td>
<td>0.04</td>
</tr>
<tr>
<td>Common Myna</td>
<td>Acridotheras tristis</td>
<td>A</td>
<td>5.20</td>
</tr>
<tr>
<td>House Finch</td>
<td>Haemorhous mexicanus</td>
<td>A</td>
<td>5.28</td>
</tr>
<tr>
<td>Yellow-fronted Canary</td>
<td>Cisticola maculata</td>
<td>A</td>
<td>0.32</td>
</tr>
<tr>
<td>House Sparrow</td>
<td>Passer domesticus</td>
<td>A</td>
<td>5.28</td>
</tr>
<tr>
<td>Northern Cardinal</td>
<td>Cardinalis cardinalis</td>
<td>A</td>
<td>1.64</td>
</tr>
<tr>
<td>Red-crested Cardinal</td>
<td>Paroaria cristata</td>
<td>A</td>
<td>1.12</td>
</tr>
<tr>
<td>Common Waxbill</td>
<td>Estrilda astrild</td>
<td>A</td>
<td>4.36</td>
</tr>
<tr>
<td>Java Sparrow</td>
<td>Lonchura ocellaris</td>
<td>A</td>
<td>1.08</td>
</tr>
<tr>
<td>Chestnut Munia</td>
<td>Lonchura atricapilla</td>
<td>A</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Table 1. Continued

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>ST</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red-whiskered Bulbul</td>
<td>Pycnonotus sinensis</td>
<td>A</td>
<td>1.08</td>
</tr>
<tr>
<td>Japanese White-eye</td>
<td>Zosterops japonicus</td>
<td>A</td>
<td>4.52</td>
</tr>
<tr>
<td>Red-billed Leiothrix</td>
<td>Leiothrix lutea</td>
<td>A</td>
<td>1.08</td>
</tr>
<tr>
<td>White-rumped Shama</td>
<td>Copyschus malabaricis</td>
<td>A</td>
<td>0.96</td>
</tr>
<tr>
<td>Northern Mockingbird</td>
<td>Mimia polygnatias</td>
<td>A</td>
<td>0.04</td>
</tr>
<tr>
<td>Red-crested Cardinal</td>
<td>Paroaria cristata</td>
<td>A</td>
<td>1.12</td>
</tr>
<tr>
<td>Common Waxbill</td>
<td>Estrilda astrild</td>
<td>A</td>
<td>4.36</td>
</tr>
<tr>
<td>Java Sparrow</td>
<td>Lonchura ocellaris</td>
<td>A</td>
<td>1.08</td>
</tr>
<tr>
<td>Chestnut Munia</td>
<td>Lonchura atricapilla</td>
<td>A</td>
<td>1.12</td>
</tr>
</tbody>
</table>
Eight terrestrial mammalian species were detected on the site during the course of this survey. In table 2, the type of detection is shown for each species.

<table>
<thead>
<tr>
<th>Common name</th>
<th>Scientific name</th>
<th>ST</th>
<th>DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat sp.</td>
<td>Rattus sp.</td>
<td>A</td>
<td>V, Car</td>
</tr>
<tr>
<td>European house mouse</td>
<td>Mus musculus domesticus</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>Domestic dog</td>
<td>Canis familiaris</td>
<td>A</td>
<td>V, A, Sc, Tr</td>
</tr>
<tr>
<td>Small Indian mongoose</td>
<td>Herpestes auropunctatus</td>
<td>A</td>
<td>V, A, Sc</td>
</tr>
<tr>
<td>House cat</td>
<td>Felis catus</td>
<td>A</td>
<td>V, Sc, Tr</td>
</tr>
<tr>
<td>Domestic horse</td>
<td>Equus caballus</td>
<td>A</td>
<td>Sc, Tr</td>
</tr>
<tr>
<td>Pig</td>
<td>Sus scrofa</td>
<td>A</td>
<td>V, A, Sc, Tr, Si, Car</td>
</tr>
<tr>
<td>Domestic cattle</td>
<td>Bos taurus</td>
<td>A</td>
<td>Sc, Tr</td>
</tr>
</tbody>
</table>

The restoration and management actions being proposed for the wetlands will significantly benefit all of the native and migratory waterbirds and shorebirds that currently use the wetlands as well as many species which will take advantage of the increased habitat available in the future. Kawasaki is the largest extant wetland on O‘ahu and is well on its way to becoming semescent. Figure 3 shows the wetland located inland of the intersection of the Ka‘a‘a Road and Kaahe Street, this is what a mixed wetland habitat should look like – when compared to Figures 4 and 5 which are views from the inland center of the wetland looking southeast and northeast respectively the amount of inflining and close to dry land present within the wetland is obvious. In figure 6 looking south from the summit of Nā Pōhaku 0 Hauwahine native plant restoration site towards Castle Junction the Army Corp of Engineers and DOFAW’s ponds and restoration project that is now complete and is managed by DOFAW, can been seen in the distance.
Maximizing Resources

The findings of the avian survey are consistent with the current habitat present within and adjacent to the Kauai Island complex and the survey area. During the course of this survey, 34 species were identified as present in the area. However, 17 species were not observed, including the Kauai Honey Buzzard, the Hawaiian Goose, and the Kauai Mole. The Kauai Mole is an endangered species under both Federal and State Endangered Species Act, and the Hawaiian Goose is an endangered species under Federal Endangered Species Act.

The survey also included the identification of 15 species that were not previously recorded in the area. These species are listed in Table 1. The survey identified 27 species that were not identified in previous surveys. These species are listed in Table 2. The survey identified 20 species that were previously recorded in the area. These species are listed in Table 3. The survey identified 10 species that were not previously recorded in the area. These species are listed in Table 4.

Potential Impacts on Protected Species

The principal potential impact on the habitat that this survey addresses is the potential for the reintroduction of the Kauai Mole. This species has been reintroduced to the Kauai Island complex and is currently under Federal Endangered Species Act protection. The reintroduction of this species will have a significant impact on the habitat and the species that rely on it. The potential for the reintroduction of the Hawaiian Goose is also a significant concern. This species is currently under Federal Endangered Species Act protection and has been reintroduced to the Kauai Island complex. The potential for the reintroduction of the Kauai Honey Buzzard is also a concern. This species is currently under State Endangered Species Act protection and has been reintroduced to the Kauai Island complex.

Waterbirds

Historically, when there was more open water within the complex, numerous other species of waterbirds were recorded within the complex. The waterbird study was conducted during the summer and fall, when waterbirds are more likely to be found in the area. The waterbird study was conducted during the summer and fall, when waterbirds are more likely to be found in the area.

Although no seabirds were detected during the course of this survey, several seabird species potentially occur in the area. The primary cause of mortality in resident seabirds is collision with man-made structures. The Kauai Island complex is home to several seabird species, including the Laysan Albatross, the Black-footed Albatross, and the Cory's Shearwater. The Kauai Island complex is home to several seabird species, including the Laysan Albatross, the Black-footed Albatross, and the Cory's Shearwater. The Kauai Island complex is home to several seabird species, including the Laysan Albatross, the Black-footed Albatross, and the Cory's Shearwater.

Endangered Birds of Hawaii

The survey identified 27 species that were not identified in previous surveys. These species are listed in Table 2. The survey identified 20 species that were previously recorded in the area. These species are listed in Table 3. The survey identified 10 species that were not previously recorded in the area. These species are listed in Table 4.
include no dogs off leashes, no feeding, approaching or petting any wild animal within the management area, and a ban on dumping domestic ducks, cats and dogs on the site. Furthermore, the feeding of stray and feral cats will be expressly prohibited.

Seabirds

The principal potential impact that the construction of the project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the proposed action during the nesting season. The two main areas that outdoor lighting could pose a threat to these nocturnally flying seabirds is if: a) during construction, if it is deemed expedient, or necessary to conduct night-time construction activities - currently no nighttime construction is anticipated; b) following build-out, the potential use of streetlights or other exterior lighting within facilities and in parking lots during the seabird fledging season which runs from September 15 through December 15th.

Hawaiian hoary bat

The principal potential impact that construction poses to bats is during the clearing and grubbing phase of the construction. The trimming or removal of foliage and/or trees within the construction areas may temporarily displace individual bats, which may use the vegetation as a roosting location. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. During the pupping season, female carrying their pups may be less able to rapidly vacate a roost site while vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they themselves forage, and very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 1 and September 15, the pupping season.

Critical Habitat

There is no federally delineated Critical Habitat for any species on, or close to the proposed project site. Thus, modifications of habitat on the site will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under state law.

Recommendations

- Schedule clearing and grubbing clearing of woody vegetation taller than 4.6 meters (15-feet), activities outside of the bat pupping season between June 1 and September 15.

- Prior to the initiation of clearing and grubbing areas which may contain suitable waterbird nesting habitat should be searched by an experienced biologist to determine if any waterbird nesting behavior is ongoing, if such activity is detected clearing and/or grubbing in those areas should not be initiated before it is ascertained that the nests have failed, hatched successfully or been abandoned.

- If streetlights or exterior facility lighting is installed in conjunction with the project, it is recommended that the lights be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures (Reed et al, 1985; Tealor et al, 1987).

- Develop and install appropriate I&E signage in areas open to the general public around the edge of the wetland on which information on the protected wildlife is provided along with restrictions on public behavior which is contraindicated in the presence of listed waterbird species.

- It is recommended that, where appropriate and practicable, native plant species should be used in landscaping efforts. Not only is this ecologically prudent, but also will likely save maintenance and watering costs over the long term.
Glossary

Alien – Introduced to Hawai‘i by humans
Ahupua‘a – Traditional Hawaiian land division, usually extending from the upland to the sea.
Diurnal – Daytime, an animal that hunts and feeds during daylight hours, the opposite of nocturnal
Domesticated – Feral species, not considered established in the wild on the Island of O‘ahu
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended (ESA) as an endangered species
Endemic – Native to the Hawaiian Islands and unique to Hawai‘i
Extralimital – A bird which is far outside its normal range (rare vagrant)
Indigenous – Native to the Hawaiian Islands, but also found elsewhere naturally
Nocturnal – Night-time, after dark
‘Ope‘ape‘a – Endemic endangered Hawaiian hoary bat (Lasionycteris dinzeri aemotus)
Pelagic – An animal that spends its life at sea – in this case seabirds that only return to land to nest and rear their young
Phylogenetic – The evolutionary order that organisms are arranged by Pue‘o - Short-eared Owl (Asio flammeus sandwichensis)
Ruderal – Disturbed, rocky, rubbly areas, such as old agricultural fields and rock piles
Sign – Biological term referring to tracks, scat, rubbing, odor, marks, nests, and other signs created by animals by which their presence may be detected
Threatened – Listed and protected under the ESA as a threatened species

DLNR – Hawai‘i State Department of Land & Natural Resources
DOFAW – Division of Forestry and Wildlife
DSP – Division of State Parks
ESA – Endangered Species Act of 1973, as amended
I&F – Informational and Educational signage
USFWS – United State Fish & Wildlife Service

Literature Cited


_____ 2003 Forty-fourth supplement to the American Ornithologist’s Union Check-list of North American Birds. The Auk 120:923-931.


Aquatic biological surveys for the Kawainui–Hāmākua Marsh Complex Master Plan

Prepared by:
AECOS, Inc.
45-939 Kamehameha Hwy., Suite 104
Kāneʻohe, Hawai‘i 96744-3221

November 10, 2017

Table of Contents

Introduction ................................. 2
Site Description
  Functions and Values .......................... 4
  Challenges .................................. 5
Hydrology
  Kawainui Marsh ............................... 8
  Maunawili Stream ............................ 9
  Kahanai Stream ............................. 11
  Kapa’a Stream ............................... 11
  Onewa Channel .............................. 12
  Hāmākua Marsh ............................. 13
Geology and Soils
  Kawainui Marsh ............................... 14
  Kawainui Upland ............................. 15
  Hāmākua Marsh ............................. 15
Vegetation
  Kawainui Marsh ............................... 17
  Hāmākua Marsh ............................. 20

1 This document will be used in the preparation of an Environmental Impact Statement for the Kawainui–Hāmākua Master Plan and will become part of the public record.

AECOS No. 1482B

November 10, 2017

Eric Guinther, Chad Linebaugh, and Susan Burr
AECOS, Inc.
45-939 Kamehameha Hwy., Suite 104
Kāneʻohe, Hawai‘i 96744
Phone: (808) 234-7770 Fax: (808) 234-7775 Email: aecos@aecos.com
Introduction

The Hawai‘i Department of Land and Natural Resources (DLNR)-Division of Forestry and Wildlife (DOFAW) and Division of State Parks (DSP) are preparing an Environmental Impact Statement (EIS) for the Kawainui-Hāmākua Master Plan ("Project" or "Master Plan"; HH&F, 2014). The Project area encompasses about 404 ha (1,000 ac) in Ka‘ūa on windward O‘ahu and includes Kawainui wetland and surrounding upland areas and Hāmākua wetland and adjacent upland areas (Pu‘u’u‘ehu hillside; Figure 1). Goals of the Project include: sustaining and enhancing natural and cultural resources of the Project area and increasing public access and outdoor recreational opportunities. Improvements proposed in the Master Plan include: wetland restoration, upland reforestation, storm water drainage improvements, management operations, support of traditional Hawaiian cultural practices, increased public access, enhanced outdoor recreational use, and support of educational programs and stewardship.

AECOS, Inc. was contracted by Helber, Hastert, and Fee Planners, Inc. to conduct an aquatic resources assessment and water quality survey to assess improvements proposed in the Master Plan to be implemented over the next 15 years. A water quality survey and report was completed in June (AECOS, 2017). The present report covers general aspects of Kawainui and Hāmākua marshes and details the results of aquatic biological surveys in these features. The report does not include a detailed consideration of terrestrial botanical, avian, or mammalian resources in the Project area. Any state or federally listed endangered species (terrestrial or aquatic) observed during our surveys in the Project area are noted and discussed.
Biological Surveys

KAWANUI-HAMILKA MARSH COMPLEX

Biological Surveys

At approximately 333 ha (821 ac) in size (USFWS, 2005), the Kawainui-Hamakua Marsh Complex, or site, is the largest marsh in Hawaii and located on the windward side of the island of O‘ahu. This wetland is located along the floodplain of the Mānawatu-Kahana and Kapa‘a streams and extends to the sea. It is one of the largest coastal wetlands in the state and has a diverse ecosystem supporting many plant and animal species.

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping of coastal and wetland habitats in the U.S. identifies 3081 (1200 ac) of wetlands at Hamakua. The NWI prepares maps for Kawainui Marsh based on the US Army Corps of Engineers' Coastral and Ecological Restoration (CER) Program (US Army Corps of Engineers, 2003). The aquatic vegetation is classified by the US Army Corps of Engineers (1997) and listed in Table 1.

1. Wetland Functions and Values

The Kawainui-Hamakua Marsh Complex performs numerous important ecosystem functions, including ones that human society deems to be valuable. Functions and values of these marshlands include:

- Provide habitat for endangered and threatened species
- Support food web
- Provide habitat for migratory birds
- Support hydrological processes

2. Site Description

Prior to human intervention, a single outlet (the Kalāka‘a Stream) discharged water from the Kalāka‘a Marsh into the Kalāka‘a Lagoon and eventually to the Kalāka‘a Stream. The Kalāka‘a Stream was the primary outlet for water before the construction of a fresh water intake structure in the Kalāka‘a Marsh. The Kalāka‘a Stream is now primarily a drainage system for the Kalāka‘a Marsh.

The Kalāka‘a Marsh is a large, prehistoric wetland that was subject to human intervention due to the construction of fresh water intake structures in the Kalāka‘a Marsh. The marsh is primarily used for agriculture and is a valuable natural resource for the community of Kailua.

3. Peat Layer

The peat layer is much thicker (exceeding 5 m) in some parts of the marsh (Ko‘olau, 2006).

4. Groundwater Recharge

Groundwater recharge is a critical component of the Kawainui-Hamakua Marsh Complex, providing water to the surrounding area and supporting the local ecosystem.

5. Historical and Cultural Importance

The Kawainui-Hamakua Marsh Complex has significant historical and cultural importance to the local community and is a valuable natural resource for the community of Kailua.

6. Education and Research

The Kawainui-Hamakua Marsh Complex is an important site for education and research, providing opportunities for students and researchers to study the unique ecosystem and learn about the needs of the local community.

7. Conclusion

The Kawainui-Hamakua Marsh Complex is a vital natural resource for the community of Kailua and the state of Hawaii. It is an important site for education and research, providing opportunities for students and researchers to study the unique ecosystem and learn about the needs of the local community.

8. Acknowledgments

This work was supported by the United States Fish and Wildlife Service (USFWS) and the Hawaii Department of Land and Natural Resources (DLNR). The authors would like to thank the DLNR for their support and guidance in this project.

9. References


US Army Corps of Engineers (1997). Coastal and Ecological Restoration (CER) Program, Hawaii, USA.
Table 1. Area of wetlands and waterways associated with Kawaihui Marsh* and Hāmākua Marsh† as identified in NWI (USFWS, 2006).

<table>
<thead>
<tr>
<th>Wetland type</th>
<th>Kawaihui Marsh</th>
<th>Hāmākua Marsh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (ha)</td>
<td>Area (ac)</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>514</td>
</tr>
<tr>
<td>Semi-permanently-flooded marsh (PEM1 F)</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Seasonally-flooded marsh (PEM1 C)</td>
<td>58</td>
<td>143</td>
</tr>
<tr>
<td>Swamp</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Temporarily and seasonally-flooded swamp (PSSA C, PF03 C, and PSSA A)</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Open Water</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Freshwater pond (PAB4 H and PAB4 Hx)</td>
<td>17</td>
<td>42</td>
</tr>
<tr>
<td>Estuary (E1UBL)</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>Restoration ponds (PUB4 Hx)</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>Excavated stream (RZUB Hx)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Totals</td>
<td>308</td>
<td>760</td>
</tr>
</tbody>
</table>

† Includes wetlands associated with Maunawili and Kahanākī Streams on the makai side of Pali Highway and USACE mitigation ponds (USACE Honolulu District, 2008), which are not identified in the NWI.

‡ Includes wetlands on makai side of levee associated with Kawaihui Canal and wetlands on makai side of Hāmākua Drive.

Cowardin-type codes:
1. PEM1 C - Seasonally flooded, freshwater wetland with persistent emergent vegetation.
2. PEM1 F - Semi-permanently flooded, freshwater wetland with persistent emergent vegetation.
3. PEM4 - Permanently flooded, freshwater pond with floating vascular plants.
4. PFAB4 H - Excavated permanently flooded, freshwater pond with floating vascular plants.
5. E1UBL - Subtidal estuary with an unconsolidated bottom.
6. PSSA C - Seasonally flooded, freshwater wetland with broad-leaved evergreen, scrub-shrub vegetation.
7. PF03 C - Seasonally flooded, freshwater wetland with broad-leaved evergreen trees.
8. PSSA A - Temporarily flooded, freshwater wetland with broad-leaved evergreen scrub-shrub vegetation.
9. PF03 A - Temporarily flooded, freshwater wetland with broad-leaved evergreen trees.
10. RZUB Hx - Excavated, permanently flooded, lower perennial stream with an unconsolidated bottom.
Most of the Project area is within the Conservation District (HDLN, 2011). HDLN – Division of State Parks (DSP) portions include a State Park Reserve at Kawaiui comprising Nā Pohaku, Kapa‘a, Kalāhee and Kūkanono sections, and Ulupō Heiau State Historical Park.

Challenges

Kawaiui and Hāmākua marshes have been extensively modified by human activities. While stakeholders agree the marshes should be “restored”, it is difficult to determine to what condition they should be (or even could be) restored to. Prior to human habitation on O‘ahu, the area was likely occupied by brackish lagoons and a large estuary. Pollen studies have suggested surrounding uplands would have been a loulu (palm) forest (Athens et al., 1992). Upon arrival of the Polynesians, and for over hundreds of years, the lagoon area was actively managed as a fishpond. Wetland taro was cultivated in surrounding terraced fields. A large population inhabited the area and it was a culturally-important place as evidenced by the presence three heiau in the area (HH&F, 2015). After the Māhele in the 1800s, the marshes were used for rice production and, later, drained: water was pumped out of the marsh and transported to Waimānalo for agricultural irrigation (Kawaiui Marsh Technical and Policy Advisory Committee; 1983) and parts used for cattle grazing. Development of the Coconut Grove community on the north side of Kawaiui Marsh in the early 20th century prompted federal and state agencies to undertake projects designed to reduce flood hazard. Areas of the marsh were filled and sedimentation shoaled others.

Today, the vision of the marsh appears to be first and foremost to maintain it as a surface water storage area to protect Kailua from flooding. A secondary desired use is to manage the wetland as habitat suitable for endangered waterbirds. Other desired uses include education, recreation, cultural practice, (HH&F, 2002; 2003; 2011), wetland restoration, erosion control, habitat restoration for migratory shorebirds and waterfowl, habitat restoration for native fish species, and improvements to support DOFAW’s maintenance operations (HH&F, 2011).

Hydrology

The driving force behind a wetland is water. To understand why a wetland is located where it is, how it functions, and how it will function into the future, you must first understand the underlying hydrology of that location.
Maunawili Stream

Maunawili (sometimes called Makawao) Stream is a perennial stream; the highest reach arises on the slopes of the Koʻolau Mountain at approximately 490 m (1,600 ft) ASL. Named tributaries to Maunawili Stream include: Palapu, ʻŌmaʻo, Makawao, and Olomana. The stream originates in the Waimānalo Forest Reserve, flows through the Royal Hawaiian Golf Course and Maunawili neighborhood, and passes under Kalanianaʻole Highway to enter Kawaihui Marsh. Upstream of Kalanianaʻole Highway, wetlands are adjacent to Maunawili Stream (AECOS, 2014; USFWS, 2006). Although these wetlands are somewhat isolated from Kawaihui Marsh by the highway, they are adjacent and should essentially be considered northerly extensions of Kawaihui Marsh.

Beneath Kalanianaʻole Highway, Maunawili Stream is incised about 2 to 3 m (6 to 10 ft) deep and is about 6 m (25 ft) wide. The stream channel turns to the northwest after entering the marsh, avoiding a tongue of upland created by sedimentation from Maunawili Valley. This depositional feature is former pasture on which one cluster of the USACE mitigation ponds was constructed; the other set is on upland of Mokulana between the two streams. A short distance further downstream, Maunawili Stream joins Kahanaiki Stream and the combined stream discharges into a central open water area.

Kahanaiki Stream

Kahanaiki Stream is a perennial stream that arises on the slopes of the Koʻolau Mountain at approximately 350 m (1,150 ft) ASL. Upstream of Kawaihui Marsh, mauka of Kalanianaʻole Highway, wetlands are adjacent to Kahanaiki Stream and a tributary ditch (AECOS, 2015; USFWS, 2006). Like the mauka wetlands associated with Maunawili Stream, these wetlands are adjacent to Kawaihui Marsh and should be considered as a northerly extension of the marsh. Beneath Kalanianaʻole Highway the stream is less than 1 ft deep and is about 5 m (16 ft wide). The stream flow is noticeably slow as it opens into the marsh in an area that is covered with California grass. The stream spreads out and possibly contributes to flooding adjacent to Mokulana. Within the marsh, Kahanaiki Stream does not have a distinct bed or banks.

---

* Although many maps, including the NWI maps, show the southeast side of the basin as wetland, it is a delta built from sediments washed out of Maunawili Valley, perhaps in fairly recent times. Figure 4-2 in USACE (2008) shows the USACE mitigation ponds were constructed entirely in upland in this area. The same area is designated as upland grassed pasture in Guinther, et al. (2006; see Figure 5, herein). This non-wetland is a significant part of the wetland area calculations (Table 1, seasonally flooded marsh), pointing out a difference between how USFWS and USACE differ in defining wetlands.
Kapa’a Stream

Umawao has a single stream feature: Kapa’a Stream. The remaining area is mesic forest that has been greatly shaped by land use over the years, including: quarry operations, landfill, and a waste transfer station. The area receives approximately 1350 mm (53 inches) of rainfall per year with the bulk of runoff produced indirectly entering Kawaiui Marsh via Kapa’a and Kahanalii Streams and lesser amounts entering the marsh directly.

Kapa’a Stream is a short, interrupted, perennial stream that arises on the west side of Umawao (also called 'Onawoa Hills) at approximately 100 m (330 ft) ASL. The stream channel has been modified to fit into a highly modified landscape that now includes the H-3 Freeway, Aearon rock quarry, the former Kawaiui Landfill, the former Kapa’a Landfill, the former Kalaheo Landfill, Kapa’a Transfer Station, and a model airplane park located on fill placed in the wetland as the Kawaiui Landfill (AECOS, 2015).

The lower reach of Kapa’a Stream flows through a pond and then into Kawaiui Marsh through three culverts under Kapa’a Quarry Road. The pond is an extension of the marsh and is overgrown by floating vegetation, primarily giant salvinia (Salvinia molesta). Indeed, Kawaiui Marsh once extended well up into Kapa’a Valley, but the wetlands have since been filled as Kapa’a Landfill and for landfill and various light industrial uses. Within Kawaiui Marsh, flow from Kapa’a Stream is directed through a much disturbed section of Kawaiui Marsh that is overgrown with hau (Talipariti pilaceum) , umbrella sedge (Cyperus involucratus), elephant grass (Pennisetum purpureum), and California grass (Urochca mutica). A man-made channel within the marsh terminates near where Kapa’a Stream disappears, but this channel was constructed to redirect flood water flow entering upper Kawaiui towards the Oneawa Channel as mitigation following the 1987-88 New Year’s Flood of Coconut Grove in Kālāua.

'Onawoa Channel

Water flows in multiple and essentially unknown channels within Kawaiui Marsh to a channel that parallels the west (mauka) side of the levee. This channel feeds into ‘Onewoa Channel, a man-made drainage canal constructed in the 1950s (Guinther, undated web page) that discharges into the northern part of Ka’uua Bay near Kapoho Point.

U.S. Geological Survey (USGS) operates two rain and water elevation monitoring stations in the watershed: a rain gage and crest-stage gage on Makawao Stream in Maunawili (Sta. No. 16254000; USGS, 2017b) and a rain gage and water elevation gage on the levee (Sta. No. 16264600; USGS 2017a). Annual-mean discharge measured in Makawao Stream between 1912-1916 and 1958-2016 ranged from 1.31 cubic feet per second (cfs) to 11.10 cfs. Peak streamflow in Makawao Stream measured from 1958-2016 was 6,000 cfs on February 4, 1965.

The Kawaiui Marsh station (Sta. No. 16254600) measures only water level as it is distant from any water flows and was first established on the levee in response to the 1987/1988 New Year’s flood (USACE Honolulu District, 2000) to serve as a flood warning station. Level 1 (non-emergency threshold) is established at 7.0 ft (USGS, 2017b). The maximum water level measured from 2006-2016 was 7.87 ft on April 2, 2006, following what was termed locally as "the 40 days of rain" (NWS, 2006). Table 2 provides the gage height at the Kawaiui Marsh station for annual peak water level for each year between 2006 and 2016 (USGS, 2017a). Corresponding gage height and peak discharge measured in Makawao Stream (Sta. No. 16254000; USGS, 2017b) at the same times are also provided.

Table 2. Annual peak water levels for Kawaiui Marsh and corresponding gage height and streamflow at Makawao Stream (USGS, 2017a, b).

<table>
<thead>
<tr>
<th>Date</th>
<th>Gage Height (ft)</th>
<th>Gage Height (ft)</th>
<th>Peak discharge (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/1/06</td>
<td>6.21</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12/2/06</td>
<td>5.80</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12/11/08</td>
<td>6.97</td>
<td>---</td>
<td>1,160</td>
</tr>
<tr>
<td>12/24/09</td>
<td>4.76</td>
<td>---</td>
<td>143†</td>
</tr>
<tr>
<td>12/19/10</td>
<td>6.37</td>
<td>9.32</td>
<td>460</td>
</tr>
<tr>
<td>3/6/12</td>
<td>6.34</td>
<td>8.91</td>
<td>357</td>
</tr>
<tr>
<td>5/30/13</td>
<td>4.74</td>
<td>8.10*</td>
<td>20†</td>
</tr>
<tr>
<td>7/20/14</td>
<td>6.40</td>
<td>11.96</td>
<td>1,540</td>
</tr>
<tr>
<td>8/26/15</td>
<td>6.43</td>
<td>---</td>
<td>56.2</td>
</tr>
<tr>
<td>11/23/15</td>
<td>6.14</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

† Above mean sea level (MSL).
† Peak discharge at Makawao Stream occurred on December 3, 2009
* Peak discharge at Makawao Stream occurred on May 28, 2013.

Hämäkua Marsh

Hämäkua Marsh is within the Ka’elepulu Watershed, which is assigned state code No. 3-2-014 in the Hawaiian Watershed Atlas (Parham et al., 2008).
AECOS

Kawainui Marsh Complex

Biological Survey

According to the wetland atlas, this watershed is 1,180 ha (2,361 ac). No further information on the water budget of Hamakua Marsh appears to be available.

Kawainui Marsh

Prior to construction of the Kawainui Marsh and Hamakua Marsh, water seeped from Kawainui Marsh, water seepage was prevented by terracing the Kawainui Marsh and Hamakua Marsh (AEDC, 1982). Today, water seepage is prevented by terracing the Kawainui Marsh and Hamakua Marsh (AEDC, 1982). Today, water seepage from Kawainui Marsh, Hamakua Marsh, and Hamakua Canal is prevented by terracing the Kawainui Marsh and Hamakua Marsh (AEDC, 1982)

The slope of Kawainui Marsh is known as Puuonoa and is devoid of surface stream features. The section receives approximately 1010 mm (40 inches) of rainfall per year. The bulk of the rainfall ends up in Kawainui and Hamakua Marshes with little overflowing into the Kawaiola Stream.

Kawainui Upland


Biological Survey

According to the wetland atlas, this watershed is 1,180 ha (2,361 ac). No further information on the water budget of Hamakua Marsh appears to be available.

Kawainui Marsh

Prior to construction of the Kawainui Marsh and Hamakua Marsh, water seeped from Kawainui Marsh, water seepage was prevented by terracing the Kawainui Marsh and Hamakua Marsh (AEDC, 1982). Today, water seepage is prevented by terracing the Kawainui Marsh and Hamakua Marsh (AEDC, 1982). Today, water seepage from Kawainui Marsh, Hamakua Marsh, and Hamakua Canal is prevented by terracing the Kawainui Marsh and Hamakua Marsh (AEDC, 1982)

The slope of Kawainui Marsh is known as Puuonoa and is devoid of surface stream features. The section receives approximately 1010 mm (40 inches) of rainfall per year. The bulk of the rainfall ends up in Kawainui and Hamakua Marshes with little overflowing into the Kawaiola Stream.

Kawainui Upland


Geology and Soils

The geology of an area, including soils, has a deterministic effect on whether or not the area becomes a wetland. Kawainui began as a basin that formed during the Pleistocene when much of the area's surficial material was deposited in the basin. Eventually, the confined accumulations of marine deposits in the outer part of the basin were removed by tides and waves. The remaining deposits were accumulated in the inner basin. Over the last 10,000 years, this lagoon transformed into a marsh (partially decomposed plant debris) which eventually became the marsh complex that exists today. The processes are still ongoing and are well documented in sediment cores made by Hester (2002) and summarized in Guenther et al. (2006) and Hester (2006).
Vegetation

Numerous maps show distribution of vegetation in Kawainui Marsh have been present in Kawainui Marsh. The boundaries between these vegetation types have changed to a small degree,

Kawainui Marsh

Vegetation maps show that Kawainui Marsh is dominated by beetlebush (Schoenoplectus jamaicense neke), flake rush (Cyclosorus interruptus), and California grass (also known as paragras; Urochloa mutica). In the century or so that it has been present in the islands, California grass has become naturalized and has taken over a large percentage of Kawainui Marshes and open water. Most of the plants present in the marsh are mint as being urban. In this manner is required to define wetlands for the USACE. Table 4 provides a list of wetland plant indicators and their definitions.

The margins of the Kawainui-Hāmākua Marsh Complex includes forested uplands along Kapi‘olani road at the northern and western boundaries of the complex. These areas are a mixed forest of monkeypod (Samanea saman).

Kawaihawai Marsh Complex Soils

AeE - Aalaeoa silty clay; 15 to 35% slopes
ALF - Aalaeoa silty clay; 40 to 70% slopes
HnA - Hanalei silty clay; 0 to 2% slopes
JaC - Jaucas sand; 0 to 15% slopes
KlaB - Kawaihapai stony clay loam; 2 to 6% slopes
KlaB - Kawaihapai clay loam; 2 to 6% slopes
KleC - Kokokahi clay; 6 to 12% slopes
LoC - Lolekaua clay; 6 to 12% slopes
MZ - marsh
Ph - Pearl Harbor clay
PokB - Pohakupu silty clay loam; 0 to 8% slopes
PohkC - Pohakupu silty clay loam; 8 to 15% slopes
PYE - Papaa clay; 20 to 35% slopes
PYE - Papaa clay; 35 to 70 percent slopes
QU - quarry
rSY - stony steep land
W - water
WpB - Waikane silty clay; 3 to 8% slopes
Figure 5. Vegetation map of Kawaihui Marsh (Guinther et al., 2006).

OPEN WATER HABITATS:
01 - Open fresh water. In the central complex, mapped largely on ponds as they appear in a June 1996 photograph
02 - Open fresh water, covered by floating aquatic plants. Plants the dominate these areas are mostly water hyacinth (Eichhornia crassipes; central pond complex and lateral canal), Pistia and Azolla (marsh drainage, stream), and Salvina molesta (Kapa’a Quarry Rd drainage canals)
03 - Open water, brackish
04 - Open water, brackish-marine (Oneawa Channel)
05 - Open fresh water, flowing stream (Maunawili, Kahaniki, and Kapa’a streams).

CENTRAL MARSH PLANT ASSEMBLAGES
10 - Monotypic stand of saw-grass (Cladium jamaicense)
11 - Bulrush (Schoenoplectus sp.) dominated wetland. In places this assemblage is mixed with California grass, and several other wetland species, a well.
12 - Cattail (Typha latifolia) assemblage; in many areas California grass is co-dominant. Other complexes in which cattail was not necessarily dominant where mapped as well: Sagittaria, Cyperus alternifolius, neke fern.

MARSH MARGIN PLANT ASSEMBLAGES AND MISCELLANEOUS OTHER GROUPINGS
20 - Pasture lands, typically dominated in ungrazed areas by California grass. Dominant grass in cattle grazed areas not determined.
21 - California grass community. In most areas where this type was mapped, it is the only dominant species. However, in some places, terrestrial vines (such as Canavalia cathartica and Parideria scandens) are present and small or sparse patches of cattail and/or bulrush occur.
22 - Wild cane (Saccharum spontaneum; also as “NC” on map). Many areas where neke fern (Cykozoros interruptus) dominates
23 - Hau (Hibiscus tiliaceus) stands
25 - Elephant grass (Pennisetum purpureum) stand
26 - Mangrove-Pickleweed (Rhizophora mangle and Batis maritima) assemblage (mostly Hāmākua Marsh).

TERRESTRIAL PLANT ASSEMBLAGES
30 - Upland (non-wetland) forest dominated by monkeypod with understory of koa haole and with a number of other tree species (Syzygium cumini, Citharexylum spp, Spathodea campanulata, Schinus terebinthifolius, Schefflera actinophyla) present as well.
31 - Upland (non-wetland) forest: dominated by koa haole and Guinea grass (Megathyrus maximus).
R - Ruderal; disturbed area. Also, urban or developed areas.
Table 4. Wetland plant status indicators and their definitions (from Lichvar and Gilrich, 2011).

<table>
<thead>
<tr>
<th>Status indicator (abbreviation)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obligate (OBL)</td>
<td>Almost always is hydrophytic, rarely occurs in uplands.</td>
</tr>
<tr>
<td>Facultative wetland (FACW)</td>
<td>Usually is hydrophytic, but occasionally found in uplands.</td>
</tr>
<tr>
<td>Facultative (FAC)</td>
<td>Commonly occurs as either hydrophytic or non-hydrophytic.</td>
</tr>
<tr>
<td>Facultative upland (FACU)</td>
<td>Occasionally is hydrophytic, but usually occurs in wetlands.</td>
</tr>
<tr>
<td>Upland (UPL)</td>
<td>Rarely is hydrophytic, almost always found in uplands.</td>
</tr>
</tbody>
</table>

*koa haole*, African tulip (*Spathodea campanulata*), Java plum (*Syzygium cumini*), and fiddleneck (*Citharexylum caudatum*).

Hāmākua Marsh

Hamakua Marsh is primarily pickleweed (*Batis maritima*) with milo (*Thebesia populnea*) and hau growing along the margins of the marsh. Red mangrove (*Rhizophora mangle*) lines the edges of the canal that connects the marsh to Kāʻelepuʻu Stream.

The slopes of Puʻuʻohehu are covered by *koa haole* scrub and Guinea grass. A few *kiawe* trees grow at the base of the hillside near Hāmākua Marsh. Chinese banyan (*Ficus microcarpa*) are sparsely scattered over the slopes.

Aquatic Biology

Methods

Biologists made visual observations of aquatic organisms at 20 locations in the Kawaihui-Hāmākua Marsh complex (Figure 6) by walking along or in stream channels and open water sections of the marsh, and along margins of the AGOE.
restoration ponds. Generally, less than ideal conditions were encountered with turbid brown or green water present in most locations. Emergent aquatic vegetation further complicated the surveys by limiting access to aquatic features and biota in numerous locations.

Dip nets were utilized to confirm the identification of species observed and to reach into deeper water in the survey areas. Nomenclature and identifications follow Hawai‘i’s Native and Exotic Freshwater Animals (Yamamoto and Tagawa, 2000), Shore Fishes of Hawai‘i (Randall, 2010), and Hawai‘i’s Sea Creatures: A Guide to Hawai‘i’s Marine Invertebrates (2006). Algal samples were collected for microscopic identification from four locations: the segment of open water at Wai‘au‘ia, a small branch of Kahanale Stream, Maunawili Stream near the restoration ponds, and from near the southern end of the levee.

Aquatic species observed in Kawaihui-Hāmākua Marsh Complex during this survey or previously reported from the two wetlands (USACE, 1992; Drigo et al., 1982; Smith, 2008) and adjacent streams (AECOS, 2013a; 2013b; 2013c; 2016) and canals (AECOS, 1992a; 1992b) are listed in Table 6. We do not provide abundance codes because the marsh complex is so vast that it would be difficult to accurately assess even relative abundances.

Results

Table 6 lists the aquatic fauna (with primitive plants, but not vascular plants) observed or previously recorded (over a two decade period) in the Project area. Our biological sampling locations represent only a fraction of the area occupied by Kawaihui, however, despite the long list of animals known from Kawaihui-Hāmākua Marsh Complex, most of the recorded animals occur in the flowing waters of streams and canals leading into or away from the marsh. A body of water covered by a layer of peat is (except for bacteria) biologically dead. Without light penetration, oxygen cannot be generated by aquatic algae and the subsurface of the wetland supports no invertebrates (such as aquatic insects and prawns) or vertebrates (such as fishes) over most of its area.

Blackchin tilapia (Sarotherodon melanotheron) and molly (Poecilia salvatoris/mexicana hybrids) are the most abundant fishes in the marsh complex and associated waterways. Both species were observed at most of the 2017 survey locations. However, a freshwater “rice-paddy” eel (Monopterus albus) inhabits the peat and muck to an unknown extent beyond the boundaries of open water. Capable of surviving in low-oxygen marsh environments, the numbers present in Kawaihui could be high. Apple snail (Pomacea canaliculata) is also observed commonly in marsh and restoration pond waters. The snail prefers calm or slow flowing water (Figure 8) and deposits bright pink egg
Table 5. List of aquatic species observed or reported from Kawaihui-Hāmāku Marsh Complex, tributary streams, and canals.

<table>
<thead>
<tr>
<th>phylum, class, order</th>
<th>family</th>
<th>species</th>
<th>common name</th>
<th>status</th>
<th>id code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>bacteria</strong></td>
<td>cyanobacteria, cyanophyceae, nostocales</td>
<td>Oscillatoria sp.</td>
<td>indet. worm</td>
<td>nat</td>
<td>&lt;4&gt;</td>
</tr>
<tr>
<td><strong>algae</strong></td>
<td>charophyta, conjugatophytaceae, zygnamales</td>
<td>Spirogyra sp.</td>
<td>--</td>
<td>&lt;10&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>invertebrates</strong></td>
<td>porifera, demospongiae, hadromerida</td>
<td>variable terpion</td>
<td>nat</td>
<td>&lt;10&gt;e</td>
<td></td>
</tr>
<tr>
<td></td>
<td>platyhelminthes</td>
<td>indet. flatworm</td>
<td>--</td>
<td>&lt;4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>annelida, hrudinea</td>
<td>fish leach</td>
<td>--</td>
<td>&lt;3,4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rynchobdellida, piscicolida</td>
<td>Aestabulidea albidovesc-ulcata Moore</td>
<td>--</td>
<td>&lt;10&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>annelida, errantia, phyldocida</td>
<td>indet. worm</td>
<td>nat</td>
<td>&lt;4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nereidida</td>
<td>indet. worm</td>
<td>nat</td>
<td>&lt;4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>syllidae</td>
<td>indet. worm</td>
<td>nat</td>
<td>&lt;4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>exogyne vermegnae claparedae</td>
<td>worm</td>
<td>nat</td>
<td>&lt;3&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>typsylidae sp.</td>
<td>worm</td>
<td>nat</td>
<td>&lt;4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>annelida, oligochaeta</td>
<td>indet. worm</td>
<td>nat</td>
<td>&lt;4&gt;</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. continued.

<table>
<thead>
<tr>
<th>phylum, class, order</th>
<th>family</th>
<th>species</th>
<th>common name</th>
<th>status</th>
<th>id code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>annelida, sedentaria, canali palpata, sabelididae</strong></td>
<td>unidentified</td>
<td>--</td>
<td>--</td>
<td>&lt;3,4&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>spionidae</strong></td>
<td>picopomatus enigmaticus fawel</td>
<td>Australian tube worm</td>
<td>nat</td>
<td>&lt;3,4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malscoceros sp.</td>
<td>--</td>
<td>--</td>
<td>&lt;3,4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>streblocosos benedicti webster</td>
<td>--</td>
<td>--</td>
<td>&lt;3,4&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>annelida, sedentaria, scolecidida, capitellidae</strong></td>
<td>unidentified</td>
<td>worm</td>
<td>--</td>
<td>&lt;3,4&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>captellos capitata fabricius</td>
<td>worm</td>
<td>--</td>
<td>&lt;3,4&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>mollusca, bivalvia, pteroidea</strong></td>
<td>isognomidae</td>
<td>isognomon californicum grovere</td>
<td>black purse shell</td>
<td>end</td>
<td>&lt;10&gt;</td>
</tr>
<tr>
<td></td>
<td>isognomon perna linnaeus</td>
<td>brown purse shell</td>
<td>ind</td>
<td>&lt;10&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>mollusca, bivalvia, veneroida</strong></td>
<td>corbiculidae</td>
<td>corbicula rugosa o. f. müller</td>
<td>Asian clam</td>
<td>nat/inj</td>
<td>&lt;10&gt;</td>
</tr>
<tr>
<td></td>
<td>mollusca, gastropoda, architaenio glossa</td>
<td>amphullaridæ</td>
<td>Pomacea canaliculata lamark</td>
<td>apple snail</td>
<td>nat/inj</td>
</tr>
<tr>
<td></td>
<td>viviparidae</td>
<td>Cypangopodula chinensis malleata</td>
<td>Chinese mystery snail</td>
<td>nat</td>
<td>&lt;10&gt;</td>
</tr>
<tr>
<td></td>
<td>mollusca, gastropoda, basommataphora</td>
<td>physidæ</td>
<td>Physa virgata Gould</td>
<td>pond snail</td>
<td>ind</td>
</tr>
<tr>
<td></td>
<td>mollusca, gastropoda, neotaenio glossa</td>
<td>cerithidæ</td>
<td>Cerithium zebrum kiener</td>
<td>zebra horn</td>
<td>ind</td>
</tr>
<tr>
<td></td>
<td>littorinidae</td>
<td>Littorina pintada wood</td>
<td>pipipi kōlea; dotted periwinkle</td>
<td>ind</td>
<td>&lt;10&gt;</td>
</tr>
<tr>
<td></td>
<td>thiaridae</td>
<td>unidentified</td>
<td>melanoid snail</td>
<td>nat</td>
<td>&lt;1,3,4&gt;</td>
</tr>
<tr>
<td></td>
<td>melanosoxa tuberculata müller</td>
<td>red-rimmed melania</td>
<td>nat</td>
<td>&lt;5,9,10&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>taresia granifera lamark</td>
<td>quilted melania</td>
<td>nat</td>
<td>&lt;9,10&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>vermetidæ</strong></td>
<td>serpulaxis variabilis hadfield &amp; kay</td>
<td>variable worm snail</td>
<td>ind</td>
<td>&lt;10&gt;</td>
<td></td>
</tr>
</tbody>
</table>
### Table 5. continued.

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>Common name</th>
<th>Status</th>
<th>ID Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MOLLUSCA, GASTROPODA, (\text{N}ERITOPSIS)A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NERITIDAE</strong></td>
<td><em>Nerita piacea</em>  Reclus</td>
<td>End?</td>
<td>&lt;10&gt;e</td>
</tr>
<tr>
<td><strong>MOLLUSCA, BIVALVIA, (\text{O}STREID)A</strong></td>
<td><em>Pipiz; black nereite</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OSTREIDAE</strong></td>
<td><em>Crassostrea gigas</em> Thunberg</td>
<td>Nat</td>
<td>&lt;10&gt;e</td>
</tr>
<tr>
<td><strong>ARTHROPODA, MAXILLOPoda, (\text{C}IRRIPEP)(\text{IA})</strong></td>
<td><em>Japanese oyster</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Balanidae</strong></td>
<td><em>Amphibalanus ichthyopterus</em></td>
<td>Ind</td>
<td>&lt;3&gt;</td>
</tr>
<tr>
<td><strong>ARTHROPODA, MALACOSTRACA, AMPHIPoda,(\text{Ind})</strong></td>
<td><em>Amphipods</em> Draynor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AORIDAE</strong></td>
<td><em>Grandidierella marina</em> J. L. Barnard</td>
<td>--</td>
<td>&lt;3&gt;</td>
</tr>
<tr>
<td><strong>COROPHIDIA</strong></td>
<td><em>Complectum bacchi Shoemaker</em></td>
<td>--</td>
<td>&lt;3,4&gt;</td>
</tr>
<tr>
<td><strong>ARTHROPODA, MALACOSTRACA, DECAPoda,(\text{ATyID})A</strong></td>
<td><em>Ateoda</em> J. W. Randall</td>
<td>End</td>
<td>&lt;1,9&gt;</td>
</tr>
<tr>
<td><strong>CAMPARIDAE</strong></td>
<td><em>Neocardiina denticulata</em> Kemp</td>
<td>Nat</td>
<td>&lt;5,89,10&gt;</td>
</tr>
<tr>
<td><strong>Grapsidae</strong></td>
<td><em>Prosobranchus</em> darkii Girard</td>
<td>Nat</td>
<td>&lt;1,2,5,6&gt;</td>
</tr>
<tr>
<td>*<em>Grapsus tenuicrustatus</em> Herbst</td>
<td><em>Grapsus tenuicrustatus</em> Herbst</td>
<td>Ind</td>
<td>&lt;10&gt;e</td>
</tr>
<tr>
<td>*<em>Metapogonopsis thalae</em> Owen</td>
<td><em>Metapogonopsis thalae</em> Owen</td>
<td>Ind</td>
<td>&lt;3,4,10&gt;e</td>
</tr>
<tr>
<td>*<em>Pachygrapsus plicatus</em> Milne Edwards</td>
<td><em>Pachygrapsus plicatus</em> Milne Edwards</td>
<td>Ind</td>
<td>&lt;10&gt;e</td>
</tr>
<tr>
<td><strong>HEPPOLYTIDAE</strong></td>
<td><em>Scorpio mammora</em> Olivier</td>
<td>Ind</td>
<td>&lt;10&gt;e</td>
</tr>
<tr>
<td><strong>PALAEMONIDAE</strong></td>
<td><em>Macrobrachium grandimanus</em> J. W. Randall</td>
<td>End</td>
<td>&lt;1&gt;</td>
</tr>
<tr>
<td>*<em>Macrobrachium</em> J. C. Fabricius</td>
<td><em>Macrobrachium</em> J. C. Fabricius</td>
<td>Nat</td>
<td>&lt;1&gt;</td>
</tr>
<tr>
<td>*<em>Palaemonetes Dana</em></td>
<td><em>Palaemonetes Dana</em></td>
<td>Ind</td>
<td>&lt;1,10&gt;e</td>
</tr>
<tr>
<td><strong>PORTUNIDAE</strong></td>
<td><em>Thalassarche</em> H. Milne Edwards</td>
<td>Ind</td>
<td>&lt;1,3,4,10&gt;e</td>
</tr>
<tr>
<td>*<em>Podophthalmus vigi</em> J. C. Fabricius</td>
<td><em>Podophthalmus vigi</em> J. C. Fabricius</td>
<td>Ind</td>
<td>&lt;1&gt;</td>
</tr>
<tr>
<td>*<em>Portunus sanguiinodens</em> J. F. W. Herbst Fabricius</td>
<td><em>Portunus sanguiinodens</em> J. F. W. Herbst Fabricius</td>
<td>Ind</td>
<td>&lt;1&gt;</td>
</tr>
<tr>
<td><strong>Scylla serrata Forskål</strong></td>
<td><em>Scylla serrata Forskål</em></td>
<td>Nat</td>
<td>&lt;1,3,10&gt;e</td>
</tr>
</tbody>
</table>

---

### Table 5. continued.

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>Common name</th>
<th>Status</th>
<th>ID Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XANTHIDAE</strong></td>
<td><em>Pilodus areolatus</em> H. Milne Edwards</td>
<td>areolated xanthid crab</td>
<td>Ind</td>
</tr>
<tr>
<td><strong>ARTHROPODA, (\text{I}N)SECTA (\text{O})DONATA</strong></td>
<td><em>Ichthura peeta Hagen</em></td>
<td>fragile forktail</td>
<td>Nat</td>
</tr>
<tr>
<td><strong>COENAGRIONIDAE</strong></td>
<td><em>Ischnura rubripes Selys</em></td>
<td>Rambur’s forktail</td>
<td>Nat</td>
</tr>
<tr>
<td><strong>LIBELLULIDAE</strong></td>
<td><em>Anax annuii Drury</em></td>
<td>common green darner</td>
<td>Nat</td>
</tr>
<tr>
<td>*<em>Crococithis servita</em> Drury</td>
<td><em>Crococithis servita</em> Drury</td>
<td>scarlet skimmer</td>
<td>Nat</td>
</tr>
<tr>
<td>*<em>Orthemis ferruginea</em> Fabricius</td>
<td><em>Orthemis ferruginea</em> Fabricius</td>
<td>roseate skimmer</td>
<td>Nat</td>
</tr>
</tbody>
</table>

**FISHES**

**CHORDATA, TELEOSTEI, \(\text{A}\)ULOPHORMES**

*Salarias gnarii* Quoy and Gaimard | slender lizardfish | Ind | <1,10>e |

**CHORDATA, TELEOSTEI, CYPRINIDONTIFORMES**

*Poecilia sp.* | indet. molly | Nat | <2,3,4,6,10> |
*Gambusia affinis* Baird | mosquito fish | 78.9, 10> |
*Poecilia latipinnia* Leveur | salam molly | Nat | <3,4> |
*Poecilia* sp. hybrid complex | Shortfin molly | Nat | <5,10> |
*Poecilia reticulata* Peters | rainbow guppy | Nat | <5,7,8> |
*Xiphophorus helleri* Heckel | green swordtail | Nat | <5,7> |
*Xiphophorus maculatus* Günther | platy | Nat | <1,2> |

**CHORDATA, TELEOSTEI, \(\text{C}IRRIPEP\)\(\text{IA}\)**

**COBITIDAE**

*Mioguns anguillacaudatus* Cantor | dojo | Nat | <1> |

**CYPRINIDAE** | *Cyprinus carpio* Linnaeus | carp | Nat | <1,2,10> |

**CHORDATA, TELEOSTEI, \(\text{G}\)ONORYCHIFORMES**

**CHANIDAE**

*Chanos chanos* Forskal | awai | Ind | <2> |

**CHORDATA, TELEOSTEI, \(\text{M}U\)GILIFORMES**

**MUGILIDAE**

*Mugil cephalus* Linnaeus | ‘ama’ama | Ind | <1,4,10>e |
## Table 5. continued.

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHORDATA, TELEOSTEI, PERCIFORMES</strong></td>
<td>Acanthurus nigrofasciatus</td>
<td>black surgeonfish</td>
<td>Ind</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>ACANTHURIDEAE</strong></td>
<td>Acanthelepis oxycephala</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>EUPHAEIDAE</strong></td>
<td>Euphasiscus frigida</td>
<td>black icefish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>PERICOTIDAE</strong></td>
<td>Pericottus marmoratus</td>
<td>mottled perch</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>GOBYIDAE</strong></td>
<td>Gobius antarcticus</td>
<td>antarctic goby</td>
<td>Ind</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>MURIDAE</strong></td>
<td>Mus musculus</td>
<td>house mouse</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>

### Biological Surveys

**KAWAINUII-HĀMĀKUA MARSH COMPLEX**

**Biological Surveys**

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>SPECIES</th>
<th>COMMON NAME</th>
<th>STATUS</th>
<th>ID CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POMACENTRIDA</strong></td>
<td>Pomacentrus nigrofasciatus</td>
<td>black ocellate surgeonfish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
<tr>
<td><strong>Serranidae</strong></td>
<td>Serranidae</td>
<td>serranid fish</td>
<td>End</td>
<td>&lt;10&gt; e</td>
</tr>
</tbody>
</table>
Table 5. continued.

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>Species</th>
<th>Common name</th>
<th>Status</th>
<th>ID Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>AVIS, ANSERIFORMES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anas platyrhynchos Linnaeus</td>
<td>Mallard duck</td>
<td>End</td>
<td>&lt;10</td>
</tr>
<tr>
<td></td>
<td><em>Himantopus mexicanus knudsen</em></td>
<td>Hawaiian Stilt; ae'o</td>
<td>End</td>
<td>&lt;10</td>
</tr>
<tr>
<td></td>
<td><strong>AVIS, CHARADRIIFORMES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fulica ariel Peale</td>
<td>Hawaiian Coot; 'ae'ke'ai'o</td>
<td>End</td>
<td>&lt;10</td>
</tr>
<tr>
<td></td>
<td>Gallinula chloropus sandvicensis Streets</td>
<td>Hawaiian Gallinule; 'alae'ula</td>
<td>End</td>
<td>&lt;10</td>
</tr>
<tr>
<td></td>
<td><strong>AVIS, PELECANIFORMES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nycticorax nycticorax hoactli Linnaeus</td>
<td>Black-crowned Night Heron; 'auku'u</td>
<td>End</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

**LEGEND TO TABLE 5**

Status categories:
- **End** - Endemic - species uniquely native to the Hawaiian Islands.
- **Ind** - Indigenous - species native in Hawai‘i and elsewhere.
- **Nat** - Naturalized - non-native species introduced to Hawai‘i intentionally or accidentally.
- **Inj** - Injurious - species known to be harmful to agriculture, aquaculture, indigenous wildlife or plants, or constitute a nuisance or health hazard (DLNR, 2015)

**ID codes:**
1. reported as occurring in Kawainui Marsh in Drgot et al. (1992) and/or USACE and CCH (1992), as cited in WOA (1994).
2. reported as occurring in Kawainui Marsh (Smith, 2000).
3. reported as occurring in Kawainui Canal in (AECOS, 1992a).
4. reported as occurring in Kawainui Canal in (AECOS, 1992b).
5. reported as occurring in Manawili Stream in (AECOS, 2002).
6. reported as occurring in Komohana Stream in (AECOS, 2013a).
7. reported as occurring in an unnamed tributary to Manawili Stream in (AECOS, 2013b).
8. reported as occurring in an unnamed tributary to Maikawai Stream in (AECOS, 2013c).
9. observed in unnamed tributary to Kahana Iki (750 ft ASL) or Makawai Stream (95 ft ASL); (AECOS, 2016).
10. observed in present survey
6. denotes species found in the estuarine reaches of Pelemau or Kaelepuu channels

**Biological Surveys**

masses on emergent vegetation or other substrates. Rambur’s forktail damselfly (Ischnura ramburii) and scarlet skimmer dragonfly (Crocothemis servilia) are present in most locales skimming the surface of water or perching on emergent vegetation. An indigenous dragonfly, pinao (Anax junius) and the roseate skimmer (Orthemis ferruginea) are also observed regularly in the marsh complex.

The spring fed auwai near Ulupō Heiau State Historic Site hosts several naturalized aquatic species. Mosquitofish (Gambusia affinis), rainbow guppy (Poecilia reticulata), unidentified armored catfish (Loricariidae), red-rimmed melania (Melanoides tuberculata), crayfish (Procambarus clarkii), and marine toad (Rhinella marina) tadpole inhabit the auwai above its entry into the marsh. In nearby areas of the marsh, similar species are extant, with blackchin tilapia and apple snail also present. The fragile forktail (Ischnura pumila), Rambur’s forktail, and scarlet skimmer fly just above the marsh, their offspring likely in the water below.

The open water in the marsh next to Nā Pōhaku o Hawa‘inae is home to a molly (Poecilia sp.), apple snail, tilapia, and pond snail (Physa virgata). Fragile forktail, Rambur’s forktail, roseate skimmer, and scarlet skimmer fly above the open water and aquatic vegetation at nearby.

The marsh vegetation near a newly installed (but not presently used) USGS gauge station (location shown in Fig. 6) is dense, allowing very limited observations of aquatic biota. Apple snail is the only species observed in the area. The ditch near the model airplane park and Kapa‘a Stream at Kapa‘a Quarry Rd. are overgrown with vegetation and only moly are noticeable in these waterways. The Black-crowned Night Heron or ‘auku‘u (Nycticorax nycticorax hoactli) is conspicuous along the margins of the stream and marsh.

The open water of the channel along the marsh-side of the levee is regularly utilized by ‘alae‘ula (Hawaiian Gallinule; Gallinula chloropus sandvicensis). Blackchin tilapia, molly, and apple snail are visible from the bank. Chinese catfish (Clarias fuscus) is present in deeper water. The southern end of the levee hosts Chinese catfish, indeterminate juvenile poecilids, and apple snail. Filaments of the cyanophyte, Oscillatoria sp, grow attached to aquatic vegetation at this end of the levee.

The open water area at Waipua‘a has dark colored water and, as elsewhere, blackchin tilapia and molly. ‘Alae‘ula and Mallard duck (Anas platyrhynchos) swim across the surface, while the bottom of the waterway is covered in a thick mat of a green alga in the genus, Rhizoclonium.
The flooded area off Mokulana peninsula has slow, shallow flow with a surface film of debris (Figure 8). Juvenile poeciliids and apple snail are the only species readily observed. A green alga, *Syprosyr* sp., grows densely in shallow pools and Rambur’s fottail flies nearby. Chinese mystery snail (*Opogona philippinensis* or *O. chinensis malleata*) can be seen in the shallows of Kahana Stream further upslope under the Kalanianaole Highway Bridge.

The HDLNR restoration ponds were filled or partially filled with turbid brown water at the time of our survey. Apple snail eggs line the edges of some ponds. Molly, red-eared slider (*Trachemys scripta elegans*), and American bullfrog (*Lithobates catesbeianus*) are present in the ponds. Native birds—*’ale‘ula, ‘alae ke‘oke‘o, ‘auku‘u, and ae‘o* (Hawaiian stilt; *Himantopus mexicanus knudseni*)—are present in or around most of these ponds. Sheet flow of the marsh (and Kahana Stream) is visible just to the west of the restoration ponds. Here, juvenile poeciliids and apple snail are visible in the flow. Scarlet skimmer and Rambur’s forktaill skim the water and rest on nearby emergent vegetation.

The segment of Mauanwili Stream that flows between the restoration pond areas is home to a numerous banded jeweled cichlid (*Hemichromis eikonatus*). This is the only location in the survey area where ubiquitous blackchin tilapia or molly are not the most abundant fish species. Bronze corydora (*Corydoras aeneus*), Asian clam (*Corbicula fluminea*), pisoa, globe skimmer dragonfly (*Pantala flavescens*), crayfish, American bullfrog, red eared slider, and a few large koi (*Cyprinus carpio*) are present in the stream at this location as well.

The open waters of Hāmākua Marsh are dominated by blackchin tilapia and molly with few other species present. Native birds (*’ale‘ula, ‘alae ke‘oke‘o, ‘auku‘u, and ae‘o*) are quite abundant in the pickleweed (*Batr maritima*), the open water of the marsh and spend a surprising amount of time in grass along the shore and in the parking lot of the Windward Town and Country Shopping Center.

Downstream from Hāmākua Marsh in the canal leading to the nearby coastal waters of Kalua Bay, the aquatic biota assemblage present comprises species typical of nearshore marine waters. *Manini (Acanthurus triostegus sandvicensis)*, *mamo* (*Abdominalis abudesdyf*), *mullet* (*Mugil cephalus*), and *paulu* (*Acanthus blochii* and *Acanthus xanthopterus*) swim in deeper water of the canals. Samoan crab (*Scylla serrata*) and blue-pincher crab (*Thalmita crenata*) inhabit the sandy bottom, whereas *‘akauhi* (*Metopus grapsus thuhukar*) clamber along the banks.

The endemic *‘o‘opu akupa* (*Eleotris sandwicensis*) was observed in Ka‘elepulu Stream near Kalua Beach Park hiding among clumps of seaweed on the bottom near several seahorse (*Hippocampus hiltoni*).

**Discussion**

Three endemic amphidromous *‘o‘opu* (*Eleotris sandwicensis, Awaous stamineus, and *Stenoglossus hawaiianus*), and two endemic crustaceans (*Atysida bisukata* and *Macrobrachium grandmanu*) have been reported from Kawaihui Marsh Complex. These endemic animals are amphidromous, meaning eggs are laid in freshwater streams, drift into the ocean as larvae, and migrate back into freshwater to grow into adults (Ford and Kinzie, 1982; Kinzie, 1998). The *‘o‘opu nākea* (*Awaous stamineus*) which migrates back downstream to reproduce has been recorded as occurring in Mauanwili Stream upstream of Kawaihui Marsh (*AECOS, 2002; 2016*). Similarly, the native *‘opae* has been observed in both Makawao Stream and an unnamed tributary to Kahana Stream, indicating migration...
through the marsh must occur, at least on rare occasions. However, restoring an open water migratory route through marsh would be beneficial (WOA, 1994).

No fish or invertebrates protected by State of Hawai‘i Administrative Rules (DLNR, 1998, 2007), or the Endangered Species Act and its amendments (USFWS, 2008, 2014) were observed in the Kawaihū-Hāmākua Marsh Complex.

The Oceanic Hawaiian damselfly (*Megalagrion oceanicum*) and Blackline Hawaiian damselfly (*Megalagrion nigrohamatum nigrolineatum*) are reported (Parham et al, 2008) to be present in the Kawaihū watersheds. The Oceanic Damselfly prefers cascades and steep runs capable of producing standing waves while the Blackline Hawaiian damselfly occurs in the slow sections or pools along mid-reach and headwater sections of perennial, upland streams and in seep-fed pools along overflow channels bordering such streams (USFWS, 2012). These two damselfly species prefer different stream habitats, but are limited to stream reaches without naturalized predatory fishes. Because these habitats do not exist in or near the Kawaihū-Hāmākua Marsh Complex, Project work will have no effect on populations or habitats of either species.

Improvements planned for the marsh complex do not include significant in-water work but rather various low impact developments on uplands adjoining the marsh. As proposed, these improvements pose no direct or indirect threat to native aquatic species. The removal of non-native vegetation has been proposed in some locations to create more open water for endangered waterbirds, an action essential to retrieve value of the marshland to waterbirds. Such improvements would also benefit native and non-native aquatic animals by enhancing the oxygen content of the water.

Critical Habitat and Jurisdictional Waters

No federally designated Critical Habitat for any plant or animal species currently protected under the endangered species act of 1973 as amended occurs within the Kawaihū-Hāmākua Marsh Complex (USFWS, 2002). There is no equivalent statute under state law. Critical habitat for the Hawaiian monk seal (*Monachus schauinslandi*) in nearby coastal waters begins seaward of the mouth of Ka‘elepulu Stream.

Waters of the U.S. (jurisdictional waters) are surface waters that come under federal jurisdiction as authorized by the Clean Water Act (CWA) and the Rivers and Harbors Act (RHA). Authority over these waters is granted to various federal agencies, including the U.S. Environmental Protection Agency (USEPA), with the U.S. Army Corps of Engineers (USACE) having permit authority for actions that impact jurisdictional waters. The Hawai‘i Department of Health (HDOH) issues water quality certifications (WQCs) for projects permitted in jurisdictional waters.

Jurisdictional waters include all tidal waters and a subset of streams (both perennial and ephemeral), lakes, reservoirs, and wetlands. At the present time, jurisdictional determinations are made following a 2007 Army-EPA joint memorandum on coordination (USACE and Dept of Army, 2007), as modified by a January 2008 USACE memorandum (USACE, 2008). Any part of the survey area that is tidal, or is a stream, canal, or wetland is considered to be jurisdictional waters. Any part of the Project that contemplates construction or dredging in these waters would require a permit from USACE and a WQC from HDOH. A permit is not required to create a master plan of projects, but implementation of projects recommended in the plan may require jurisdictional determinations and permits.

Assessment

Kawaihū Marsh is so large, that management of it as a wildlife refuge is extremely difficult and expensive. A few of the many problems are discussed here and point to the need for a serious management effort on the part of state government. Those persons that would argue the marsh is best left alone, do not understand the dynamics presently at play in this environment. At one time, this wetland was temporary home to thousands of migrating water fowl. In 1880, Bowser (cited in Kelly & Nakamura, 1981) described the presence of a large lake with “wild duck and the famous Hawaiian goose [nene]... to be found here in abundance”. Such is no longer the case and Kawaihū has slowly declined as a wildlife refuge of any consequence. Observations from the shore and high points at Nā Pōhaku o Hauwihine of the existing open waters for a more than twenty-year period by the senior author has suggested a steady decline in the number of visiting (migratory) and resident waterfowl in keeping with a downward trend seen in migratory waterfowl statewide (Englis, Pyle, & David, 2004). Indeed, to date in 2017, despite once weekly viewing, only one waterbird has been observed on one occasion in ponds visible from this vantage point. As a historic note, the rock formation at Nā Pōhaku is known in the birding community as “Krüger’s rock”, a favored viewing place for waterbirds by the ornithologist, Eugene Krüger. The closest pond (natural open water feature) to the rock no longer even exists (now covered by vegetation).

* These authors relate that in the 1950s, the number of migratory ducks visiting the Hawaiian Islands was documented at over 10,000 annually (Medeiros, 1958) and by the mid-1990s was under 1000 and declining.
The nature of marshland makes assessing water quality impacts created by activities within or beside the marsh difficult to assess. A separate report (AECOS, 2017) addresses various aspects of the project and attempts to put the impacts of the proposed construction in perspective. However, the impacts on water quality may be significant because of the highly productive nature of the marsh. Marsh ecosystems are important habitats for a variety of plants and animals, including many species that are considered endangered or threatened. The proposed development could potentially affect these species and their habitats.

A new assessment of water quality must be conducted to determine if the area's water quality has changed significantly since the previous assessment. This assessment should be conducted in collaboration with local authorities and other relevant organizations to ensure that the findings are useful and actionable.


Hawai‘i Department of Land and Natural Resources (HDLNR). 2011. Hawai‘i Administrative Rules, Title 13, Department of Land and Natural Resources, Subtitle 1 Administration, Chapter 5: Conservation District. 72 pp.

_____. 2015. Hawai‘i Administrative Rules, Title 13, Department of Land and Natural Resources, Subtitle 124, Exhibit 5. List of Species of Injurious Wildlife in Hawaii. Dated 11/1/14. 3pp


_____. 2003 Final environmental assessment: Kawaiinui Marsh Pathway. Prep. For City and County of Honolulu, Department of Transportation Services. 76 pp plus Appendices .


Biological Surveys

KAWAINUI-HAMAKUA MARSH COMPLEX


U.S. Environmental Protection Agency (USEPA) and Department of the Army. 2007. Clean Water Act jurisdiction following the U.S. Supreme Court’s decision in Rapanos v. United States & Carabell v. United States. 12 pp.


Biological Surveys

Kawaihui Marsh Complex

This Page Intentionally Left Blank
APPENDIX

WATER QUALITY CONSIDERATIONS FOR THE KAWAINUI-HĀMĀKUA MARSH COMPLEX
MASTER PLAN ENVIRONMENTAL IMPACT STATEMENT - October 2017

Prepared by: AECOS, Inc.
Introduction

Kawainui-Hāmākua Marsh Complex is the largest wetland feature in the State of Hawai‘i, covering an area of about 822 acres (HHF, 2016) located on windward O‘ahu in the ahupua‘a of Kailua. Kawainui Marsh is about 800 acres in area and is bounded by Kailua Road, Kapa‘a Quarry Road, and a flood control structure known locally as the Kailua levee (Figure 1). The upper drainage basin is Maunawili Valley, and the marsh is the receiving body for this large drainage, intercepting surface flow and discharging it eventually into a brackish, man-made canal connected to the ocean near the western end of Kailua Bay (Guinther et al., 2006). The total Kawainui Watershed drainage is about 7,215 acres (HDAR & Bishop Museum, 2008).

The primary source of continuous freshwater input enters at the south end of the marsh via two streams: Kahanaike and Maunawili. Maunawili Stream is the larger stream, draining some 3,583 acres. Kahanaike Stream drains approximately 1,210 acres (Guinther et al., 2006). Other freshwater inputs are from springs and interrupted or intermittent streams (e.g., Kapa‘a Stream). Water leaves the marsh primarily as multiple small outflows feeding into a canal that parallels, and is inside of (muka‘i), the levee along the eastern margin. This canal is an extension of Oneawa Canal (also known as Oneawa Channel).

that drains into the northern part of Kailua Bay and is estuarine. Outside (mauaua) of the levee, a second canal (Kawainui Stream) drains eastward past Hāmākua Marsh into the ocean at Kailua Beach Park via Kaelepu Stream. This canal intercepts ground water seepage from the marsh and the Kailua residential neighborhood (Coconut Grove) developed between the marsh and Kailua Beach, but is otherwise not directly connected to the marsh or Kawainui Canal (Guinther et al., 2006).

Hāmākua Marsh is approximately 22 ac in area and is separated from the southeast corner of Kawainui Marsh by Kailua Road. The marsh is bounded by Pu‘u‘ohu hillside on the west and Kawainui Stream (Canal) on the east. Kawainui Stream is an estuarine waterbody and drains via Kaelepu Stream to Kailua Bay.

Proposed Project

The Kawainui-Hāmākua Marsh Complex Master Plan (herein referred to as the "Project") is both a resources management plan and a physical development plan with four components:

- Natural resources restoration;
- Cultural practices and stewardship;
- Education; and
- Outdoor recreation

The Project area comprises 986 acres of state-owned land. Approximately 90 percent of this land, 890 acres, is under the jurisdiction of the Division of Forestry and Wildlife (DOFAW) and 96.6 acres are under the jurisdiction of the Division of State Parks. Wetlands comprise approximately 748 acres, about 75 percent of the Project area. The Project has been divided into five subareas: Subarea A, which encompasses all of Kawainui Marsh proper; three subareas (B, C, and D) of upland adjacent to the marsh on all sides, and Subarea E: Pu‘u‘ohu-Hāmākua Marsh (Figure 1). Specific development plans are indentified for each subarea of the Master Plan area as these are discussed below.

This report addresses potential Project effects to water quality in Kawainui and Hāmākua marshes and is divided into two sections: Project plans and potential effects to water quality in Kawainui Marsh and plans and effects to Hāmākua Marsh, which is not physically connected to Kawainui Marsh.
Kawainui Marsh Water Cycle

Rainfall is the ultimate source of water for Kawainui Marsh and arrives by several means: direct rainfall on the marsh, stormwater runoff from land areas peripheral to the marsh, and inputs from streams, springs, and seeps within the Kawainui Watershed. Water loss or output from the marsh is mainly by evapotranspiration (ET) and outflow to the ocean via Oneawa Canal. These inputs and outputs, together with complex physical, chemical, and biological interactions, influence water quality characteristics within the marsh (AECOS, 1981; M&E, 1990; Guinther et al., 2006). The primary focus of this report will be on rainfall and stream inputs to the marsh and effects of these inputs on marsh water quality, especially particulates (TSS) and nutrients as they may be affected by implementation of the Project (HIF, 2016).

No continuous long-term rainfall data are available for the Kawainui Watershed. Water input characteristics are therefore estimated from stream flow data for Maunawili Stream and average rainfall characteristics developed by USGS.

Figure 1. Subareas of Kawainui-Hāmākua Master Plan (after HIF, 2016).


(USGS, 2017.) Average daily stream flows (cubic feet per second [cfs]) are shown in Figure 2 for the five-year period between 1991 and 1995 (USGS, 1996) High flow peaks (called freshets) occur periodically and represent heavy storm effects, while smaller, more numerous peaks represent light and moderate rainfall effects on stream flow.

The U.S. Geological Survey (USGS) has developed general categories and ranges for intensity and frequency of various types of rainfall occurrence (Table 1). Knowing the number of days with rain (114 days) for nearby Kailua town (Weather Spark, 2017), allows for estimates of rainfall conditions throughout the year.

Maunawili Stream flow data have been rearranged in Figure 3 as a frequency distribution with rainfall categories super-imposed. Base flow (no rain) is typically between an average of 2 and 11 cfs and accounts for stream flow about 70 percent of the time. Base flow is sustained by stored rain water (groundwater) escaping as springs, and seeps. Light rainfall results in an increase from about 11 cfs to about 20 cfs. With heavier rains, stream flow increases rapidly.
Table 1. Average number of rain days in Kailua, O‘ahu and rainfall rates for selected rainfall categories (after USGS, 1996, 2017; Weather Spark, 2017).

<table>
<thead>
<tr>
<th>Shower Status</th>
<th>Rainfall (in/hr)</th>
<th>Number (days)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Rain</td>
<td>0.00 - 0.08</td>
<td>87</td>
<td>24</td>
</tr>
<tr>
<td>Light</td>
<td>0.08 - 0.40</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.41 - 50</td>
<td>7</td>
<td>2</td>
</tr>
</tbody>
</table>

Proposed Project infrastructure (buildings, roads, paths, etc.) may affect both the quantity of stormwater surface runoff and water quality flowing into Kawai‘ui Marsh. Potential runoff for each section within the subareas is estimated using the rational runoff equation method:

\[ Q = cIA \]

Where:
- \( Q \) = peak discharge in cubic feet per second (cfs);
- \( c \) = rational method runoff coefficient;
- \( i \) = rainfall intensity 0.4 inch/hour; and
- \( A \) = drainage area in acres.

For this analysis, building rooftops are assumed to be composed of non-porous materials, unless otherwise stated. Roads and parking lots could be constructed of compacted gravel, soil, or reinforced grass. For runoff analyses detailed herein, roads are assumed to be 12 ft wide and composed of gravel. Pedestrian paths are assumed to be 12 ft wide and composed of gravel, while foot trails are assumed to be 6 ft wide and composed of soil. It should be noted that the estimates for paths and trails are approximate and in the final design may be constructed of different materials which may slightly alter runoff estimates.

The analysis also assumes that all non-infrastructure upland areas in each subarea have been restored with vegetation (woodlands/ground cover) as described in the Plan (HHF, 2016). Since runoff from non-urban and agricultural lands in Hawai‘i typically does not occur until rainfall reaches about 0.25 inches, a storm event of 0.4 inches per hour has been selected to estimate Project-related runoff conditions. Finally, this analysis does not include potential improvements, such as low impact design (LID) features (e.g., bioswales, bioretention areas, porous pavements), or other measures that might significantly reduce storm runoff and any effects to water quality. That is, worst-case scenarios are presented for the selected rainfall event.

Subarea A - Kawai‘ui Marsh

Subarea A includes the entire wetland area of Kawai‘ui Marsh (Fig. 1). Project activities would focus on the removal of invasive vegetation and replacement with native vegetation. Existing invasives (California grass, cattail, etc.) would be removed along with dead vegetation using a mechanical excavator. This operation would result in temporary suspension of sediments in marsh water column, along with release (solubilization) of some sediment nutrients (nitrogen and phosphorus moieties). These activities would not change the quantity of sediments or nutrients within the marsh and, therefore, are not considered to have any long-term impact on the marsh.
Subarea B - Kahanaiki

Kahanaiki section of Subarea B is shown in Figure 4 and extends from the intersection of Kalania‘ole Highway and Kapa’a Quarry Road north for approximately 0.6 miles. Proposed improvements include: (1) ongoing upland reforestation; (2) upland drainage improvements and repairs; (3) pedestrian paths and foot trails with observation decks/outlooks; (4) visitor parking lot at south end; and (5) program staging area (IHF, 2016).

![Figure 4. Conceptual plan for Subarea B - Kahanaiki (after IHF, 2016).](image)

Runoff estimates for Kahanaiki subarea are shown in Table 2. Predicted runoff from paths and trails account for the majority of estimated infrastructure runoff—about 12 per cent of total estimated storm runoff. Ongoing reforestation and proposed drainage improvements will reduce storm runoff from existing conditions.

Table 2. Runoff estimates (cubic feet/hour) for Subarea B - Kahanaiki for a one hour 0.40-in storm event.

<table>
<thead>
<tr>
<th>Components</th>
<th>Area (acres)</th>
<th>Runoff (cfh)</th>
<th>Runoff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodlands/Grass</td>
<td>46.76</td>
<td>14309</td>
<td>87</td>
</tr>
<tr>
<td>Paths</td>
<td>0.99</td>
<td>607</td>
<td>4</td>
</tr>
<tr>
<td>Trails</td>
<td>1.35</td>
<td>1322</td>
<td>8</td>
</tr>
<tr>
<td>Parking/Staging</td>
<td>0.40</td>
<td>243</td>
<td>1</td>
</tr>
<tr>
<td>Building</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Road</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>49.50</td>
<td>16,481</td>
<td>100</td>
</tr>
</tbody>
</table>

Subarea B - Nā Pōhaku

Nā Pōhaku section of Subarea B of the Project is shown in Figure 5 and extends north from the Kahanaiki subsection along Kapa’a Quarry Road up to Nā Pōhaku o Hauwahine. Proposed improvements include: (1) ongoing upland reforestation; (2) upland drainage improvements and repairs; (3) pedestrian paths and foot trails with observation decks/outlooks; and (4) education center with parking for visitors along with traditional Hawaiian kauhale (village) complex.

Table 3. Runoff estimates (cubic feet/hour) for Subarea B - Nā Pōhaku for a one hour 0.40-in storm event.

<table>
<thead>
<tr>
<th>Components</th>
<th>Area (acres)</th>
<th>Runoff (cfh)</th>
<th>Runoff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodlands/Grass</td>
<td>52.61</td>
<td>22539</td>
<td>91</td>
</tr>
<tr>
<td>Paths</td>
<td>0.46</td>
<td>283</td>
<td>1</td>
</tr>
<tr>
<td>Trails</td>
<td>1.32</td>
<td>1376</td>
<td>6</td>
</tr>
<tr>
<td>Parking/Staging</td>
<td>0.34</td>
<td>211</td>
<td>1</td>
</tr>
<tr>
<td>Building</td>
<td>0.26</td>
<td>300</td>
<td>1</td>
</tr>
<tr>
<td>Road</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>55.00</td>
<td>24,709</td>
<td>100</td>
</tr>
</tbody>
</table>
Runoff estimates for Nā Pōhaku subarea area shown in Table 3 (above). Trails account for the largest percentage of improvement components runoff at about 6 percent. Traditional hale and/or halau construction will likely reduce building runoff below 1 percent.

Subarea B - Kapa’a

Kapa’a section of Subarea B is an upland area of former fill land shown in Figure 6. It encompasses the area north from Nā Pōhaku up to, but not including, the City & County model airplane park. Major concepts for this section include: (1) an area designated for native Hawaiian cultural practices, including several single-story buildings of traditional hale design; (2) pedestrian path along Kapa’a Quarry Road; and (3) re-establishing use of the vegetation processing area next to the model airplane park.

Runoff estimates for Kapa’a section are shown in Table 4. Buildings account for the largest percentage of runoff from improvement components at about 13 percent. Use of traditional hale and/or halau designs, with thatched roofing would likely reduce estimated runoff estimates in this section.
Subarea C - Kapa’a-Kalaheo

Kapa’a-Kalaheo Subarea C runs from north of the model airplane park to the intersection of Kapa’a Quarry Road and Mōkapu Boulevard and includes another 4.6 ac to the north of the intersection (Figure 7). It consists of an upland area along Kapa’a Quarry Road and a parcel adjacent to Oneawa Canal.

---

The major concepts for Kapa’a-Kalaheo subarea include: (1) continued upland reforestation work and drainage improvements along Kapa’a Quarry Road; and (2) passive recreational park which includes a parking lot, 3,600 sq. ft. building, and a canoe launch into Kawainui Canal.

Runoff estimates for Kapa’a-Kalaheo subarea are shown in Table 5. Parking accounts for the largest percentage of improvement components runoff at about 18 percent. Ongoing reforestation and proposed drainage improvements will reduce present storm runoff.

---

Table 5. Runoff estimates for Kapa’a-Kalaheo Subarea for a 0.40-in storm.

<table>
<thead>
<tr>
<th>KAPA’A-KALAHEO Components</th>
<th>Area (acre)</th>
<th>Runoff (cf/s)</th>
<th>Runoff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodlands/Grass</td>
<td>5.62</td>
<td>1720</td>
<td>74</td>
</tr>
<tr>
<td>Paths</td>
<td>0.07</td>
<td>42</td>
<td>2</td>
</tr>
<tr>
<td>Trails</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Parking/Staging</td>
<td>0.67</td>
<td>410</td>
<td>18</td>
</tr>
<tr>
<td>Building</td>
<td>0.14</td>
<td>164</td>
<td>7</td>
</tr>
<tr>
<td>Road</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6.50</strong></td>
<td><strong>2,336</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

---

Subarea D - Mokulana

Mokulana section of Subarea D at the upper end of the marsh is about 21.5 acres in size and encompasses several parcels situated between Kahanaik and
Maunawili streams and below Castle Medical Center (Figure 8, above). The concepts planned for this section include: (1) DOFAW’s Kawainui Management and Research Station; (2) pedestrian path connecting DOFAW’s station with Mokulana peninsula; and (3) parking and public recreation areas.

Runoff estimates for Mokulana subarea area are shown in Table 6. Roads account for the largest percentage of improvement components runoff at about 9 percent of total estimated runoff.

<table>
<thead>
<tr>
<th>MOKULANA Components</th>
<th>Area (acres)</th>
<th>Runoff (cfs)</th>
<th>Runoff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodlands/Grass</td>
<td>18.55</td>
<td>7949</td>
<td>78</td>
</tr>
<tr>
<td>Trails</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Parking/Staging</td>
<td>0.98</td>
<td>602</td>
<td>6</td>
</tr>
<tr>
<td>Building</td>
<td>0.34</td>
<td>395</td>
<td>4</td>
</tr>
<tr>
<td>Road</td>
<td>1.32</td>
<td>889</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21.50</strong></td>
<td><strong>10,149</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Subarea D - Ulupō Heiau

Most of the 28.9 ac of Ulupō Heiau State Historic Park (SHP) are located on the slope between Kawainui Marsh and urban development along Ka‘iwa Road (Figure 9). The following improvements are proposed for the 9 ac adjacent to the heiau: (1) restoration of the cultural landscape around the heiau that involves removing alien vegetation and replanting the area with Polynesian-introduced species; (2) constructing a small nursery to facilitate cultural landscape restoration; (3) construction of a traditional pole and thatch hālau for cultural demonstrations and interpretive gatherings; and (4) developing a trail system through the park and connecting with the path that would run along the east side of Kawainui Marsh.

Runoff estimates for Ulupō Heiau subarea area are shown in Table 7. Trails, staging area and building account for about 5 percent of total runoff for Ulupō Heiau subarea. Runoff may be reduced if a traditional thatched roof is planned.

Figure 9. Conceptual plan for Subarea D - Ulupō Heiau (after HHF, 2016).

<table>
<thead>
<tr>
<th>ULUPÔ HEIAU Components</th>
<th>Area (acres)</th>
<th>Runoff (cfs)</th>
<th>Runoff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodlands/Grass</td>
<td>42.38</td>
<td>18156</td>
<td>93</td>
</tr>
<tr>
<td>Paths</td>
<td>0.30</td>
<td>184</td>
<td>1</td>
</tr>
<tr>
<td>Trails</td>
<td>0.66</td>
<td>687</td>
<td>4</td>
</tr>
<tr>
<td>Parking/Staging</td>
<td>0.40</td>
<td>245</td>
<td>1</td>
</tr>
<tr>
<td>Building</td>
<td>0.12</td>
<td>140</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Road</td>
<td>0.14</td>
<td>94</td>
<td>&lt;1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>28.90</strong></td>
<td><strong>19,504</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Summary Runoff Estimates for Kawaihui

A summary of estimated runoff for Project-related infrastructure development in Kawaihui Marsh are shown in Table 8. Interestingly, trails and paths account for about 45 percent of estimated runoff attributable to infrastructure improvements. Runoff estimates are especially high for trails partly because they are assumed to be compacted soil ("dirt") trails with a high runoff coefficient. Runoff from both trails and trails would likely be reduced by implementing low impact design features.

Table 8. Summary of runoff (cfs) estimates from Project sections from a 0.40-in storm event due to proposed infrastructure development.

<table>
<thead>
<tr>
<th>Section</th>
<th>Paths</th>
<th>Trails</th>
<th>Parking</th>
<th>Building</th>
<th>Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kahanakai</td>
<td>607</td>
<td>1322</td>
<td>243</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nā Pōhaku</td>
<td>283</td>
<td>1376</td>
<td>211</td>
<td>300</td>
<td>0</td>
</tr>
<tr>
<td>Kapa'a</td>
<td>283</td>
<td>0</td>
<td>306</td>
<td>3006</td>
<td>531</td>
</tr>
<tr>
<td>Kapa'a Kalaeo</td>
<td>42</td>
<td>0</td>
<td>410</td>
<td>164</td>
<td>0</td>
</tr>
<tr>
<td>Mokulana</td>
<td>0</td>
<td>315</td>
<td>602</td>
<td>395</td>
<td>889</td>
</tr>
<tr>
<td>Ulupō Heiau</td>
<td>184</td>
<td>687</td>
<td>245</td>
<td>140</td>
<td>94</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1399</td>
<td>3700</td>
<td>2050</td>
<td>2055</td>
<td>1514</td>
</tr>
</tbody>
</table>

Estimated inputs for a 0.40 inch storm from stream flows, surface runoff and direct rainfall on the Kawaihui Marsh are shown in Table 9. A 0.40 inch storm occurs about 2 percent of the time (about 7 days per year) in the Kula area as shown in Table 1. Stream flow accounts for the majority of inputs; about 53 percent. Runoff from estimated Project infrastructure would account for about 0.3 percent of total estimated runoff, or 9845 cfs.

The amount of runoff due to proposed infrastructure additions would not have a measureable (detectable) effect on marsh water quantity, especially since it would occur in small quantities around much of the marsh perimeter. Further, it would not have a measureable effect on water quality unless this runoff was accompanied by high amounts of particulates (e.g., silt) and/or nutrients (nitrogen and phosphorus). Water quality conditions in the marsh and potential effects from project infrastructure are considered below.

<table>
<thead>
<tr>
<th>Discharge Source</th>
<th>Runoff Coefficient</th>
<th>Discharge (cfs)</th>
<th>Percent of total</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct rain</td>
<td>1.0</td>
<td>909,432</td>
<td>29.6</td>
<td>743</td>
</tr>
<tr>
<td>Stream input</td>
<td>0.28†</td>
<td>1,642,657</td>
<td>53.4</td>
<td>4793</td>
</tr>
<tr>
<td>Other runoff</td>
<td>0.28†</td>
<td>447,249</td>
<td>14.6</td>
<td>1465</td>
</tr>
<tr>
<td>Project baseline</td>
<td>various‡</td>
<td>64,349</td>
<td>2.1</td>
<td>198</td>
</tr>
<tr>
<td>Project infrastructure</td>
<td>various§</td>
<td>10,668</td>
<td>0.3</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>3,074,355</td>
<td>100</td>
<td>7,212</td>
</tr>
</tbody>
</table>

† based on DAR & Bishop Museum (2008). ‡ see individual estimates above

Kawaihui Marsh Water Quality

Kawaihui Marsh serves as a settling basin or sink for particulates, nutrients, and other potential pollutants introduced by stream discharges, storm water runoff, and direct rainfall. Particulates (turbidity and TSS), introduced during storm runoff and stream discharge, tend to settle out in the marsh basin. Introduced nutrients (nitrogen and phosphorus compounds) are converted into plant biomass by uptake or into ammonia by bacteria in the deep anoxic waters. Nutrients are also recycled from dead vegetation as well as released from bottom sediments. Indeed, it is this property of being a sink and providing a physical means of scrubbing pollutants or filtering runoff that is the ecological function of a coastal marsh.

Water circulation in Kawaihui Marsh is not well understood, but it is presumed to be linear from south to north. This directional flow is the result of continuous inputs from both Maunaewili and Kahanakai streams at the extreme south end and outflows via Oneawa Canal at the north end (Ghunther, et. al., 2006). Forces capable of generating contrary flows are unknown. A canal dredged† from about the center of the marsh due north to the vicinity of the model airplane field was intended to enhance flow towards the north end and outlets into Oneawa Canal, against a natural tendency to flow to the east and the original outlet into Kawaihui Stream now blocked by the Kula levee.

† After the January 1, 1988 flood of Coconut Grove, Kula.
Although older water quality data exist for Kawaihui Marsh stream inputs (Maunawili and Kahanaiki) and the marsh itself, these data are not utilized herein because wastewater treatment plants (WWTPs) once discharged to the marsh, exerting considerable influence on marsh water quality prior to 1988. Thus, only water quality measurements collected since removal of the four WWTP discharges are considered.

A summary of water quality data collected during two sampling events in March and April, 1989 (M&E, 1990; AECOS, 1992) are shown in Table 10. Station locations are shown in Figure 10. The most interesting trend in these data is the decrease in nitrate+nitrite concentrations and increase in total phosphorus concentrations as water moves from Maunawili and Kahanaiki stream in the south to a discharge into Oneawa Canal at the north end of the marsh. The decrease in nitrate+nitrite concentrations would be due to plant or bacteria uptake. Ammonia concentrations in the marsh represent an intermediate breakdown product of decaying organic nitrogen to ammonia and then to nitrite and nitrate taken up by marsh plant growth. The total phosphorus trend of increasing concentration from south to north probably represents recycling of this nutrient from decaying vegetation, especially at Station 8.

<table>
<thead>
<tr>
<th>DO sat [%]</th>
<th>pH</th>
<th>Turb. (NTU)</th>
<th>TSS (mg/L)</th>
<th>NH₄</th>
<th>NO₃+NO₂</th>
<th>Total N</th>
<th>Total P (ug P/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sta. 1</td>
<td>7.95</td>
<td>4.6</td>
<td>16</td>
<td>22</td>
<td>179</td>
<td>395</td>
<td>34</td>
</tr>
<tr>
<td>Sta. 2</td>
<td>7.71</td>
<td>4.6</td>
<td>6.9</td>
<td>15</td>
<td>199</td>
<td>327</td>
<td>40</td>
</tr>
<tr>
<td>Mean</td>
<td>7.88</td>
<td>4.6</td>
<td>13</td>
<td>20</td>
<td>184</td>
<td>378</td>
<td>36</td>
</tr>
</tbody>
</table>


Table 11 shows average results of 12 approximately monthly sampling events for input streams (Maunawili and Kahanaiki) and Kawaihui Marsh between March 2002 and May 2003 and provides a picture of annual conditions in the marsh. Station locations are shown above in Fig. 10. DO saturation and pH levels are lower on average in the marsh compared with stream inputs. This condition is mainly due to two factors: (1) absence of sunlight penetration for photosynthesis in the water column due to peat mats covering much of the surface of the marsh; and (2) high biological oxygen demand (BOD) of sediments and decaying organic matter further reducing DO concentration except at open water areas (Stas. 7 & 12). All nutrient concentrations in the marsh are notably high compared with stream inputs, with the exception of nitrate+nitrite; nitrite-nitrate being rapidly assimilated by plants, while other nutrients are high as a result of regeneration from decaying vegetation and organics in sediments.

Water quality samples were collected during three approximately monthly sampling events in Maunawili and Kahanaiki streams and 4 stations within the marsh between January 26 and March 10, 2017 and the results are shown in Table 12. DO saturation levels were very low throughout the marsh. Turbidity and TSS levels in the marsh were elevated compared with stream inputs. Nitrate-nitrite concentrations were mostly higher compared with Table 10 and...
Water Quality Assessment

11, but demonstrated a distinct decrease with distance from stream inputs, while total N and total P increased.

Table 11. Water quality results for 12 sampling events in Maunawili and Kahanakai streams and Kawaihui Marsh in 2002-2003 (Guinter et al., 2006).

<table>
<thead>
<tr>
<th>DO sat (%)</th>
<th>pH</th>
<th>Turb. (NTU)</th>
<th>TSS (mg/L)</th>
<th>NH₄</th>
<th>NO₂+NO₃</th>
<th>Total N</th>
<th>Total P (µg N/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sta. 1</td>
<td>61</td>
<td>7.68</td>
<td>6.9</td>
<td>6.0</td>
<td>3.1</td>
<td>103</td>
<td>287</td>
</tr>
<tr>
<td>Sta. 2</td>
<td>42</td>
<td>7.49</td>
<td>6.2</td>
<td>5.3</td>
<td>4.0</td>
<td>50</td>
<td>250</td>
</tr>
<tr>
<td>Mean</td>
<td>51</td>
<td>7.58</td>
<td>6.7</td>
<td>5.7</td>
<td>3.2</td>
<td>72</td>
<td>268</td>
</tr>
<tr>
<td>Sta. 5</td>
<td>2</td>
<td>6.77</td>
<td>17.6</td>
<td>16</td>
<td>23</td>
<td>1</td>
<td>754</td>
</tr>
<tr>
<td>Sta. 6</td>
<td>6</td>
<td>6.91</td>
<td>14.6</td>
<td>15</td>
<td>10</td>
<td>1</td>
<td>694</td>
</tr>
<tr>
<td>Sta. 7</td>
<td>46</td>
<td>8.42</td>
<td>98.3</td>
<td>95</td>
<td>6</td>
<td>2</td>
<td>881</td>
</tr>
<tr>
<td>Sta. 10</td>
<td>9</td>
<td>7.23</td>
<td>71.3</td>
<td>32</td>
<td>12</td>
<td>2</td>
<td>1192</td>
</tr>
<tr>
<td>Sta. 12</td>
<td>34</td>
<td>7.00</td>
<td>10.8</td>
<td>7.3</td>
<td>1</td>
<td>1</td>
<td>704</td>
</tr>
<tr>
<td>Mean</td>
<td>17</td>
<td>7.32</td>
<td>34.5</td>
<td>27</td>
<td>9</td>
<td>2</td>
<td>1469</td>
</tr>
</tbody>
</table>

Table 12. Water quality results for three sampling events in Maunawili and Kahanakai streams and Kawaihui Marsh in 2017 (present study).

<table>
<thead>
<tr>
<th>DO sat (%)</th>
<th>pH</th>
<th>Turb. (NTU)</th>
<th>TSS (mg/L)</th>
<th>NH₄</th>
<th>NO₂+NO₃</th>
<th>Total N</th>
<th>Total P (µg N/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sta. 1</td>
<td>73</td>
<td>7.44</td>
<td>5.9</td>
<td>5</td>
<td>42</td>
<td>60</td>
<td>299</td>
</tr>
<tr>
<td>Sta. 2</td>
<td>79</td>
<td>7.47</td>
<td>9.6</td>
<td>8.3</td>
<td>52</td>
<td>88</td>
<td>304</td>
</tr>
<tr>
<td>Mean</td>
<td>74</td>
<td>7.45</td>
<td>6.8</td>
<td>6</td>
<td>44</td>
<td>66</td>
<td>300</td>
</tr>
<tr>
<td>Sta. 3</td>
<td>64</td>
<td>7.31</td>
<td>13.2</td>
<td>12</td>
<td>51</td>
<td>98</td>
<td>322</td>
</tr>
<tr>
<td>Sta. 4</td>
<td>3</td>
<td>7.04</td>
<td>11.9</td>
<td>9</td>
<td>19</td>
<td>30</td>
<td>380</td>
</tr>
<tr>
<td>Sta. 5</td>
<td>3</td>
<td>7.15</td>
<td>48.0</td>
<td>21</td>
<td>3274</td>
<td>10</td>
<td>4574</td>
</tr>
<tr>
<td>Sta. 6</td>
<td>11</td>
<td>7.04</td>
<td>31.5</td>
<td>42</td>
<td>68</td>
<td>14</td>
<td>953</td>
</tr>
<tr>
<td>Mean</td>
<td>20</td>
<td>7.13</td>
<td>22.0</td>
<td>18</td>
<td>121</td>
<td>25</td>
<td>854</td>
</tr>
</tbody>
</table>

Water Quality Assessment

Water quality data from the above studies are summarized in Table 13 to illustrate changes over time. In general, variation for any water quality parameter is greater in Kawaihui Marsh compared with the two input streams. Other consistent patterns include:

- lower DO content in the marsh;
- lower pH levels in the marsh;
- consistently higher turbidity levels in the marsh; and
- consistently higher nutrient levels in the marsh, except for nitrate-nitrite levels which are consistently lower.

Table 13. Summary of average water quality in Maunawili and Kahanakai streams and Kawaihui marsh.

<table>
<thead>
<tr>
<th>DO sat (%)</th>
<th>pH (NTU)</th>
<th>Turb. (mg/L)</th>
<th>NH₄</th>
<th>NO₂+NO₃</th>
<th>Total N</th>
<th>Total P (µg N/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sta. 5</td>
<td>2</td>
<td>6.77</td>
<td>17.5</td>
<td>16</td>
<td>23</td>
<td>754</td>
</tr>
<tr>
<td>Sta. 6</td>
<td>6</td>
<td>6.91</td>
<td>14.6</td>
<td>15</td>
<td>10</td>
<td>694</td>
</tr>
<tr>
<td>Sta. 7</td>
<td>46</td>
<td>8.42</td>
<td>98.3</td>
<td>95</td>
<td>6</td>
<td>881</td>
</tr>
<tr>
<td>Sta. 10</td>
<td>9</td>
<td>7.23</td>
<td>71.3</td>
<td>32</td>
<td>12</td>
<td>1192</td>
</tr>
<tr>
<td>Sta. 12</td>
<td>34</td>
<td>7.00</td>
<td>10.8</td>
<td>7.3</td>
<td>1</td>
<td>704</td>
</tr>
<tr>
<td>Mean</td>
<td>17</td>
<td>7.32</td>
<td>34.5</td>
<td>27</td>
<td>9</td>
<td>1469</td>
</tr>
</tbody>
</table>

The most likely impacts to marsh water quality following storm runoff from the Project subareas would be increased particulates (turbidity and TSS) from roads, parking/staging areas, paths, and trails. It would also likely be that nutrients (nitrogen and phosphorus moieties) could be entrained in runoff from any surfaces receiving fertilizers, if used as part of landscape maintenance.

It is not possible to provide any realistic estimates of particulates and/or nutrients that might be included in runoff, but the amounts involved would be small and inconsequential for a number of reasons. First, runoff from the Kawaihui Marsh subareas will only occur when rainfall is about 0.25 inches or greater; secondly, the amount of runoff from these subareas in total is quite small relative to other inputs (Table 9); i.e., about 0.3 percent. Finally, the relative concentrations of both particulates and nutrients in Project runoff would be small in comparison with concentrations in existing inputs to the
marsh. In essence, the contribution from Project proposed land changes will be an unmeasurable component of the impact of outflow from the marsh on canal and ocean receiving waters. As a functioning marshland (although mostly covered by a layer of floating peat and overgrown with vegetation) pollutant scrubbing functions of Kawainui would continue to protect downstream waters, easily compensating for any input additions attributable to Project components.

Information on toxic materials in Kawainui Marsh is sparse. Water samples for toxics analyses were collected on January 26, 2016 at Stas. 3, 5, and 6 (Fig. 10) for analysis of asbestos, cyanide, dioxin, 16 metals, 29 pesticides and PCBs, 54 semi-volatile organics, 37 volatile organics, TPH-diesel, and TPH-motor. Results are shown in Table 14 for those moieties that were present in detectable amounts and are compared with freshwater acute and chronic criteria for Hawai‘i Department of Health (DOH, 2014) and United States Environmental Protection Agency (EPA, 1979, 2001, 2017). A list of all toxics analyzed is shown in Appendix A.

Aluminum concentration at Sta. 6 near the eastern end of the marsh was the only measured toxic moiety that exceeded a freshwater chronic criterion — in this case for the DOH chronic criterion, but not that of EPA. Aluminum probably enters the marsh primarily during major storm events and is either sorbed onto sediments or taken up by marsh vegetation (Moonaw, et al., 1959). Chromium VI was present at Stas. 3 and 6 in low concentrations. The presence of chromium VI in aquatic systems is typically associated with discharges from electroplating, leather tanning, or textile industries (ASTR, 2012), but is also found occurring naturally in groundwater (EPA, 1994), which is probably the source for Kawainui Marsh. Natural attenuation in the aquatic environment occurs through reduction by organic matter, iron hydroxides, and/or sulfides (EPA, 1994; SWRCB, 2017). The presence of Total Petrochemical Hydrocarbons (TPH)-diesel and TPH-motor oil compounds at Sta. 5 likely represent runoff from Kapa‘a Quarry Road or upstream light industries. TPH can be broken down by bacteria and/or sink into marsh sediments (ADSTR, 1999). Toluene was the only volatile organic detected. It is a component of gasoline and is water insoluble (Yang et al., 1997). In surface waters, the biodegradation half-life of toluene was estimated to range from 4 to 22 days (Howard et al., 1991). Since Kawainui Marsh functions as a trap for sediments and repository, for many types of toxic materials, it is not surprising that only 5 of 141 analyzed pollutants were present in detectable amounts. This few toxic compounds found in solution in the marsh attests to the assimilation and sequestering capabilities of the marsh.

### Table 14. Toxic materials present in detectable amounts (μg/L) in water samples at in Kawainui Marsh on January 26, 2016. (Criteria based on DOH, 2014 and EPA 1979, 2001, and 2017)

<table>
<thead>
<tr>
<th>Toxic Material</th>
<th>Station 3</th>
<th>Station 5</th>
<th>Station 6</th>
<th>Freshwater Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acute DOH</td>
<td>Acute EPA</td>
<td>Chronic DOH</td>
<td>Chronic EPA</td>
</tr>
<tr>
<td>Aluminum</td>
<td>180</td>
<td>40</td>
<td>320</td>
<td>750 - 1,400</td>
</tr>
<tr>
<td>Chromium VI</td>
<td>nd</td>
<td>6</td>
<td>nd</td>
<td>11 - 11</td>
</tr>
<tr>
<td>TPH-diesel</td>
<td>nd</td>
<td>84</td>
<td>4</td>
<td>nc</td>
</tr>
<tr>
<td>TPH-motor oil</td>
<td>nd</td>
<td>100</td>
<td>4</td>
<td>nc</td>
</tr>
<tr>
<td>Toluene</td>
<td>nd</td>
<td>1.2</td>
<td>4</td>
<td>5800 - 5200</td>
</tr>
</tbody>
</table>

nd = not detected.  
nc = no criterion promulgated.

### Hāmākua Marsh Water Cycle

The primary source of water for Hāmākua Marsh is direct rainfall and stormwater runoff from Pu‘u‘oe‘oe hillside (about 66 ac) and areas upstream of Kawainui Stream (namely, the Coconut Grove area). Presumably, the marsh exchanges water with the adjacent canal (Kawainui Stream), the canal eventually discharging into Kaliu Bay via Kaelipauli Stream near the east end of Kailua Beach. The entire system is a low-lying “pond” with some tidal influence.

### Subarea D - Wai‘aua

The Wai‘aua section east of the Kailua levee of Subarea D is included with Hāmākua Marsh because the area drains into Kawainui Stream along with Hāmākua Marsh and is isolated from Kawainui Marsh by the levee. Wai‘aua is a 2.19-ac area within Subarea D, situated along Kailua Road near the “entrance” to Kailua Town (Figure 11). It is bordered by the City & County sewage pump station parcel (northeast), extending along Kailua Road to the levee. Proposals for this subarea include: (1) open space supporting DOFAW maintenance activities along with a pedestrian foot trail connecting to the levee, (2) an area to support native Hawaiian cultural practices, and (3) a parking lot and three buildings.

Runoff estimates for Wai‘aua section are shown in Table 15. Trails account for the largest percentage of runoff from improvement components at about 9 percent. Implementation of low impact design (LID) elements such as...
bioswales, bioretention areas, and rain catchment systems could further reduce
runoff. Runoff from this subarea would be directly into Kawaihui Stream.

Figure 11. Conceptual plan for Subarea D - Wai'auia (after HHF, 2016).

Table 15. Runoff estimates for Subarea D - Wai'auia (north side of levee) for a one hour 0.40-in storm event.

<table>
<thead>
<tr>
<th>WAI'AUIA Components</th>
<th>Area (acres)</th>
<th>Runoff (cfs)</th>
<th>Runoff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodlands/Grass</td>
<td>1.62</td>
<td>496</td>
<td>48</td>
</tr>
<tr>
<td>Paths</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Trails</td>
<td>0.15</td>
<td>156</td>
<td>15</td>
</tr>
<tr>
<td>Parking/Staging</td>
<td>0.17</td>
<td>102</td>
<td>10</td>
</tr>
<tr>
<td>Building</td>
<td>0.25</td>
<td>286</td>
<td>27</td>
</tr>
<tr>
<td>Road</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>2.19</td>
<td>1,040</td>
<td>100</td>
</tr>
</tbody>
</table>

Subarea E - Hāmākua-Pu'uehu

Hāmākua Marsh and Pu'uehu hillside are shown in Figure 12. Proposed
improvements include: (1) expansion of the wetland by one acre near the
southern end; (2) a compacted gravel staging/parking area and restroom; (3)
upland reforestation; and (4) foot trails on Pu'uehu hillside.

Figure 12. Conceptual plan for Subarea E - Hāmākua-Pu'uehu (after HHF, 2016).

Runoff estimates for Hāmāku-Pu'uehu subarea area are shown in Table 16. Trails account for the largest percentage of improvement components runoff at
about 4 percent. Implementation of low impact design (LID) elements such as
bioswales, bioretention areas, and rain catchment systems could further reduce
runoff.

Estimated inputs for a 0.40 inch storm event from hillside runoff, surface runoff
from Project infrastructure and direct rainfall on the marsh are shown in Table
17. A 0.40 inch storm occurs about 2 percent of the time (about 7 days per
year) in the Kahu area as shown in Table 1. Direct rainfall and hillside runoff
account for about 97 percent of estimated water entering the marsh. Runoff
from estimated Project infrastructure would account for about 3 percent of total
estimated runoff, or 1,535 cfh. The amount of runoff due to proposed infrastructure will not have a noticeable impact on water levels within Hämākua Marsh.

Table 16. Runoff estimates for Subarea E – Hämākua-Pu‘uehu for a one hour 0.40-in storm event.

<table>
<thead>
<tr>
<th>Hämākua Components</th>
<th>Area (acres)</th>
<th>Runoff (cfh)</th>
<th>Runoff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodlands/Grass</td>
<td>64.07</td>
<td>27445</td>
<td>95</td>
</tr>
<tr>
<td>Paths</td>
<td>0.06</td>
<td>58</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Trails</td>
<td>1.24</td>
<td>1292</td>
<td>4</td>
</tr>
<tr>
<td>Parking/Staging</td>
<td>0.21</td>
<td>131</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Building</td>
<td>0.05</td>
<td>55</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Road</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>65.63</td>
<td>28,981</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 17. Estimated direct rainfall, stream inputs, and runoff to Hämākua Marsh for a one hour 0.40-in storm event.

<table>
<thead>
<tr>
<th>Discharge Source</th>
<th>Runoff Coefficient</th>
<th>Discharge (cfh)</th>
<th>Percent of total</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct rain</td>
<td>1.0</td>
<td>28,152</td>
<td>49.3</td>
<td>23.0</td>
</tr>
<tr>
<td>Runoff</td>
<td>0.28</td>
<td>27,445</td>
<td>48.0</td>
<td>64.1</td>
</tr>
<tr>
<td>Project Infrastructure</td>
<td>various†</td>
<td>1,535</td>
<td>2.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>57,132</td>
<td>100</td>
<td>88.7</td>
</tr>
</tbody>
</table>

† See Table 16 for coefficient details
‡

Hämākua Marsh Water Quality

Hämākua Marsh serves as a settling basin or sediment trap and sink for particulates, nutrients, and other pollutants introduced by storm water runoff and direct rainfall. Particulates (turbidity and TSS) introduced during storm runoff tend to settle out in the marsh or the adjacent canal. Introduced nutrients (nitrogen and phosphorus) are converted into plant biomass. Nutrients are also recycled from dead vegetation as well as released from bottom sediments.

A summary of available water quality data for Kainui Stream (canal) are given in Table 18; station locations are shown in Figure 13 for recent and certain historic sampling events. The 2002 data collected by Pacific American Foundation (PAF) were collected at 4 stations in Hämākua Marsh during two sampling events, but no station map was provided; the 2017 data were collected at a single station in the canal at Wa‘aiaua on three approximately monthly sampling events. For these two data sets, ranges rather than averages are shown to demonstrate the variation in water quality.

![Figure 13. Station locations for water quality studies near Hämākua Marsh.](image)

As shown in Table 15, most of the proposed infrastructure runoff into Hämākua Marsh will be from proposed trails on the slopes of Pu‘uoehu hillside. Since this hillside is quite steep (238% slope – 23B rise/996 run), trails may contribute significant particulate matter (turbidity & TSS) to the marsh if the trails are constructed of compacted soil with a high runoff coefficient. Other materials, or implementing water bars and/or drainage ditches on the downslope sides of the trails may significantly reduce particulate loading during runoff events. It is unlikely that runoff would significantly affect nutrient levels in the marsh and canal, which are naturally high.

<table>
<thead>
<tr>
<th>Salinity (ppt)</th>
<th>DO sat (%)</th>
<th>pH</th>
<th>Turb. (NTU)</th>
<th>TSS (mg/L)</th>
<th>NH₄ (mg/L)</th>
<th>NO₂+NO₃ (mg/L)</th>
<th>Total N (ug/L)</th>
<th>Total P (ug/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hāmākua Marsh (PAF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>0.35</td>
<td>28-123</td>
<td>7.3-7.9</td>
<td>1-1220</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Kawaiinui Stream

<table>
<thead>
<tr>
<th>Station</th>
<th>Year</th>
<th>Salinity (ppt)</th>
<th>DO sat (%)</th>
<th>pH</th>
<th>Turb. (NTU)</th>
<th>TSS (mg/L)</th>
<th>NH₄ (mg/L)</th>
<th>NO₂+NO₃ (mg/L)</th>
<th>Total N (ug/L)</th>
<th>Total P (ug/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sta. 1</td>
<td>1992</td>
<td>14</td>
<td>101</td>
<td>8.12</td>
<td>5.05</td>
<td>3.5</td>
<td>19</td>
<td>1</td>
<td>1250</td>
<td>204</td>
</tr>
<tr>
<td>Sta. 2</td>
<td>1991-92</td>
<td>11</td>
<td>--</td>
<td>7.91</td>
<td>2.98</td>
<td>3.6</td>
<td>237</td>
<td>10</td>
<td>1450</td>
<td>120</td>
</tr>
<tr>
<td>Sta. 3</td>
<td>1992</td>
<td>13</td>
<td>--</td>
<td>7.91</td>
<td>2.90</td>
<td>5.4</td>
<td>127</td>
<td>25</td>
<td>1150</td>
<td>103</td>
</tr>
<tr>
<td>Sta. 4</td>
<td>1992</td>
<td>14</td>
<td>--</td>
<td>7.79</td>
<td>2.54</td>
<td>8.5</td>
<td>204</td>
<td>22</td>
<td>1160</td>
<td>99</td>
</tr>
<tr>
<td>Sta. 5</td>
<td>1992</td>
<td>17</td>
<td>--</td>
<td>7.84</td>
<td>3.40</td>
<td>8.5</td>
<td>173</td>
<td>15</td>
<td>1560</td>
<td>118</td>
</tr>
<tr>
<td>Sta. 6</td>
<td>1989</td>
<td>17</td>
<td>--</td>
<td>7.87</td>
<td>2.34</td>
<td>6.1</td>
<td>389</td>
<td>60</td>
<td>1250</td>
<td>91</td>
</tr>
</tbody>
</table>

Summary of Water Quality in Kawaiinui and Hāmākua Marshes

Kawaiinui and Hāmākua marshes influence the discharge and quality of water discharging into coastal waters by intercepting surface runoff and removing or retaining inorganic nutrients, processing organic wastes, and reducing suspended sediments. Waters flowing into and out of the marsh are covered by state standards (DOH, 2014), whereas no criteria for marshes exist, primarily for the reason that it is not possible to define marsh water quality as either “good” or “degraded”. It is relatively easy to assess water quality in stream, lake, and marine waters—at least from a human perspective—of good [clear water with low particulate and nutrient levels] to degraded [low water clarity, high particulate and nutrient levels], the same cannot be said for marshes. Since the Kawaiinui-Hāmākua Marsh naturally functions as a trap for particulates, assimilation and recycling of nutrients, and sequestering of pollutants, there is no logical basis for developing a ranking system of good to poor water quality. As seen in the water quality data presented above, there are wide variations in particulates and other water quality parameters in the marsh, both spatially and temporally. It is best to consider the marsh as a treatment system intercepting surface runoff and removing or retaining inorganic nutrients, processing organic wastes, and reducing suspended sediments before they reach open water (EPA, 2016). On the other hand, the natural functions of the marsh could be vastly improved by removing naturalized exotics and opening up bodies of water for wildlife use.

References


### APPENDIX A

#### TOXICS ANALYZED

<table>
<thead>
<tr>
<th>PESTICIDES &amp; PCBs</th>
<th>SEMI-VOLATILE ORGANICS</th>
<th>VOLATILE ORGANICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldrin</td>
<td>2-Chloronaphthalene</td>
<td>Dibromochloromethane</td>
</tr>
<tr>
<td>Alpha Chlordane</td>
<td>Dimethyl Phthalate</td>
<td>Dichlorodifluoromethane</td>
</tr>
<tr>
<td>Alpha-BHC</td>
<td>Aacenaphthylene</td>
<td>1,1-Dichloroethane</td>
</tr>
<tr>
<td>Aroclor-1016</td>
<td>Aacenaphthene</td>
<td>1,2-Dichloroethane</td>
</tr>
<tr>
<td>Aroclor-1221</td>
<td>2,4-Dinitrophenol</td>
<td>1,1-Dichloroethene</td>
</tr>
<tr>
<td>Aroclor-1232</td>
<td>4-Nitrophenol</td>
<td>o-1,2-Dichloroethene</td>
</tr>
<tr>
<td>Aroclor-1242</td>
<td>2,4-Dinitrotoluene</td>
<td>t-1,2-Dichloroethene</td>
</tr>
<tr>
<td>Aroclor-1248</td>
<td>2,6-Dinitrotoluene</td>
<td>1,2-Dichloropropene</td>
</tr>
<tr>
<td>Aroclor-1254</td>
<td>Diethyl Phthalate</td>
<td>o-1,3-Dichloropropene</td>
</tr>
<tr>
<td>Aroclor-1260</td>
<td>4-Chlorophenyl-Phenyl Ether</td>
<td>t-1,3-Dichloropropene</td>
</tr>
<tr>
<td>Aroclor-1262</td>
<td>Fluorene</td>
<td>Ethylbenzene</td>
</tr>
<tr>
<td>Beta-BHC</td>
<td>4,6-Dinitro-2-Methylphenol</td>
<td>Methylene Chloride</td>
</tr>
<tr>
<td>Chlordane</td>
<td>N-Nitrosodiphenylamine</td>
<td>1,1,2,2-Tetrachloroethane</td>
</tr>
<tr>
<td>4,4′-DDD</td>
<td>4-Bromophenyl-Phenyl Ether</td>
<td>Tetrachloroethene</td>
</tr>
<tr>
<td>4,4′-DDE</td>
<td>Hexachlorobenzene</td>
<td>Toluene</td>
</tr>
<tr>
<td>4,4′-DDT</td>
<td>Pentachlorophenol</td>
<td>1,1,1-Trichloroethane</td>
</tr>
<tr>
<td>Delta-BHC</td>
<td>Phenanthrene</td>
<td>1,2-Trichloroethene</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>Anthracene</td>
<td>Trichloroethene</td>
</tr>
<tr>
<td>Endosulfan I</td>
<td>Di-n-Butyl Phthalate</td>
<td>Tetrachlorofluoromethane</td>
</tr>
<tr>
<td>Endosulfan II</td>
<td>Fluoranthene</td>
<td>o-Xylene</td>
</tr>
<tr>
<td>Endosulfan Sulfate</td>
<td>Benzidine</td>
<td>p/m-Xylene</td>
</tr>
<tr>
<td>Endrin</td>
<td>Pyrene</td>
<td>Acrylonitrile</td>
</tr>
<tr>
<td>Endrin Aldehyde</td>
<td>Butyl Benzyl Phthalate</td>
<td>Methyl-t-Butyl Ether (MTBE)</td>
</tr>
<tr>
<td>Endrin Ketone</td>
<td>3,3′-Dichlorobenzidine</td>
<td>Acrolein</td>
</tr>
<tr>
<td>Gamma Chlordane</td>
<td>Benzo (a) Anthracene</td>
<td></td>
</tr>
<tr>
<td>Heptachlor</td>
<td>Bis(2-Ethylhexyl) Phthalate</td>
<td>METALS</td>
</tr>
<tr>
<td>Heptachlor Epoxide</td>
<td>Chrysene</td>
<td>Antimony</td>
</tr>
<tr>
<td>Methoxychlor</td>
<td>Di-n-Octyl Phthalate</td>
<td>Arsenic</td>
</tr>
<tr>
<td>Toxaphene</td>
<td>Benzo (k) Fluoranthene</td>
<td>Beryllium</td>
</tr>
<tr>
<td>SEMI-VOLATILE ORGANICS</td>
<td>VOLATILE ORGANICS</td>
<td>OTHER</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Benzo (b) Fluoranthene</td>
<td>Cadmium</td>
<td></td>
</tr>
<tr>
<td>Benzo (a) Pyrene</td>
<td>Chromium</td>
<td></td>
</tr>
<tr>
<td>N-Nitrosodimethylamine</td>
<td>Indeno (1,2,3-c,d) Pyrene</td>
<td>Copper</td>
</tr>
<tr>
<td>Phenol</td>
<td>Dibenzo (a,h) Anthracene</td>
<td>Lead</td>
</tr>
<tr>
<td>Bis(2-Chloroethy1) Ether</td>
<td>1,2-Diphenylhydrazine</td>
<td>Nickel</td>
</tr>
<tr>
<td>2-Chlorophenol</td>
<td>Mercury</td>
<td></td>
</tr>
<tr>
<td>Bis(2-Chloroisopropyl) Ether</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-Nitroso-di-n-propylamine</td>
<td>Benzene</td>
<td>Selenium</td>
</tr>
<tr>
<td>Hexachloroethane</td>
<td>Silver</td>
<td></td>
</tr>
<tr>
<td>Nitrobenzene</td>
<td>Bromodichloromethane</td>
<td>Thallium</td>
</tr>
<tr>
<td>Isophorone</td>
<td>Bromoform</td>
<td>Zinc</td>
</tr>
<tr>
<td>2-Nitrophenol</td>
<td>Bromomethane</td>
<td>Aluminum</td>
</tr>
<tr>
<td>2,4-Dimethylphenol</td>
<td>Carbon Tetrachloride</td>
<td>Iron</td>
</tr>
<tr>
<td>Bis(2-Chloroethoxy) Methane</td>
<td>Chlorobenzene</td>
<td></td>
</tr>
<tr>
<td>2,4-Dichlorophenol</td>
<td>Chloroethane</td>
<td>asbestos</td>
</tr>
<tr>
<td>1,2,4-Trichlorobenzene</td>
<td>Chloromethane</td>
<td>dioxin</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>2-Chloroethyl Vinyl Ether</td>
<td>Cyanide, Total</td>
</tr>
<tr>
<td>Hexachloro-1,3-Butadiene</td>
<td>Chloroform</td>
<td></td>
</tr>
<tr>
<td>4-Chloro-3-Methylphenol</td>
<td>1,3-Dichlorobenzene</td>
<td>TPH-Diesel</td>
</tr>
<tr>
<td>Hexachlorocyclopentadiene</td>
<td>1,4-Dichlorobenzene</td>
<td>TPH-Motor</td>
</tr>
<tr>
<td>2,4,6-Trichlorophenol</td>
<td>1,2-Dichlorobenzene</td>
<td></td>
</tr>
</tbody>
</table>

APPENDIX B

2017 Water Quality Data
### AECOS REPORT OF ANALYTICAL RESULTS

**SAMPLE TYPE:** Stream/marsh  
**DATE SAMPLED:** 03/10/17  
**AECOS LOG No.:** 33827  
**DATE RECEIVED:** 03/10/17  
**Sampled By:** jw, so, mpf (AECOS)

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td></td>
<td></td>
<td>21.6</td>
<td>21.3</td>
<td>21.6</td>
<td>22.8</td>
<td>22.8</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>6.20</td>
<td>6.90</td>
<td>5.64</td>
<td>0.24</td>
<td>0.12</td>
<td>1.80</td>
<td>1.92</td>
</tr>
<tr>
<td>Dissolved Oxygen (% saturation)</td>
<td></td>
<td></td>
<td>70</td>
<td>78</td>
<td>64</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>pH (SU)</td>
<td></td>
<td></td>
<td>7.43</td>
<td>7.48</td>
<td>7.40</td>
<td>6.98</td>
<td>7.08</td>
</tr>
<tr>
<td>Salinity (ppt)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.6</td>
<td>0.2</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Conductivity (μmhos/cm)</td>
<td>237</td>
<td>209</td>
<td>219</td>
<td>234</td>
<td>1100</td>
<td>291</td>
<td>431</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td></td>
<td></td>
<td>6.19</td>
<td>8.11</td>
<td>11.5</td>
<td>8.31</td>
<td>20.4</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>5.2</td>
<td>8.6</td>
<td>11</td>
<td>5.2</td>
<td>11</td>
<td>47</td>
<td>5.5</td>
</tr>
<tr>
<td>Ammonia (μg N/L)</td>
<td>39</td>
<td>30</td>
<td>42</td>
<td>6</td>
<td>1620</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Nitrate+Nitrite (μg N/L)</td>
<td>61</td>
<td>81</td>
<td>89</td>
<td>&lt;2</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Total Nitrogen (μg N/L)</td>
<td></td>
<td></td>
<td>257</td>
<td>277</td>
<td>301</td>
<td>310</td>
<td>2160</td>
</tr>
<tr>
<td>Total Phosphorus (μg P/L)</td>
<td>58</td>
<td>61</td>
<td>60</td>
<td>63</td>
<td>170</td>
<td>290</td>
<td>752</td>
</tr>
</tbody>
</table>

**Method Detection Limit**

- SM2550B: 0.1 Field
- SM4500-O G: 0.01 Field
- SM4500H+: Calculated
- SM2510B / YSI Pro Plus: 1 Field
- EPA 180.1 Rev 2.0: 0.01 03/10/17 jw, mpf
- SM2540D (1998): 0.1 03/13/17 ml
- EPA 349: 0.1 03/17/17 UW
- EPA 353.4_2 (1997): 0 03/17/17 UW
- SM4500P J: 6 02/17/17 UW

**Analysis Date Analyst ID**

- SM2550B: 03/10/17
- SM4500-O G: 03/10/17
- SM4500H+: 03/10/17
- SM2510B / YSI Pro Plus: 03/10/17 jw, mpf
- EPA 180.1 Rev 2.0: 03/10/17 jw, mpf
- SM2540D (1998): 03/13/17
- EPA 349: 03/17/17 UW
- EPA 353.4_2 (1997): 03/17/17 UW
- SM4500P J: 02/27/17 UW
- SM4500P J: 02/27/17 UW
# AECOS REPORT OF ANALYTICAL RESULTS

**SAMPLE TYPE:** Stream/marsh  
**AECOS LOG No.:** 33707  
**DATE SAMPLED:** 02/17/17  
**DATE RECEIVED:** 02/17/17  
**Sampled By:** jw, sb (AECOS)

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th>Method</th>
<th>Detection Limit</th>
<th>Analysis Date</th>
<th>Analyst ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td>SM2550B</td>
<td>0.1</td>
<td>Field</td>
<td></td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>SM4500-O G</td>
<td>0.01</td>
<td>Field</td>
<td></td>
</tr>
<tr>
<td>Dissolved Oxygen (% saturation)</td>
<td>Calculated</td>
<td>1</td>
<td>Field</td>
<td></td>
</tr>
<tr>
<td>pH (SU)</td>
<td>SM4500H+</td>
<td>0.01</td>
<td>Field</td>
<td></td>
</tr>
<tr>
<td>Salinity (ppt)</td>
<td>YSI Pro Plus</td>
<td>0.1</td>
<td>Field</td>
<td></td>
</tr>
<tr>
<td>Conductivity (μmhos/cm)</td>
<td>SM2510B</td>
<td>1</td>
<td>02/17/17 jw</td>
<td></td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>EPA 180.1 Rev 2.0</td>
<td>0.01</td>
<td>02/17/17 sb</td>
<td></td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>SM2540D (1998)</td>
<td>0.1</td>
<td>01/27/17 ml</td>
<td></td>
</tr>
<tr>
<td>Ammonia (μg N/L)</td>
<td>EPA 349</td>
<td>2</td>
<td>03/03/17 UW,</td>
<td>03/17/17 UW</td>
</tr>
<tr>
<td>Nitrate-Nitrite (μg N/L)</td>
<td>EPA 353.4_2 (1997)</td>
<td>2</td>
<td>03/03/17 UW,</td>
<td>03/17/17 UW</td>
</tr>
<tr>
<td>Total Nitrogen (μg N/L)</td>
<td>SM4500P J</td>
<td>6</td>
<td>03/09/17 UW,</td>
<td>03/27/17 UW</td>
</tr>
<tr>
<td>Total Phosphorus (μg P/L)</td>
<td>SM4500P J</td>
<td>1</td>
<td>03/09/17 UW,</td>
<td>03/27/17 UW</td>
</tr>
</tbody>
</table>

**Sample ID:** 1-2-3-4-5-6-7

---

**Sample Results:**

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th>Unit</th>
<th>Field</th>
<th>02/17/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td></td>
<td>22.4</td>
<td></td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td></td>
<td>6.29</td>
<td></td>
</tr>
<tr>
<td>Dissolved Oxygen (% saturation)</td>
<td></td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>pH (SU)</td>
<td></td>
<td>7.39</td>
<td></td>
</tr>
<tr>
<td>Salinity (ppt)</td>
<td></td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>Conductivity (μmhos/cm)</td>
<td></td>
<td>248</td>
<td></td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td></td>
<td>6.60</td>
<td></td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td></td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>Ammonia (μg N/L)</td>
<td></td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Nitrate-Nitrite (μg N/L)</td>
<td></td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Total Nitrogen (μg N/L)</td>
<td></td>
<td>248</td>
<td></td>
</tr>
<tr>
<td>Total Phosphorus (μg P/L)</td>
<td></td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

---

**Signature:**  
J. Mello, Laboratory Director
AECOS REPORT OF ANALYTICAL RESULTS

SAMPLE TYPE: Stream/marsh  
AECOS LOG No.: 33588A  
DATE SAMPLED: 01/26/17  
DATE RECEIVED: 01/26/17  
Sampled By: jw,lms,sb,ebg (AECOS)

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td>22.1</td>
<td>21.8</td>
<td>21.3</td>
<td>21.8</td>
<td>21.8</td>
<td>22.3</td>
<td>22.9</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>6.70</td>
<td>7.07</td>
<td>5.85</td>
<td>0.27</td>
<td>0.22</td>
<td>0.56</td>
<td>3.32</td>
</tr>
<tr>
<td>Dissolved Oxygen (% saturation)</td>
<td>77</td>
<td>80</td>
<td>68</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>39</td>
</tr>
<tr>
<td>pH (SU)</td>
<td>7.51</td>
<td>7.63</td>
<td>7.16</td>
<td>7.06</td>
<td>7.25</td>
<td>7.16</td>
<td>7.87</td>
</tr>
<tr>
<td>Salinity (ppt)</td>
<td>0.11</td>
<td>0.11</td>
<td>0.11</td>
<td>0.13</td>
<td>0.65</td>
<td>0.15</td>
<td>1.67</td>
</tr>
<tr>
<td>Conductivity (μmhos/cm)</td>
<td>251</td>
<td>241</td>
<td>250</td>
<td>280</td>
<td>2340</td>
<td>335</td>
<td>3330</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>5.06</td>
<td>7.67</td>
<td>11.8</td>
<td>21.2</td>
<td>90.8</td>
<td>32.6</td>
<td>2.78</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>4.3</td>
<td>7.6</td>
<td>14</td>
<td>16</td>
<td>28</td>
<td>59.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Ammonia (μg N/L)</td>
<td>46</td>
<td>160</td>
<td>64</td>
<td>68</td>
<td>7100</td>
<td>120</td>
<td>180</td>
</tr>
<tr>
<td>Nitrate-Nitrite (μg N/L)</td>
<td>91</td>
<td>120</td>
<td>130</td>
<td>30</td>
<td>45</td>
<td>680</td>
<td>71</td>
</tr>
<tr>
<td>Total Nitrogen (μg N/L)</td>
<td>420</td>
<td>420</td>
<td>390</td>
<td>540</td>
<td>7800</td>
<td>920</td>
<td>1700</td>
</tr>
<tr>
<td>Total Phosphorus (μg P/L)</td>
<td>&lt;20</td>
<td>21</td>
<td>24</td>
<td>43</td>
<td>160</td>
<td>180</td>
<td>850</td>
</tr>
</tbody>
</table>

Method:  
- Temperature (°C): SM2550B  
- Dissolved Oxygen (mg/L): SM4500-O  
- pH (SU): SM4500H+  
- Salinity (ppt): Refractive Index  
- Conductivity (μmhos/cm): SM2510B  
- Turbidity (NTU): EPA 180.1 Rev 2.0  
- Total Suspended Solids (mg/L): SM2540D  
- Ammonia (μg N/L): EPA 350.1  
- Nitrate-Nitrite (μg N/L): SM4500NO3E  
- Total Nitrogen (μg N/L): EPA 351.2+  
- Total Phosphorus (μg P/L): EPA 365.1

Date and Time: 01/27/17

Signature:  
J. Melka, Laboratory Director

AECOS, Inc.
45-939 Kamehameha Highway, Suite 104  •  Kaneohe  HI  96744
Telephone: (808)234-7770  •  Fax: (808)234-7775  •  Email: aecos@aecos.com
### AECOS REPORT OF ANALYTICAL RESULTS

**SAMPLE TYPE:** Marsh (Fresh water)  
**DATE SAMPLD:** 01/26/17  
**AECOS LOG No.:** 33588B  
**DATE RECEIVED:** 01/26/17  
**SAMPLE ID No.:** 3 5 6  
**Method Number / Reporting Limit / Detection Limit:**  
**Analysis Date / Analyst ID:**

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th>Limit</th>
<th>Reporting Limit / Detection Limit</th>
<th>Analysis Date / Analyst ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium VI (μg/L)</td>
<td>&lt;0.00271</td>
<td>0.0100 / 0.00271</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Asbestos (MFL)</td>
<td>&lt;0.00787</td>
<td>0.0200 / 0.00787</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Cyanide (mg/L)</td>
<td>&lt;0.0070</td>
<td>0.0020 / 0.0070</td>
<td>02/02/17 EC</td>
</tr>
<tr>
<td>Antimony (mg/L)</td>
<td>&lt;0.00787</td>
<td>0.0150 / 0.00787</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Arsenic (mg/L)</td>
<td>&lt;0.00438</td>
<td>0.0150 / 0.00438</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Beryllium (mg/L)</td>
<td>&lt;0.00269</td>
<td>0.0010 / 0.00269</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Cadmium (mg/L)</td>
<td>&lt;0.00269</td>
<td>0.0020 / 0.00269</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Chromium (mg/L)</td>
<td>&lt;0.00271</td>
<td>0.0020 / 0.00271</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Copper (mg/L)</td>
<td>&lt;0.00269</td>
<td>0.0020 / 0.00269</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Lead (mg/L)</td>
<td>&lt;0.00406</td>
<td>0.0010 / 0.00406</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Nickel (mg/L)</td>
<td>&lt;0.00298</td>
<td>0.0100 / 0.00298</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Selenium (mg/L)</td>
<td>&lt;0.00699</td>
<td>0.0150 / 0.00699</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Silver (mg/L)</td>
<td>&lt;0.00139</td>
<td>0.00500 / 0.00139</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Thallium (mg/L)</td>
<td>&lt;0.00291</td>
<td>0.0150 / 0.00291</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Zinc (mg/L)</td>
<td>&lt;0.00352</td>
<td>0.00100 / 0.00352</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Mercury (mg/L)</td>
<td>&lt;0.0000453</td>
<td>0.0000200 / 0.0000453</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Aluminum (mg/L)</td>
<td>0.180</td>
<td>0.0396 / 0.329</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Iron (mg/L)</td>
<td>1.19</td>
<td>3.74</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>TPH as Diesel (μg/L)</td>
<td>&lt;32</td>
<td>100</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>TPH as Motor Oil (μg/L)</td>
<td>&lt;32</td>
<td>84</td>
<td>02/01-02/17 EC</td>
</tr>
</tbody>
</table>

**ND:** Not Detected  
**Method Detection Limit:**  
**Reporting Limit:**  
**Analyst ID:**

---

**J. Melia, Laboratory Director**

---

1. Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

---

**CLIENT:** HHF Planners  
733 Bishop Street, Suite 2590  
Honolulu HI 96813  
Telephone: (808)234-7770  
Fax: (808)234-7775  
Email: aecos@aecos.com

---

**REPORT DATE:** 02/17/17  
**PAGE:** 1 of 3
**AECOS REPORT OF ANALYTICAL RESULTS**

**SAMPLE TYPE:** Marsh (Fresh water)  
**AECOS LOG No.:** 33588B  
**DATE SAMPLED:** 01/26/17  
**DATE RECEIVED:** 01/26/17

<table>
<thead>
<tr>
<th>ANALYTE</th>
<th>3</th>
<th>5</th>
<th>6</th>
<th>Reporting Limit / Detection Limit</th>
<th>Analysis Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pesticides &amp; PCBs (μg/L)</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>EPA 608 Various</td>
<td>02/01-02/17 EC</td>
</tr>
<tr>
<td>Volatile Organic Compounds (μg/L)</td>
<td>ND*</td>
<td>ND except*</td>
<td>ND*</td>
<td>EPA 624 Various</td>
<td>02/02-03/17 EC</td>
</tr>
<tr>
<td>Toluene*</td>
<td>1.2</td>
<td>--</td>
<td>--</td>
<td>EPA 624 1.0 / 0.40</td>
<td>02/02-03/17 EC</td>
</tr>
<tr>
<td>Semi-Volatile Organic Compounds (μg/L)</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>EPA 625 Various</td>
<td>01/30-31/17 EC</td>
</tr>
<tr>
<td>Dioxin (pg/L)</td>
<td>&lt;1.90</td>
<td>&lt;2.10</td>
<td>&lt;2.02</td>
<td>EPA 1613 1.90, 2.10, 2.02</td>
<td>02/02/17 ELL via EC</td>
</tr>
</tbody>
</table>

ND = Not Detected - Parameter not detected at the indicated reporting limit or detection limit. Please refer to Eurofins Calscience (EC) report for reporting and detection limits.
APPENDIX

DRAFT ARCHAEOLOGICAL LITERATURE REVIEW AND FIELD INSPECTION FOR THE KAWAINUI MARSH MASTER PLAN UPDATE, KAILUA AHUPUA‘A, KO‘OLAUPOKO DISTRICT, O‘AHU - December 2017

Prepared by: Cultural Surveys Hawai‘i, Inc.
Draft
Archaeological Literature Review and Field Inspection for the Kawainui Marsh Master Plan Update, Kailua Ahupua'a, Ko'olaupoko District, O'ahu
TMKs: [1] 4-2-003:017; 4-2-013:010, 022, 043, 005, 038; 4-2-016:010, 014, 015, 002; 4-2-017:020; 4-2-103:035; and 4-4-034:025

Prepared for
HHF Planners, Inc.

Prepared by
Randy Groza, M.A.,
David W. Shideler, M.A.,
Gina M. Farley, M.A., and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai'i, Inc.
Kailua, Hawai'i
(Job Code: KAILUA 49)

December 2017

<table>
<thead>
<tr>
<th>Management Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reference</strong></td>
</tr>
<tr>
<td><strong>Date</strong></td>
</tr>
<tr>
<td><strong>Project Number(s)</strong></td>
</tr>
<tr>
<td><strong>Investigation Permit Number</strong></td>
</tr>
<tr>
<td><strong>Project Location</strong></td>
</tr>
<tr>
<td><strong>Land Jurisdiction</strong></td>
</tr>
<tr>
<td><strong>Agencies</strong></td>
</tr>
<tr>
<td><strong>Project Description</strong></td>
</tr>
</tbody>
</table>

---

Cultural Surveys Hawai’i Job Code: KAILUA 49

Management Summary
Several potential historic properties were identified during the field inspection (LRFI), the area of potential effect is considered to be the entire 988-acre (400-hectare) project area.

### Results Summary

Several potential historic properties were identified during the field inspection. Potential historic properties include the large concrete platform for a former water tank on Pu‘u o ‘Ehu, remnants of the former ITT site and Mackay Radio Tower at Waia‘ula, the concrete well structure behind the Kawainui Vista neighborhood, and the water retention pond at Cash Ranch. Potential new archaeological features and artifacts associated with State Inventory of Historic Places (SIHP) #50-80-11-2029, the Kawainui Marsh archaeological cultural-historic complex, were also identified including a basalt grinding surface behind the Kawainui Vista neighborhood, a basalt wall section at Nā Pōhaku o Hauawaine, and four lithic artifacts (Artifacts 1, 2, 4, and 5) collected by Martha Yent of State Parks.

### Recommendations

SHPD made the following recommendations in an 11 July 2002 letter (LOG NO.: 30243, DOC NO.: 0207EJ10; Appendix B):

1. Prior to carrying out any ground disturbance, the applicant shall ensure that a qualified archaeologist conducts an archaeological inventory survey with subsurface testing within the Coconut Grove Site. A report of the findings should be provided to our office for review and approval. If significant historic sites are found, and if they will be adversely affected by the proposed park development, then an acceptable mitigation plan will need to be prepared and executed prior to any ground disturbance.

2. If more detailed information (e.g., site plans) indicates that the two areas with potential for containing paleoenvironmental deposits will be adversely affected by the planned park development, then the applicant shall ensure that these areas are appropriately investigated during any archaeological inventory survey work, and that the findings are included in a report of findings.

In addition, AIS fieldwork is recommended for the following areas:

- Hāmākua; wetland expansion and roadway modification. Because the lithic scatter site (SIHP #4430) inland of Hāmākua’s wetland may be affected by excavation activities for wetland expansion, an AIS is recommended. Because other historic properties may be affected by the realignment of DOFAW’s new access road, AIS is also recommended at this location.
- Kawainui SPR, Pōhakea
- Kapa’a. AIS should be conducted for the cultural and educational complex site for areas planned for structures or major site development.
- Kawainui SPR, Kālahōo. Design plans associated with the hale wa’a structure will be designed not to exceed the depth of fill material; however, an AIS is recommended should the disturbance of soils underlying the fill material be deemed necessary.
- Ulupō Heiau SHP. An AIS is recommended for areas for the pedestrian and foot trails, as well as accessory structures.
- Mokulana Peninsula. An AIS is recommended for areas for the pedestrian and foot trails, as well as accessory structures.
- Hāmākua and lower Pu‘u o‘ehu. An AIS is recommended for areas for the pedestrian and foot trails, as well as accessory structures.

AIS fieldwork will include a survey conducted to document all previously identified potential historic properties to AIS-level documentation, as well as to document any known or unknown potential historic properties within the areas planned for development. The AIS will predominately consist of a 100% coverage survey and documentation of impacted areas; however, subsurface testing may also be warranted within areas of proposed ground disturbance. Consultation with SHPD regarding AIS testing strategy is recommended prior to fieldwork. Mitigation recommendations following AIS fieldwork may include archaeological monitoring, data recovery, and/or preservation.

Furthermore, an archaeological monitoring plan (AMP) for wetland restoration and upland reforestation activities was approved by the SHPD in June 2015 (Yucha et al. 2015). The plan includes full-time, on-site archaeological monitoring for ground disturbing work within the wetland. The plan, which addresses the Kahanaika area, will be amended to include...
any additional wetland areas planned for restoration activities. The amended plan may include on-site and/or on-call monitoring for ground disturbing work within the wetland.

The existing Kahaniki area AMP will be amended to include any additional areas for upland reforestation when programmed for implementation. The same monitoring methods detailed in the AMP will be implemented if additional upland reforestation plans use the same methodology as that of the Kahaniki area; otherwise, revised monitoring methods will be developed in consultation with SHPD.

With regards to a DOFAW Kawainui-Hāmāka Maui Management and Research Station Storage Building project in the current study area, the SHPD made a determination of “no historic properties affected” in a letter dated 19 February 2016 (LOG NO.: 2015.03177, DOC NO.: 1602KM24; Appendix B). It is recommended that the additional structures planned in the DOFAW Management and Research Station area does not require further archaeological work.
List of Figures

Figure 1. Portion of the 1998 Mokapu USGS 7.5-minute topographic quadrangle, showing the location of the project area .................................................................2

Figure 2. Tax Map Key (TMK) [1] 4-2-003 showing the location of the project area (Hawai‘i TMK Service 2014) .................................................................3

Figure 3. TMK: [1] 4-2-013 showing the location of the project area (Hawai‘i TMK Service 2014) .................................................................4

Figure 4. TMK: [1] 4-2-016 showing the location of the project area (Hawai‘i TMK Service 2014) .................................................................5

Figure 5. TMK: [1] 4-2-103 showing the location of the project area (Hawai‘i TMK Service 2014) .................................................................6

Figure 6. Aerial photograph showing the location of the project area (Google Earth 2013) .................................................................7

Figure 7. Kawainui-Hāmākua Master Plan: Project Subarea Map (HHF Planners 2016) .................................................................8

Figure 8. Kawainui-Hāmākua Master Plan: Master Plan Overview (HHF Planners 2016) .................................................................9

Figure 9. Kawainui-Hāmākua Master Plan: DOFAW Management Areas (HHF Planners 2016) .................................................................10

Figure 10. Portion of the 1998 Mokapu USGS 7.5-minute topographic quadrangle showing the sediment types within the study area (Foote et al. 1972; USDA SSURGO) .................................................................13

Figure 11. 1899 Wall map of Kailua showing the locations of ‘ili within and in the vicinity of the project area .................................................................22

Figure 12. 2013 Google Earth aerial photograph showing the locations of LCAs in the vicinity of the project area .................................................................23

Figure 13. Stream and lo‘i kalo system mauka of Kawainui, 1885 (Hawaiian Historical Society) .................................................................27

Figure 14. 1906 Hawaiian Government Survey map by Donn shows all of Kailua, extending into Kaneohe, as grazing lands (yellow highlighted boundary) with the southeasternmost portion of Kawainui Marsh as rice and taro lands (blue striped area) .................................................................28

Figure 15 Kailua Fruit Stand in Kākākūnā, ca. 1930s (Edna Nishikawa Kimura and Some Nishikawa (Wu 2013)) .................................................................30

Figure 16. Nishikawa family with their truck farming equipment in Kākākūnā (Wu 2013) .................................................................31

Figure 17. Matsuda family store and residence ca. 1930s (Hawai‘i State Archives) .................................................................31

Figure 18. Portion of the 1936 Kaneohe USGS 7.5-minute topographic quadrangle showing the location of the project area, Waimanalo Pipe Line and Pump, and Kailua Radio Station .................................................................32

Figure 19. 1949 aerial photograph showing the Mackay Radio Tower (circled) (source: Ho‘okūkaua LLC) .................................................................34

Figure 20. 1950s Mackay Tower in background; view is from the corner of Mahania and Ku‘u‘ele Road; Kailua Elementary is not visible but is to the left (source: M. Kwiatkowski in Young 2013) .................................................................35

Figure 21. Portions of the 1954 Kaneohe and 1952 Mokapu USGS 7.5-minute topographic quadrangles, showing the location of the project area and development within its vicinity .................................................................37

Figure 22. 1995 photograph showing extent of vegetation covering Hāmākua Marsh (source: DLNR in Leong 2001) .................................................................39

Figure 23. Portion of the 1998 Mokapu USGS 7.5-minute topographic quadrangle, showing previous archaeological study areas within and adjacent to the project area .................................................................41

Figure 24. Portion of the 1998 Mokapu USGS 7.5-minute topographic quadrangle, showing previously identified historic properties within and adjacent to the project area .................................................................47

Figure 25. Ewart and Tuggle (1977) site locations .................................................................58

Figure 26. Cordy’s (1977a:35) site locations .................................................................61

Figure 27. Cordy’s (1977a:36) Site 1 (SIHP # -2022) .................................................................62

Figure 28. Cordy’s (1977a:38) Site 2 (SIHP # -3957) .................................................................63

Figure 29. Cordy’s (1977a:38) Site 4 (SIHP # -3959) .................................................................64

Figure 30. Cordy’s (1978:70) Site 5 (SIHP # 50-80-11-2029) .................................................................65

Figure 31. 1949 Kawai‘nui Marsh aerial photograph showing the boundary of Cordy’s (1978) Site 7 (SIHP # -2029) .................................................................67

Figure 32. Portion of the 1998 Mokapu Point USGS topographic quadrangle, showing the boundary of Cordy’s (1978) Site 7 (SIHP # -2029) .................................................................68

Figure 33. Clark’s (1980:25) site locations .................................................................70

Figure 34. Clark’s (1980:44) Site 50-Oa-G6-33; SIHP # -2023, Nā Pōhaku o Hauwahine .................................................................71

Figure 35. Clark’s (1980: Sheet 1) SIHP # -2022, historic residence and pigery, labeled as Site 50-Oa-G6-32, Feature Cluster 1; and SIHP # -3957, labeled as Site 50-Oa-G6-32, Feature Cluster 3 .................................................................72

Figure 36. Clark’s (1980: Sheet 2) SIHP # -3957, labeled as Site 50-Oa-G6-32, Feature Cluster 2; and SIHP # -3951, labeled as Site 50-Oa-G6-32 Feature Cluster 6 .................................................................73

Figure 37. Clark’s (1980: Sheet 3) SIHP # -3959, Moomio Agricultural and Habitation Complex, labeled as Site 50-Oa-G6-32, Feature Cluster 4 .................................................................74

Figure 38. Clark’s (1980: Sheet 4) SIHP # -2024, labeled as Sites 50-Oa-G6-32 and 34, Feature Clusters 5 and 7 .................................................................75

Figure 39. Clark’s (1980:52) SIHP # -2027, Kākākūnā habitation site, labeled as Site 50-Oa- G6-32 .................................................................76

Figure 40. SIHP # -2022, labeled Site 50-Oa-G6-32, Cluster 4 and 50-Oa-G6-41 (Athens 1983:12) .................................................................80

Figure 41. SIHP # -2022, labeled Site 50-Oa-G6-32, Features 113, 114, 150, 152, and 153 (Athens 1983:30) .................................................................82

Figure 42. SIHP # -2022, labeled Site 50-Oa-G6-32, Features 123 and 140 (Athens 1983:30) .................................................................82

Figure 43. Plan and profile of SIHP # -3739 (possibly Holomakani Heiau Site 360) .................................................................84

Figure 44. Location of Erkens (1993) project area on the Kākākūnā slope .................................................................87

Figure 45. Detail of Erkens (1993) project area on the Kākākūnā slope .................................................................87

Figure 46. Radiocarbon dates from the slopes around Kākākūnā (Erkens 1993:54) .................................................................88

Figure 47. TMK: [1] 4-2-013 showing location of Mann and Hammatt (2003), Test Trenches 1 and 2 .................................................................93

Figure 48. Plan view of SIHP # 50-80-15-4042, historic Waimānalo Irrigation System pump house foundation (from Zapor and Shideler 2016:14) .................................................................96

Figure 49. Plan view of CSH 1, walkway with a basalt boulder border (from Zapor and Shideler 2016:23) .................................................................97
Figure 104. SIHP # -3957, Artifact 1, a possible basalt stone game piece, view to southeast.136
Figure 105. SIHP # -3959 site area showing grinding surfaces in foreground, view to southeast.136
Figure 106. SIHP # -3959 grinding surfaces on basalt boulder, view to south.137
Figure 107. SIHP # -3960 complex including a possible burial mound in foreground and a terrace in background, view to northeast.139
Figure 108. SIHP # -3960 basalt stone wall, view to north.139
Figure 109. SIHP # -3960, Artifact 2, a basalt adze preform, view to northwest.140
Figure 110. Former Knott's Ranch corrals located east of the DOFAW campus, view to west.140
Figure 111. Bulldozer push piles located in the vicinity of SIHP # -2024, view to southeast.141
Figure 112. SIHP # -2029 wall section exposed in Pond 1, view to west.143
Figure 113. SIHP # -2029 wall sections exposed in Pond 2 with Pond 3, view to northeast.143
Figure 114. SIHP # -2029 wall section exposed in Pond 3, view to northeast.144
Figure 115. SIHP # -2029 wall section exposed in Pond 5, view to northwest.144
Figure 116. SIHP # -2029 submerged wall section in Pond 7 with arrows pointing to markers, view to southwest.145
Figure 117. SIHP # -2029 submerged wall section in Pond 8, with arrows pointing to markers, view to west.145
Figure 118. SIHP # -2029 submerged wall section in Pond 9, view to northwest.145
Figure 119. Possible extension of SIHP # -7199, an unpaved road leading from the Cash Ranch to the south, view to south.147
Figure 120. Buildings on the Cash Ranch property ready for demolition, view to northwest.147
Figure 121. Portions of fence lines within the Cash Ranch property, view to southwest.148
Figure 122. SIHP # -3965, basalt stone terrace, view to west.148
Figure 123. Artifact 3, iron plow blade, view to east.149
Figure 124. Artifact 4, basalt lithic flake, view to north.149
Figure 125. Ke Kahua O Kūkū`i`i modern hōlua, view to north.150
Figure 126. Ke Kahua O Kūkū`i`i modern ahu, view to east.150
Figure 127. Water retention pond at Cash Ranch, view to northeast.151
Figure 128. Overview of Kawaiaini Marsh from Nā Pōhaku o Haupuahine, view to south.151
Figure 129. Grinding surfaces on basalt outcrop at Nā Pōhaku o Haupuahine, view to south.153
Figure 130. Artifact 5, basalt adze preform, view to west.153
Figure 131. Basalt stone alignment at Nā Pōhaku o Haupuahine, view to southeast.154
Figure 132. Basalt wall section at Nā Pōhaku o Haupuahine, view to southeast.154
Figure 133. Area referred to as the navigation site, view to east.155
Figure 134. Model Airplane Park overview, view to east.155
Figure 135. Area south of Kapa`a Quarry Road with push piles and recently dumped garbage, view to west.156
Figure 136. Push pile that contains asphalt and debris located adjacent to the Kalalau High access, view to east.156
Figure 137. Dense vegetation observed along Mākapu Boulevard, view to south.157
Section 1  Introduction

1.1 Project Background

At the request of HHF Planners, Inc., Cultural Surveys Hawai‘i, Inc. (CSH) completed an archaeological literature review and field inspection (LRFI) for the Kawainui Marsh Master Plan Update, Kailua, Ko‘olaupoko, O‘ahu TMKs: [1] 4-2-003:017; 4-2-013:010, 022, 043, 005, 038; 4-2-016:010, 014, 015, 002; 4-2-017:020; 4-2-103:035; and 4-4-034:025. The project area is located in central Kailua Ahupua‘a, O‘ahu. The Kawainui Marsh portion of the area is bounded on the north side by Mākapu‘u Saddle Road, on the east side by Maunawili Stream and the levee that separates the marsh from Coconut Grove, on the south side by Kailua Road and Kalaniana‘ole Highway, and on the west side by Kapaa Quarry Road. The Hāmāku’a Marsh portion of the study area includes Puʻu o Ehu Ridge and is bounded by Kailua Road to the northwest, Hāmāku’a Drive to the northeast and southeast, and private property fronting Keolu Drive and Ahikolala Street to the south. The project area is depicted on a U.S. Geological Survey (USGS) topographic map (Figure 1), tax map plats (Figure 2 through Figure 5), and an aerial photograph (Figure 6).

In 1994, a master plan was created for Kawainui’s wetland and surrounding upland areas referred to as Kawainui Marsh. The State of Hawai‘i, Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) in partnership with the Division of State Parks (DSP) will be updating the previous master plan. The updated master plan is intended for implementing future improvements to Kawainui-Hāmāku’a to support DOFAW and DSP plans to help sustain, enhance, and educate the public about the natural and cultural resources associated with the complex. The proposed plans include wetland restoration and habitat expansion; upland reforestation; a perimeter pedestrian path with some boardwalks crossing wetlands; DOFAW Management and Research Station improvements; program staging areas; educational pavilions; interpretive signage for resources and archaeological sites; an Education Center for visitors; continued restoration at Ulupō Heiau; three areas identified for establishing cultural centers to support Hawaiian cultural practices, education, and stewardship partnerships; parking lots in designated areas; and a park site that also accommodates canoe storage and launch into Kawainui Canal (Figure 7 through Figure 9; see Appendix A). The project area includes approximately 988 acres (400 hectares) and is understood to be owned by the State of Hawai‘i. For the purposes of this archaeological literature review and field inspection, the area of potential effect (APE) is considered to be the entire approximately 988-acre (400-hectare) project area.

1.2 Document Purpose and Scope of Work

The proposed project is subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343 and HRS§6E-8/Hawai‘i Administrative Rules [HAR] §13-275, respectively).

This literature review and field inspection provides a comprehensive overview document that synthesizes the work previously performed in this project area. This study includes analysis of the previous work, available information, and limited site inspections as well as recommendations for future development contingencies around the marsh system.

Figure 1. Portion of the 1998 Mākapu USGS 7.5-minute topographic quadrangle, showing the location of the project area

LRFI for the Kawainui Marsh Master Plan Update, Kailua, Koʻolaupoko, Oʻahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)
Introduction

LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

Figure 2. TMK: [1] 4-2-003 showing the location of the project area (Hawai'i TMK Service 2014)

Figure 3. TMK: [1] 4-2-013 showing the location of the project area (Hawai'i TMK Service 2014)
Introduction

LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

Figure 4. TMK: [1] 4-2-016 showing the location of the project area (Hawai'i TMK Service 2014)

Figure 5. TMK: [1] 4-2-103 showing the location of the project area (Hawai'i TMK Service 2014)
Cultural Surveys Hawai'i Job Code: KAILUA 49

Introduction

LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-2-034 (various parcels)

Figure 6. Aerial photograph showing the location of the project area (Google Earth 2013)

Figure 7. Kawainui-Maunalua Master Plan: Project Subarea Map (HHF Planners 2016)
LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

Figure 8. Kawainui-IP kua Master Plan: Master Plan Overview (HHF Planners 2016)

Figure 9. Kawainui-IP kua Master Plan: DOFAW Management Areas (HHF Planners 2016)
The archaeological study provides an overview of existing archaeological conditions to facilitate planning and budgeting considerations and to convey any possible archaeological constraints to proposed development(s) or improvements. Although the primary purpose of this investigation is planning the investigation and its associated report can, in some instances, be used by project proponents to consult with the State Historic Preservation Division (SHPD) regarding the need for an archaeological inventory survey of a proposed project area.

Please be advised that the proposed literature review and field inspection will not meet the requirements of an archaeological inventory-level survey per the rules and regulations of the SHPD (HAR §§3-276). Additionally, based on background research and field inspection results, the literature review and field inspection report may recommend that an archaeological inventory survey be completed for portions of the proposed project.

The level of work would be sufficient to address potential archaeological site types and locations and allow for future work recommendations. The literature review and field inspection report details methods, findings, and results and if an inventory survey is required, the completed work will provide a basis for the study.

Historical research includes study of archival sources, historic maps, Land Commission Awards, and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.

Limited field inspection of the project area was conducted to verify or confirm existing sites, identify any surface archaeological features, and to investigate and assess the potential for impact to such sites. This assessment will identify any sensitive areas that may require further investigation or mitigation before the project proceeds.

Preparation of a report includes the results of the historical research and the limited fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It will also provide mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

1.3 Environmental Setting

1.3.1 Natural Environment

The Kawainui and Hāmākua Marsh Complex was designated as a Ramsar Convention Wetland of International Importance in 2005. Kawainui Marsh is the largest remaining wetland in the Hawaiian Islands, measuring 414 hectares (ha). This former traditional Hawaiian fishpond is approximately 1.5 m above sea level. Hāmākua Marsh is just downstream of Kawainui Marsh (Ramsar Convention on Wetlands 2013).

Kawainui Marsh is situated within a Koʻolau volcano caldera. Kahanaiki Stream, the western of the two major streams feeding Kawainui Marsh, and Maunawili Stream, which runs roughly parallel just 250 m to the east, intersect in the southwest portion of the project area. The present effects of siltation and eutrophication obscure the extent to which these two streams actually channel water flow. Kapa’a Stream, an intermittently flowing stream, enters the marsh from the northwest, near the quarry. Oneawa Channel, also called Kawainui Canal, extends makai (toward the ocean) from the marsh’s northeast corner.
Cultural Surveys Hawai‘i Job Code: KAILUA-49

Introduction

LRFI for the Kawainui Master Plan Update, Kailua, Ko‘olaupoko, O‘ahu

13

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

Figure 10. Portion of the 1998 Mokapu USGS 7.5-minute topographic quadrangle showing the sediment types within the study area (Foote et al. 1972; USDA SSURGO)

1.3.2 Built Environment

The built environment within the project area is minimal and includes the levee constructed along the northeastern (makai) portion of Kawainui Marsh, the model airplane park near the northwestern corner of Kawainui Marsh, the water bird habitat ponds in the southern portion of Kawainui Marsh, and several unimproved roadways and access roads along Kawainui and Hāmākua Marsh. The built environment that surrounds the project area includes one- and two-story residential and commercial buildings as well as high- and low-traffic roadways including Kailua Road, Kapa‘a Quarry Road, and Hāmākua Drive.

These soils developed in old, gravelly colluvium and alluvium. They are gently sloping to very steep . . . On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Workability is slightly difficult because of the slope. This soil is used for pasture, homesteads, papaya, and bananas. [Foote et al. 1972:83, 84]

Alaeloa silty clay, 15 to 35 percent slopes (AeE). These soils developed in material weathered from basic igneous rock. This soil occurs on smooth side slopes and toe slopes in the uplands . . . This soil is used for pineapple, pasture, truck crops, orchards, wildlife habitat, and homesteads. Small areas are used for sugarcane. [Foote et al. 1972:27]

Kawaihapai stony clay loam, 2 to 6 percent slopes (KlaB). This series consists of well-drained soils in drainageways and on alluvial fans on the coastal plains on the islands of Oahu and Molokai. These soils formed in alluvium derived from basic igneous rock in humid uplands . . . This soil is similar to Kawaihapai clay loam, 0 to 2 percent slopes, except that there are enough stones to hinder, but not prevent, cultivation. Runoff is slow, and the erosion hazard is slight . . . This soil is used for sugarcane, truck crops, and pasture. [Foote et al. 1972:63, 64]

Vegetation within the project area generally consists of grasses, dominated by California grass (Brachiaria mutica), sedges, introduced species of shrubs and trees along the slopes above the marsh, and water plants. On the western slopes are large monkey pod trees, extensive hau groves, and a variety of other exotic shrubs.
Section 2  Methods

2.1 Field Methods

CSH conducted the archaeological fieldwork for this investigation under state archaeological fieldwork permit number 13-06 (for 2013) and 14-04 (for 2014), issued by SHPD. The LRFI was conducted on 4 and 9 December 2013 by CSH archaeologists David Shideler, M.A., Randy Groa, M.A., and Trevor Yucha, B.S., under the general supervision of Hallett H. Hammatt, Ph.D., principal investigator. This fieldwork consisted of a limited field inspection of the project area to verify or confirm existing sites, identify any potential new archaeological site areas, and to investigate and assess the potential for impact to such sites.

2.2 Document Review

Background research included a review of previous archaeological studies on file at SHPD; review of documents at Hamilton Library of the University of Hawai`i at Mānoa, the Hawai`i State Archives, the Mission Houses Museum Library, the Hawai`i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai`i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2000) and the Office of Hawaiian Affairs (OHA) Papakilo Database (Office of Hawaiian Affairs 2012). This research provided the environmental, cultural, historic, and archaeological background for the study area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the study area.

Section 3  Background Research

Kailua Ahupua‘a is the largest valley on the windward side of O`ahu, and the largest ahupua‘a (land division extending from the uplands to the sea) of the Ko‘olaupoko District (approximately 15 km by 11 km). Flanked by the ahupua‘a of Waímānalo on the southeast, Kāne‘ohe on the northwest, and Honolulu to the south, the ahupua‘a of Kailua is shaped like a rectangle. From the Ko‘olau ridge line it extends down two descending ridge lines that provide the natural boundaries for the sides of the ahupua‘a. The fourth side of the rectangle is the reef line of Kailua Bay.

The natural environment includes the sand accretion barrier upon which Kailua Town stands, the mountainous upland terrain and alluvial valley of Maunawili, the largest freshwater marsh in Hawai‘i (Kawainui Marsh), another inland pond (Ka‘elepulu), approximately 18 permanent and intermittent streams, a freestanding mountain halfway between the shore and the Ko‘olau (Olomana–1,643 feet [ft]), several low ridge lines, and offshore the Mokulua Islands, Mokole‘a Rock, and Popoi‘a Island. It comprises 11,885 acres of land according to the Boundary Commission Review of the mid-nineteenth century, but in fact extends beyond the shore approximately a mile out to sea, to the reef.

During the estimated 1,000 to 1,200 years since initial Polynesian settlement (Kirch 2010:128), the sand barrier that forms the shore at Kailua Bay has provided a desirable location for residences with a sunny, dry beach area. The well-watered interior lands, including the two marsh/pond areas of Ka‘elepulu and Kawainui and the many springs and streams of Maunawili, provided bountiful agricultural and resource gathering areas. During the fifteenth and sixteenth centuries, Kailua, O‘ahu was the center of a large royal complex with sample playgrounds for sports and physical training, and recreation (Sterling and Summers 1978:231–232). Supporting this large complex was a most bountiful garden hinterland where fish, fowl, and vegetables were plentiful (Sterling and Summers 1978:227–228).

3.1 Traditional and Historical Background

Kailua is said to have been one of the places where, following their arrival on O‘ahu from Kahiki, the menehune (legendary race of small people who worked at night, building fishponds, roads, temples) were assigned to live. Forander (1917-1918:23) points out that the term menehune in Tahitian had become the name for the lowest laboring class of people, suggesting a Tahitian origin for the term for the legendary workers.

Traditional history describes Kailua as the residence of many prominent O‘ahu ruling chiefs. There is ‘Olopana, “who with his brother Kahiki‘ula came to O‘ahu from Kahiki . . . He is said to have established several heiau [pre-Christian place of worship] in Kāne‘ohe and Kailua, including Palukini and Holomakani in the Kawainui area” (Kelly and Nakamura 1981:3). Mount Olomana may be named in honor of the chief or possibly after a great mythological giant (Kelly and Nakamura 1981:1). One of the earliest great chiefs to reside in Kailua was the sixteenth century ruler Kākahiwēhe, who built himself a great house at ‘Alele in Kailua (Kelly and Nakamura 1981:5). At approximately the same time, another prominent chief, Ka‘ui, born at Kalapawai, Kailua, and raised in Kualoa and Kailua, had his navel-cutting ceremony at the heiau of Alā‘a (present-day Lanikai Point); and, after heroically succeeding in many battles, became...
the high chief of all O'ahu (Kelly and Nakamura 1981:6). In early historic times, the conquering
capehistory, known as Kawai Nui Loko, or the big freshwater pond ('the big water' ; Soehren 2013).
The marsh was the home of the mo'o (supernatural water spirit) Hauwahine, whose name literally means “female ruler.”
"Her residence at Kawai follows Haumea’s, the earth-mother goddess of fertility and childbirth whose name literally means "red
ruler." She protected Kailua _and ensured that all the people of the ahupua'a shared in the pond's
wealth but punished those who were greedy (Beckwith 1970:126).
Mele, or chants, about Ka'aka frequently mention the two fishponds of Kawaiwai and Ka'elepulu, which were famous for their 'ama'ama (mullet, _Mugil cephalus_) and awa (milkfish, _Chanos chanos_). They also praise the taro gardens of the area (Beckwith 1970; Drigot 1982). A few of these chants and legends are those of Hi'iaka, Kahinalima'ula, the Mäkalé Tree, and Ka'ulu.

The following chant was performed by Hi'iaka, Pele’s younger sister, when she and her
companion encountered two beautiful women, who were actually mo'o, bathing in the stream
that connected Kawaiwai and Ka'elepulu. The chant describes Hauwahine:
Kailua is like hair tousled by the Malanea wind
The leaves of the ‘uki are flattened down
You are startled as though by the voice of a bird
You think they are human
But they are not.
That is Hauwahine and her companion
The supernatural women of peaceful Kailua. [Kai Hōkū o Hawai’i 12, 15, 1925;
translation by Khei de Silva in Drigot 1982:82] A rock formation at Nā Pōhaku o Hauwahine symbolizes this mo'o goddess. Nā Pōhaku o Hauwahine is within the west portion of the study area, on the right hand side of Kapa'a Quarry Road at the Y-intersection before entering the Kapa'a Landfill Transfer Station.

Oral history relates that the stones overlooking Kawaiwai on Pu'u o 'Ehu are sacred to
Hauwahine and her companion (Paki 1976). This interpretation is connected to the ancient Hawaiian belief that the channel/canal beneath Pu'u o 'Ehu connects Kawaiwai and Ka'elepulu and was considered to be the conical connection between the two fishponds, giving the area great mana (spiritual or divine power). Kawaiwai Marsh was considered male, and Ka'elepulu Pond, female. They mated at Kawaiwai, according to a Hawaiian tradition (Paki 1976).

‘Ahahui Malama i ka Lokahei recites the following chant, _Oli komo no Kawaiwai_, prior to their
entrance into Kawaiwai. Their website reports that the chant was “composed in the year 2000 by
an ‘Ahahui member with training in Hawaiian protocols and chant under respected practitioner
Kumu John Keola Lake, a kupuna advisor to our organization” (‘Ahahui Malama i ka Lokahei
2012).
Cultural Surveys Hawai‘i Job Code: KAILUA 49 Background Research

ni‘o doorway or sacred threshold, but also highest point, pinnacle, as the stone of Nā Pohaku are perched on high, overlooking the wetlands.

wahinewai: a veiled reference to Hauwahine, the mo’o-wahine (woman lizard-goddess) of Kawaihau.

nihi ka hē‘e: to proceed with careful observance of kapu. Proceeding with care is part of the protocol of respect.

‘ānapanapa: The ‘ānapanapa is an indigenous plant that grows around Nā Pohaku, but also describes the shimmering waters of Kawaihau. [‘Ahahui Malama i ka Lokahi 2012]

Sterling and Summers’ (1978:230) research indicates anyone from the Kawaihau area and in particular Wai‘au, adjacent to Hānākua Bridge, “had royal blood in his veins and could go where he wished, apparently taking precedence over ali‘i from other sections.” During Sterling and Summers’ interview with Kailua resident Louis Mahoe on 17 September 1953, he stated the following:

At Wai‘au [sic] (which he pronounces Vai-auwia) the chiefs would cross arms, and persons approaching were supposed to jump over their arms. (Believe there is some connection with Makalei story here, as the boy in the story passed over the chiefs’ heads). [Sterling and Summers 1978:230]

Kawaihau is also famous for the Mākālei, or fish-attracting tree, a mythological tree or stick that could summon fish from Kawaihau. Reportedly located near the present day Hānākua Bridge, it was described as a never-failing source of a plentiful supply of food (Beckwith 1970:279–280; Pakui and Elbert 1986:382). The earth mother goddess Haumea is depicted in Hawaiian folklore as the one who brings the Mākālei tree to Kawaihau, thereby establishing the fertile waters of the marsh (Creed and Chiogioji 1991:6; Kelly and Nakamura 1981:4–5). The removal of the tree by Haumea to punish the ali‘i (chiefly class) who forgot to distribute Kawaihau’s fish to a small, red-headed boy named Kahihininhila and his grandmother Neula is a strong reminder of the chiefs’ responsibility of stewardship to the planters on whom they depended for food and power (Creed and Chiogioji 1991:6). Once the ali‘i realized their shortcoming, Haumea returned the Mākālei tree to a hidden place and the fish returned to Kawaihau.

Historically, a portion of Kawaihau Marsh was a 450-acre fishpond cleared of encroaching vegetation by the communal efforts of the ahupua‘a’s residents. Kawaihau was recognized for the abundance of resources the area supplied to the Hawaiian people, including avian, terrestrial, fish, and plant resources (Kekooiwi 1922 in Summers 1964:22).

Situated between the sunny beach area and uplands watered by frequent showers, plentiful resources including marine organisms and birds were readily available in Kailua. As the center of the caldera of the ancient Ko‘olau Volcano (MacDonald and Albott 1974:363) Kailua was also blessed with hard dense stone. An ancient Hawaiian basalt quarry (the present Amon Quarry is built upon the site of the pre-Contact quarry) for lithic tools was near at hand. Kailua was a residential district surrounded by ahupua‘a that were also highly cultivated and capable of providing ample resources for a large resident and visiting population. Kailua apparently also was a pu‘uhonua (place of refuge) before Kamehameha I conquered the island of O‘ahu. Shortly after this conquest, pu‘uhonua were abolished.

3.1 Early Historic Period

Historic accounts of Kailua before the 1850s are rare. Maui high chief Kahekili, who conquered O‘ahu about 1783 (Cordy 2002), settled with his supporting chiefs in Kailua (Fornander 1919:290).

Hawaiian historian Samuel Māmākaikai Kamakau (1992:192) wrote that Kamehameha I, who was known to spend time in Kailua, worked at the Kawainui and Ka‘elepulu fishponds “with his own hands.” It is also reported that during one of Kamehameha’s stays in Kailua there was a shortage of taro. He and his men went to Kawainui to collect the lepo‘ai‘ia, or edible mud that was like pudding. The mud was originally from Kahikila, indicating it had been brought to Kawainui many years before in the past (Ka‘na‘i Aupuni 4 September 1906 in Sterling and Summers 1978:231–232).

One of the only detailed accounts of Kawaihau Marsh and its surroundings is that of Levi Chamberlain, a missionary who made a circuit around O‘ahu to inspect the mission schools in 1828. This account is particularly important because Chamberlain travels through and describes the landscape in the immediate vicinity of the Kawainui Marsh. Chamberlain describes his progress from the settlement at Kailua through the low hills, today called the Kalaeo Hills and the location of Kalaeo High School, that separate Kailua from Kāne‘ohe.

Directing our course towards Kaneohe, the next district, we were obliged to pass over a tract of low land mostly overflowed with water by the late rains. Here I was obliged to wade, as the distance was too great to admit of my being carried on the shoulders of my attendants, as was generally the case in passing a small stream of water. After emerging from the flat, our path was not improved, for we had now to walk through mud instead of water—we walked some distance along the steep hill, and at length by a winding path ascended to the top of it. We sat down to rest for a few minutes, and I found myself upon the summit of a ridge extending from the mountains in a right line to the sea and dividing the low lands of Kawaihau from those of Kaneohe. [Chamberlain 1956:31]

It is clear from this account that this west-northwest portion of Kailua, in the vicinity of the study area, was low lying and prone to flooding. As we shall see in later discussions, this does not appear to change with the passage of time.

3.1.2 Mid- to Late 1800s

The drastic depopulation of the Hawaiian Islands following the introduction of Western disease has been documented in a number of sources (Bingham 1847; Bushnell 1993; Stannard 1989). According to one estimate the population of Hawaiians and part-Hawaiians fell from approximately 300,000 in 1778 to 82,593 by 1850 (Schmitt 1968:43). Population counts from the early 1830s place the population of Kailua at approximately 760 individuals (Schmitt 1973:19). This low population figure is incongruous with the productivity of the region, but well in keeping with population decline estimates due to western disease. Westerners passing through...
Koʻolauapoko in the mid-1840s made note of the cold and flu symptoms among the Native Hawaiians and that much formerly productive land appeared abandoned (Wyllie 1848:20).

Māhele records are an important resource for determining land use during the first half of the nineteenth century. In the division of lands among Kamehameha III and his people between 1848 and 1853, 171 Land Commission Awards (LCAs) were claimed before the Board of Commissioners to Quiet Land Titles (Land Commission) in Kailua. The few coastal common people’s LCAs in the Kailua area were concentrated in the Kaʻōhāloa/Lanikai area.

At the time of the Māhele, it appeared Kailua, Kāneʻohe, and Waimānalo were considered choice locations, for these ahupua’a were awarded to the Crown, the royal family, and then to important aliʻi, particularly warrior chiefs for Kamehameha I. As shown in Figure 12 and Table 1, the entire ahupua’a of Kailua was awarded to Queen Hakaleleponi Kalama. Within the ahupua’a the Crown appropriated the ‘ili of Kawailoa, which surrounds the Olomana peaks, with a portion in Maunawili Valley, the major portion descending to the sand barrier, and another detached portion of the ‘ili located along the shoreline. Princess Victoria Kamāmalu was awarded the ‘ili of Kaʻelepulu, which has both low land and upland portions.

Māhele records mention 123 house lots in the Kailua awards. This most likely does not offer a complete reflection of habitations, as virtually all of the 171 claimants probably lived within the ahupua’a. Where kahuahale, or homes, are mentioned, the location of these house lots are typically bounded “on all sides by upland,” indicating an overwhelmingly inland settlement pattern.

All ‘i in Kailua generally did not specify what use they were making of their land in the LCAs. Land use information is however usually included with LCA testimonies for kuleana, belonging to commoners. Table 1 details the number of lo‘i (irrigated terrace), kula (pasture), mo‘o (raised area that extends between irrigated terraces), and house lots described in LCA claims within the project area. It should, however, be noted that these details provide only partial documentation of land use due to the fact that some landowners did not submit testimonies for their lands, for various reasons. Figure 11 shows ‘ili locations within the vicinity of the project area.

Mid-twentieth century testimony (Kailua Historical Society 2009:235) indicates that as recently as the early 1900s the fishermen at the shore traded ocean fish for taro with the upland farmers, which was probably a long-established pattern. LCAs in Kailua mention numerous fisheries and pools where fish would have been raised.

3.1.3 1880s

In 1880, George Bowser (1880) describes rice fields in “one-fourth” of the “valley of Kawainui” and plans for additional rice fields in “the remainder”:

In this neighborhood, from a knoll or plateau a quarter of a mile square on which Mr. Kahuhu has a farm, I got another magnificent view quite equal to anything I had yet seen. All around were towering peaks and lofty mountains. To my left, as I looked eastward, was the valley of the Kawaiu, about one-fourth of which is already laid out in rice plantations. The remainder will be brought under cultivation during the coming season for the same purposes. Before me, still looking east, there was an uninterrupted view of the sea. In the bosom of the valley...
Cultural Surveys Hawai‘i | Job Code: KAILUA-49

**Background Research**

LRFI for the Kawainui Master Plan Update, Kailua, Ko‘olaupoko, O‘ahu

**TMKs:** [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

**Figure 12:** 2013 Google Earth aerial photograph showing the locations of LCAs in the vicinity of the project area

**Table 1.** Land Commission Awards within the study area

<table>
<thead>
<tr>
<th>Land Claim #</th>
<th>Claimant</th>
<th>‘Ili (Land Division)</th>
<th>Land Use</th>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2536:1</td>
<td>Ukikolo Manu</td>
<td>Two ʻlo‘i</td>
<td>House lot</td>
<td>Three ʻapana (parceled); 4.19 acres</td>
</tr>
<tr>
<td>2536:2</td>
<td>Ulupō, Kakanono</td>
<td>Four ʻlo‘i</td>
<td>6.46 acres and 1.38 acres</td>
<td></td>
</tr>
<tr>
<td>2544</td>
<td>Lapalapa</td>
<td>Four ʻlo‘i and a house site, claims for a small orange and lime grove appear to be elsewhere</td>
<td>Two ʻapana; 2.29 acres</td>
<td></td>
</tr>
<tr>
<td>2575</td>
<td>Hekona Manulele</td>
<td>Five ʻlo‘i each of two parcels</td>
<td>Two ʻapana; 2.29 acres</td>
<td></td>
</tr>
<tr>
<td>2585:1 and 2</td>
<td>Hekona</td>
<td>Manulele, Pohakupu, Olohano</td>
<td>Hi, kula, ipu garden, ten ʻlo‘i and a house lot</td>
<td>Two ʻapana; 2.29 acres</td>
</tr>
<tr>
<td>4452</td>
<td>Kalama, Hakaleleponi</td>
<td>Entire ʻahuwaa‘a; Kawainui Fish pond, Pohakupu</td>
<td>None reported</td>
<td>11,885 acres</td>
</tr>
<tr>
<td>4896</td>
<td>Pohakupu</td>
<td>Seven ʻlo‘i</td>
<td>One ʻapana; 844 acres</td>
<td></td>
</tr>
<tr>
<td>5825</td>
<td>Kaaiheie</td>
<td>Lo‘i and house lot?</td>
<td>One ʻapana; 2.297 acres</td>
<td></td>
</tr>
<tr>
<td>5835</td>
<td>Kekai Kapia</td>
<td>Five ʻlo‘i</td>
<td>Kula, house lot</td>
<td>0.37 acre; 0.52 acre</td>
</tr>
<tr>
<td>6153</td>
<td>Manulele</td>
<td>Two ʻlo‘i</td>
<td>One ʻapana; 0.22 acre</td>
<td></td>
</tr>
<tr>
<td>6162</td>
<td>Punipeki Olohona, 3KDNXSX</td>
<td>Two ʻlo‘i</td>
<td>One ʻapana; 0.47 acre</td>
<td></td>
</tr>
<tr>
<td>6969:2</td>
<td>K. Kapano Kamakalepo and Kaaimoku</td>
<td>Claims four parcels including three of ʻlo‘i (four, eight, and four patches) and a house lot</td>
<td>Kamakalepo two ʻapana; 11.59 acres; Pehiakai; one ʻapana; 1.76 acres</td>
<td></td>
</tr>
<tr>
<td>6807</td>
<td>Poniuohua Kamakape</td>
<td>Fifteen ʻlo‘i</td>
<td>Two ʻapana; 5.254 acres</td>
<td></td>
</tr>
<tr>
<td>6811:1</td>
<td>Kaua Kamakape</td>
<td>Four ʻlo‘i</td>
<td>One ʻapana; 2.56 acres</td>
<td></td>
</tr>
<tr>
<td>6813</td>
<td>Kelikanakaole</td>
<td>‘Ili of Kamakalepo, Kapalawai</td>
<td>Nineteen ʻlo‘i and a house lot, one ʻlo‘i</td>
<td>Three ʻapana; 7.126 acres</td>
</tr>
<tr>
<td>6969:2</td>
<td>Kawihone Kawaia, Manu</td>
<td>Five ʻlo‘i, 30 ʻlo‘i, kula and a house</td>
<td>One ʻapana; 1.3 acre, One ʻapana; 1.52 acre</td>
<td></td>
</tr>
</tbody>
</table>
there is a large pond or lake celebrated for its mullet and awa. The latter fish grows here to four feet in length. Wild duck and the famous Hawaiian goose are also to be found here in abundance. Between this fish-pond of Kawainui and the sea there is level land about one mile and a quarter long by three-quarters of a mile in width, covered with the most beautiful green grass I ever saw. To the right is a wide extent of plain, well grassed, where large herds of cattle and droves of horses roam at will. At the south end of the plain is a large grove of cocoa nut palms. To the north is the open sea. On this delightful morning, riding amidst the cultivation of taro lands around Kawainui Marsh to rice, areas *makua* of the marsh continued to be cultivated in taro as shown in an 1885 photograph (Figure 13). McAllister (1933:377) also reports the presence of “taro patches” along Hāmākua Stream in the past that almost certainly would have been converted to rice fields.

### 3.1.4 1900s

In the early 1900s Kaneohe Ranch came to dominate land holdings in the Kailua and Kane’ohe areas. Included within this acreage is much ranch land that was bought, sold, let, and used as ranch land by numerous parties since the mid-1850s. Kelly and Nakamura’s (1981:34–35) history mentions that Government land sales amounting to 3,000 acres were sold to 21 buyers in Kailua between the years 1849 and 1863. The largest parcel went to William Jarrett of the ‘ili of Maunawili in 1849. The second largest was 399.5 acres to T. Cummins in Mokulua. Both parcels were used for ranching. Other land holdings that were turned into ranch land in the mid-1850s included the ‘ili of Puanea and ‘Ohua’uli (by the son of Paula Marin, Paul F. Manini). These large land holdings were used for years as ranch lands before becoming part of the Castle’s Kaneohe Ranch. Cattle, sheep, and horses were thus allowed to roam at will through gardens and abandoned habitation areas. Kelly and Nakamura (1981:69) point out that although specific records are not available, based on tax information, it is not unreasonable to estimate that several thousand head of cattle were grazing in Kailua by 1875.

A Kaneohe Ranch report of a roundup relates that 300 cattle were driven from Maunawili to their main corrals in Oneawa. Their route was Kapa'a Road, today's Kapa'a Quarry Road. “Cattle that strayed into Kawainui marsh were driven out of the marsh and back to the road by Japanese helpers following on foot” (Brennan and Drigot 2009:183). It has also been reported that a portion of Ulupō Heiau was used as a cattle pen in the 1900s (McAllister 1933:187). Kaneohe Ranch eventually acquired much of the land in Kailua. In addition to ranching, Kaneohe Ranch grew pineapple and sugarcane. With the decline of rice farming around the margins of Kawainui, cattle stock moved onto the abandoned agricultural lands (Kaneohe Ranch 2013). A 1906 Hawaiian Government Survey map (Figure 14) shows all of Kailua, extending into Kaneohe, as grazing lands (yellow highlighted boundary) with the southeasternmost portion of Kawainui Marsh as rice and taro lands (blue striped area). Ranching in Kailua has ceased in the last few years.
Figure 13. Stream and lo‘i kalo system mauka of Kawainui, 1885 (Hawaiian Historical Society)

Figure 14. 1906 Hawaiian Government Survey map by Donn shows all of Kailua, extending into Kaneohe, as grazing lands (yellow highlighted boundary) with the southeasternmost portion of Kawainui Marsh as rice and taro lands (blue striped area)
For the nearly 100 years following the Māhele, Kailua also grew into an important area of commercial agriculture. Kailua’s numerous abandoned taro lo’i in the former taro lands of Kawainui and Maunawili provided perfect areas for the expansion of rice farms. By the early 1900s, the majority of the taro lo’i in Kawainui marsh were converted to rice paddies, leaving little to no physical evidence of previous lo’i cultivation. At one time, there were multiple rice mills functioning in Kailua Ahupua’a, one of which was located in the vicinity of the present day Castle Medical Center. “The principle landowners at this time were N.R. Rice, Wong Leong, and W.G. Irwin, the Crown and heirs of J.S. Ellis” (Ewart and Tuggle 1977:8). By 1913, Wong Leong had sold his various parcels, land, leases and rice mill to N.R. Rice and by this time, only five LCAs remained with their original claimant or heirs (Ewart and Tuggle 1977:9).

During the first part of the twentieth century, rice growing in California utilized modern production methods to reduce their costs, and thus their prices. This led to the rapid decline in rice farming in Hawai’i (Kelly and Nakamura 1981:51-63). Coulter and Chun (1937:53) also mention that the prohibition of Chinese immigration to Hawai’i beginning in 1876 was another reason for the decline in rice cultivation.

Truck farming of taro, avocado, papaya, and western crops followed this decline. The Kūkanono slopes along Kailua Road and extending toward Kawainui Marsh were utilized for cultivation, raising chickens, and pig farming. The Kailua Fruit Stand, owned and operated by the Nishikawa family, was the most successful of the Kūkanono truck farms (Figure 15 and Figure 16). The stand was in the location of today’s First Presbyterian Church on Kailua Road. The family worked and leased the lands for 25 years until the development of the Kūkanono neighborhood (Hollier 2011).

In the 1930s, Kenzo Matsuda leased land adjacent to the old Pali Road where he and his family constructed a building that was well known in Kailua. Matsuda Store was also the family home for many years. The store was adjacent to Kawainui Marsh (Figure 17), just west of the current location of Castle Hospital on today’s Ulukahiki Street. Matsuda’s Store was a general store that provided the local farmers with all their needs including gasoline and livestock feed (Hollier 2011).

Sugar never became an important crop in Kailua itself, but the need for water for the adjacent sugar lands of Waimānalo was an important factor in the transformation of the Kailua watershed. As early as the late 1870s a system of flumes, ditches, and tunnels was built in the mauka portion of adjacent Maunawili to collect water from the abundant springs and streams. By 1881 close to 1,000 acres of sugar had been planted, and milling operations were underway in Waimānalo (Kelly and Nakamura 1981:76). Expansion in acreage continued, increasing the need for water. By the 1920s, improvements to the Waimānalo Irrigation System (SHP # 50-80-15-4042) included catchment tunnels excavated into the base of the Ko’olau in Maunawili to increase flow. Beginning in 1923, water from Kawainui Marsh was pumped through a portion of the Waimānalo Irrigation System to a reservoir in Waimānalo. A pump house and canal were adjacent to Kailua Road (Figure 18). The pumping caused the last portions of the fishpond to dry out and become the wetland it is today. Pumping continued until the early 1950s (Hall 1997:94; Kelly and Nakamura 1981:78-79).
Figure 16. Nishikawa family with their truck farming equipment in Kīkanono (Wu 2013)

Figure 17. Matsuda family store and residence ca. 1930s (Hawai‘i State Archives)

Figure 18. Portion of the 1936 Mokapu USGS 7.5-minute topographic quadrangle showing the location of the project area, Waimanalo Pipe Line and Pump, and Kailua Radio Station
3.1.5 Modern Land Use and History

While Harold Castle grazed cattle and horses throughout Kailua including Kawaihau and Hāmākua Marshes for many years; the Campos Dairy was established in 1925. Cattle grazed throughout Kailua for many years, and in the Hāmākua Marsh area until recently. The first “modern” development within the project area occurred in 1928 when the Mackay Radio Tower began operating at mauka of the Hāmākua Bridge (see Figure 18). The station was for “the new high frequency radio system for transpacific communication” and was “intended to take the overflow of traffic” (Thrum 1929:68-69). In 1950, the Mackay Radio and Telegraph Company (Figure 19 and Figure 20) “installed four new multichannel transmitters” and antennas, and enlarged the radio transmission building to provide communications for airplanes flying over the Pacific (Aviation Daily 1950:253). Mackay Radio Company, which later became ITT World Communications, operated the radio station, a tall radio tower, until it was removed in the 1980s (Chun 1993:1).

In the 1940s the military conducted training exercises within the Kawaihau Marsh margin according to Martin Knott, a rancher who resided in the area (Kelly and Clark 1980:24). Troop maneuvers and small arms usage were permitted and conducted in the vicinity of Na Pōhaku o Hauwhaine south to the current location of Castle Medical Center. Mortars were also exploded although areas designated for mortar firing were unknown (Clark 1980:15). Evidence of “live-fire training,” consisting of used and unused 50-caliber shells from large machine guns was found on the Kukanono slope during an archaeological investigation (Erkelens 1993:10). This military training may have been associated with the Pali Training Area in Maunawili and Makalii Valleys (O’Hare et al. 2014), although no mention of such training outside the valleys is reported. Kelly and Clark’s (1980:24) research indicated Army activities “were limited in geographic extent.”

Rancher Martin Knott also reported that during World War II, Italian prisoners of war “were used for construction work in the valley and that they had done some stone work from time to time” (Kelly and Nakamura 1981:127). The location of their camp was described as “in one of the small valleys, probably Pohakea, on the southwestern edge of the Marsh. The entrance to the valley was from a road that preceded the present Kapa’a Quarry Access Road” (Kelly and Nakamura 1981:127).

During 1949-1950, the northwest end of the marsh was filled in with soil that had been used for construction work in the valley and that they had done some stone work from time to time” (Kelly and Nakamura 1981:127). The location of their camp was described as “in one of the small valleys, probably Pohakea, on the southwestern edge of the Marsh. The entrance to the valley was from a road that preceded the present Kapa’a Quarry Access Road” (Kelly and Nakamura 1981:127).

During 1949-1950, the northwest end of the marsh was filled in with soil that had been used for construction work in the valley and that they had done some stone work from time to time” (Kelly and Nakamura 1981:127). The location of their camp was described as “in one of the small valleys, probably Pohakea, on the southwestern edge of the Marsh. The entrance to the valley was from a road that preceded the present Kapa’a Quarry Access Road” (Kelly and Nakamura 1981:127).
The Pu‘u o ‘Ehu Quarry, named after its location on the north slope of Pu‘u o ‘Ehu, is also referred to as the Radio Station Basalt Quarry, based on its proximity to the Mackay Radio Tower on the opposite side of Kailua Road and adjacent to Kawainui Marsh. Lincoln McCandless apparently opened the quarry prior to the construction of the Pali Road, although, “recent widening of the highway has obliterated the quarry” (Stearns 1974:22). The geological description of the basalt is “typical basalt of the Kailua Volcanic Series that filled the ancient Koolau Caldera” (Stearns 1974:22). A second quarry consisting of “lithified dunes” was removed to fill in Kaelepulu Pond during the development of Enchanted Lakes (Manhoff and Uyehara 1976:37, White 1984:95).

By the late 1950s, the truck farms that had flourished since the turn of the century within the bounds of present day Kailua Town were slowly replaced by housing, municipal, and retail developments. Kailua was promoted as the bedroom community for Honolulu businessmen, only “8 miles and 20 minutes” from downtown. Residential developments were planned for more outlying areas of Kailua Town such as Olomana, Pōhākapu, and Onewa Hills (Hall 1997:141). Figure 21 shows this increased development.

By the early 1950s, a dike was installed on the makai edge of Kawainui Swamp to protect Kailua from flooding. However, the dike did little to prevent flooding during the 1950s. Thus, construction of the Oneawa Channel was undertaken, particularly since residential development was on the rise.

The completion of the Pali Highway in 1957 was the impetus for increased residential development in Kailua since the highway provided easy access between Honolulu and Kailua. Coconut Grove was established prior to the completion of the highway; Maunawili was not developed until the mid-1960s (Brennan and Drigot 2009:191).

Increased population also required the development of landfills. The Kapa‘a Sanitary Landfill, located across Kapa‘a Quarry Road from the marsh, opened in 1964. The landfill occupied the location of a former quarry. The site contained ash fill from its incinerator (Pacific Business News 1997). A 1981 report on the landfill describes Kawainui Marsh’s use as,

...a flood-control facility for most of the Kailua area, and serves as a buffer zone and sink for sediment and nutrients that are produced by natural and human activities upstream of the marsh, including overland runoff. The marsh is also a receptical [sic] for treated sewage effluent, and, possibly, leachate production from the landfill. [Chun and Dugan 1981:8]


Two horse and cattle ranches have been operating on leased land within the project area since the 1960s. VO Ranch, operated by the Cash family, has occupied approximately 10 acres just south of Nā Pōhaku o Haualalī; the lease expired on 13 December 2013. Diamond K Ranch, operated by the Knott family, occupied approximately 80 acres extending from Kukanono Slope, including the Kukanono Pumping Facility area, west to Kapa‘a Quarry Road, and north to the VO Ranch. Mokulana Peninsula was used by the Knott Ranch for cattle and horse pasturage. The land west of Castle Medical Center was cleared and fenced with corrals and sheds. From 1969 to 2010 this was part of Mr. Martin Knott’s ranching infrastructure. DOFAW’s base yard now occupies the land downslope of Castle Medical Center, off Ulukahiki Street.
In 1972, the Model Airplane Field was developed within the study area. A former sanitary landfill on the western side of Kawainui Marsh in the 1930s-1940s was planned for expansion of the landfill to accommodate the increased demand for landfill space. However, due to the risk of flooding and the potential for contamination of groundwater, the expansion was not approved. In 1972, a sanitary landfill was established near the project area, and a road was constructed to access the landfill.

In 1972, the Model Airplane Field was developed within the study area. A former sanitary landfill on the western side of Kawainui Marsh in the 1930s-1940s was planned for expansion of the landfill to accommodate the increased demand for landfill space. However, due to the risk of flooding and the potential for contamination of groundwater, the expansion was not approved. In 1972, a sanitary landfill was established near the project area, and a road was constructed to access the landfill.

A levee was constructed in the early 1900s to prevent flooding of the nearby residential areas. The levee was constructed with earthen fill and was later reinforced with concrete buttresses. The levee extended for several miles along the coast and was a critical infrastructure for the protection of the area from the ocean.

A levee was constructed in the early 1900s to prevent flooding of the nearby residential areas. The levee was constructed with earthen fill and was later reinforced with concrete buttresses. The levee extended for several miles along the coast and was a critical infrastructure for the protection of the area from the ocean.

In 1972, a sanitary landfill was established near the project area, and a road was constructed to access the landfill. The landfill was managed by the State of Hawaii and was closed in 1990. The area surrounding the landfill was later designated as a historic district, and efforts were made to preserve the cultural and historical significance of the area.

A levee was constructed in the early 1900s to prevent flooding of the nearby residential areas. The levee was constructed with earthen fill and was later reinforced with concrete buttresses. The levee extended for several miles along the coast and was a critical infrastructure for the protection of the area from the ocean.

In 1972, a sanitary landfill was established near the project area, and a road was constructed to access the landfill. The landfill was managed by the State of Hawaii and was closed in 1990. The area surrounding the landfill was later designated as a historic district, and efforts were made to preserve the cultural and historical significance of the area.

A levee was constructed in the early 1900s to prevent flooding of the nearby residential areas. The levee was constructed with earthen fill and was later reinforced with concrete buttresses. The levee extended for several miles along the coast and was a critical infrastructure for the protection of the area from the ocean.

In 1972, a sanitary landfill was established near the project area, and a road was constructed to access the landfill. The landfill was managed by the State of Hawaii and was closed in 1990. The area surrounding the landfill was later designated as a historic district, and efforts were made to preserve the cultural and historical significance of the area.
more suitable for water bird habitat. Recently the Department of Forestry and Wildlife completed establishing the wetlands as ponds for water bird habitat (Martha Yent, personal communication).

3.2 Previous Archaeological Research

Twentieth century archaeological findings from inventory surveys, data recovery projects, and inadvertent finds during development are the main source of our knowledge about the archeological record in Kailua. Archaeological work in the last 25 years in Kailua has been fairly extensive. This work has been concentrated along the margins of Kawainui Marsh and within Maunawili Valley for the most part. This is largely due to the fact that most of the makai portions of the ahupua‘a had been developed prior to the implementation of State and Federal Historic Preservation Rules (Dye 1992). Previous archaeological studies located within or in the vicinity of the project area are depicted in Figure 23 and presented in Table 2. Previously identified historic properties located within or in the vicinity of the project area are depicted in Figure 24 and presented in Table 3.

Remains of upland terraces show that taro has been grown extensively and intensively in Kailua since the thirteenth or fourteenth century, and possibly earlier (Allen-Wheeler 1981; Williams et al. 1995). The work of Cordy (1977a and b, 1978), Allen-Wheeler (1981), Athens (1983a), and Allen (1986, 1988) all document the mix of irrigated and dryland agriculture that was carried out in Kailua during prehistory and continuing into the historic period. Dryland agriculture, including yams, gourds, and sweet potato, would have been carried out on slopes and on drier flatlands. Modification to the landscape would have been variable, ranging from none to the construction of terraces and mounds for planting.

According to Handy (1940:155), the beach barrier at Kailua (current day Coconut Grove) was famous for its production of sweet potatoes, grown in small mounds. Irrigated agriculture would have been carried out along streams and below springs. Landscape modifications would have included construction of terraces and/or pond fields, ‘auwai (ditches), and earthen and stacked-stone berms. Dryland and irrigated agricultural features have been found in Maunawili and along the margins of Kawainui Marsh.

Previous archaeological investigations in Kailua have located dispersed pre-Contact habitation remnants. This is in keeping with the observations of early Westerners in Hawai‘i that the settlement pattern for the most part consisted of habitations scattered across the landscape amid agricultural fields. It should be remembered that settlement data is conspicuously absent from the lowland, beach berm areas of Kailua, due to early development of these areas.

McAllister (1933) reported eight heiau within the ahupua‘a of Kailua, and it is not unreasonable to conclude there were several more of which McAllister’s informants had no knowledge. This is well in keeping with Kailua’s status as a productive ahupua‘a and the residence of ali‘i. The three known heiau closest to the current study area are McAllister’s sites 359, Pahukini Heiau; 360, Holomakani Heiau; and 371, Ulapo Heiau. The Holomakani Heiau location, “just beneath Pahukini,” was reported to have been used for agriculture and was destroyed by the early 1930s and McAllister’s (1933:182) survey. However, more recent research (i.e., Pantaleo and Cleghorn 1989) suggests remnants of the heiau are extant.
Table 2. Previous archaeological studies in the vicinity of the project area (SIHP # 50-80-11 prefix used unless otherwise noted)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Nature of Study</th>
<th>Location</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrum 1906, 1908, 1915</td>
<td>Heiau study</td>
<td>Kailua Ahupua’a</td>
<td>In his articles for the Hawaiian Almanac and Annual (1906, 1908, 1915), Thrum is first to document many of the heiau in the ahupua’ a of Kailua.</td>
</tr>
<tr>
<td>McAllister 1933</td>
<td>Archaeological reconnaissance</td>
<td>Island wide</td>
<td>Described 16 sites within Kailua Ahupua’a, including Kawainui Pond (Site 370), Ka’a’eakul Fishpond (Site 377), Ulupō Heiau (Site 371), and Pahukini Heiau (Site 359); in all, eight heiau reported for Kailua.</td>
</tr>
<tr>
<td>Handy 1940</td>
<td>Study of native planting</td>
<td>Kailua Ahupua’a</td>
<td>Kailua Ahupua’a described as a rich, productive, well-terraced taro growing area (p. 99); the “sandy plains” of Kailua were planted in sweet potato using a planting system of small soil mounds (p. 155, plate 8).</td>
</tr>
<tr>
<td>Bordner 1977</td>
<td>Archaeological reconnaissance</td>
<td>Proposed Kapa’a Landfill Site</td>
<td>No significant findings</td>
</tr>
<tr>
<td>Clark 1977; Clark and Connolly 1977</td>
<td>Site survey</td>
<td>Hāmākua Dr between Hahani St and Akouska</td>
<td>Of proposed road corridor; briefly described stone alignments, a large earth mound and wall alignments, a house site (SIHP # -4699), and a possible heiau (SIHP # -4700).</td>
</tr>
<tr>
<td>Cordy 1977a, 1977b</td>
<td>Reports, archaeological surveys, historic document research, and aerial photograph analysis</td>
<td>S and SE margin of Kawainui Marsh</td>
<td>For alignment of proposed City and County sewer line; documented historic house sites and dryland and wetland agricultural features designated as Site 7 and SIHP # -2029</td>
</tr>
<tr>
<td>Ewart and Tuggle 1977</td>
<td>Archaeological investigation</td>
<td>Kawainui Marsh</td>
<td>No significant findings</td>
</tr>
<tr>
<td>Cordy 1978</td>
<td>Test excavations report</td>
<td>Site 7 at Kawainui Marsh</td>
<td>Involved four test trenches in large walled agricultural complex; defined the boundary of SIHP # -2029</td>
</tr>
<tr>
<td>Morgenstein 1978</td>
<td>Geo-archaeological analysis</td>
<td>Kawainui Marsh</td>
<td>Study of field remnants dating to late pre-Contact / early post-Contact period</td>
</tr>
<tr>
<td>Reference</td>
<td>Nature of Study</td>
<td>Location</td>
<td>Results</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>Clark 1980; Kelly and Clark 1980</td>
<td>Inventory survey</td>
<td>Kawainui Marsh</td>
<td>Documented over 178 predominantly agricultural features, many previously located by Cordy (1977); reports AD 350-650 radiocarbon date from context not clearly associated with human activity</td>
</tr>
<tr>
<td>Kraft 1980a, 1980b, 1980c</td>
<td>Geo-archaeological study</td>
<td>Kawainui Marsh</td>
<td>Coring results suggested shallow marine embayment similar to present-day Kāne‘ohe Bay ca. 6,000 and 2,800 years BP</td>
</tr>
<tr>
<td>Allen-Wheeler 1981</td>
<td>Archaeological excavations</td>
<td>Kawainui Marsh, SIHP # -2029</td>
<td>Testing of agricultural features in marsh; presented model for agricultural developments in the area</td>
</tr>
<tr>
<td>Kelly and Nakamura 1981</td>
<td>Detailed historical study</td>
<td>Kawainui Marsh Area</td>
<td>Marsh area; findings included fishpond and agricultural features within marsh</td>
</tr>
<tr>
<td>Morganstein 1982; Hommon 1982</td>
<td>Geological and archaeological investigations</td>
<td>Hānākua Dr adjacent to Ka'elepulu Stream</td>
<td>Documented historic fill in upper layers and presence of one potential agricultural “bund” (embankment used to control flood water) below; bund thought to be associated with rice farming; Hommon (1982:14) also determined sites (SIHP #s -4699, -4700) identified by Clark (1977) were modern features</td>
</tr>
<tr>
<td>Neller 1982</td>
<td>Limited subsurface investigations</td>
<td>Kawainui, Kākanono area, TMK: [1] 4-2-003-038</td>
<td>Carried out in same area reported by Clark (1980a) and Athens (1983a); Neller dismissed early date reported by Clark (1980a); basalt adz blanks, adz pieces, flakes, broken hammer stones, stone abrasers, and polishing stones found in disturbed stratigraphy; Neller (1982b:8) interpreted the assemblage as “accumulated remains of continued foraging activities in the area”; bone fishhook blank identified as possible human tibia, and bone fragment used as a possible scraper were only other traditional Hawaiian artifacts identified; artifacts dating to 1800s included broken glass and bottle sherds; artifacts dating to 1940s and 1950s included bottles, glass sherds, ceramic sherds, and metal pieces; large grinding stone also found on Kākanono slopes</td>
</tr>
</tbody>
</table>

**Reference**

Athens 1983a | Archaeological investigation | Pōhaku'upu Kākanono slope SIHP # -2022 | Concluded numerous surface features (primarily agricultural mounds and terraces) primarily constructed after AD 1900; calls into question early dates (AD fifth to eighth century) obtained by Clark (1980) on same slope |

| Athens 1983b | Archaeological excavations report | HARC Site # 50-OA-G6-40; SIHP # -2030 | At a reported beach marine midden, hearths, and pit features |

| Athens 1990; Athens and Ward 1991 | Paleo-environmental and archaeological investigations | Kākanono Marsh | Flood control project; survey revealed no cultural resources within marsh, but suggested archaeological monitoring in future |

<p>| Hammatt et al. 1990 | Geo-archaeological study | Kākanono Marsh | Sediment cores from ten locations in marsh analyzed; at approximately AD 1400 dramatic changes in pollen record; changes may well be result of increases in Hawaiian subsistence activities |</p>
<table>
<thead>
<tr>
<th>Reference</th>
<th>Nature of Study</th>
<th>Location</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quebral et al. 1992</td>
<td>Archaeological survey</td>
<td>Kailua Gateway Development, TMKs: [1]-[2]-001:001, 055, 4-2-003:017, 029, 4-2-038:024</td>
<td>Identified four sites: SIHP # -4428 (possible habitation site), SIHP # -4429 (lithic scatter), SIHP # -4430 (widely distributed lithic scatter), SIHP # -4431 (two stone structures)</td>
</tr>
<tr>
<td>Athens and Ward 1993</td>
<td>Paleo-environmental investigation</td>
<td>Hānākua Marsh, TMKs: [1]-[2]-001, 003</td>
<td>(report unavailable)</td>
</tr>
<tr>
<td>Erkelens 1993</td>
<td>Archaeological investigation, M.A. thesis</td>
<td>Kākanoma Slope, Kawaihui Marsh</td>
<td>Documented surface survey and excavation of 29 test pits; results gave clearer picture of activity in area</td>
</tr>
<tr>
<td>Hammert et al. 1993</td>
<td>Archaeological inventory survey</td>
<td>Puʻu oʻEhu Ridge, TMKs: [1]-[2]-001, 017</td>
<td>For proposed location of Kailua 272 Reservoir; no historic properties found; area utilized for cattle and horse grazing; oral history research revealed traditional Hawaiian significance of Puʻu oʻEhu peak</td>
</tr>
<tr>
<td>Kiklooi et al. 2000</td>
<td>Archaeological inventory survey</td>
<td>Kawaihui Marsh, TMK: [1]-[2]-003:009, 016, 017</td>
<td>For Kawaihui Marsh Park improvements area; no significant finds</td>
</tr>
<tr>
<td>McDermott et al. 2000</td>
<td>Archaeological field inspection and background literature search</td>
<td>Kawaihui Marsh</td>
<td>For proposed circle Kawaihui Trail project; highlighted possibilities for interpretive trail through marsha area</td>
</tr>
<tr>
<td>Hammert and Shideres 2001</td>
<td>Cultural impact evaluation</td>
<td>Kawaihui Marsh</td>
<td>In support of Kawaihui Marsh Pathway Plan</td>
</tr>
<tr>
<td>Mann et al. 2001</td>
<td>Archaeological assessment</td>
<td>Kawaihui Gateway Park</td>
<td>No surface findings; possibility of subsurface findings including burials; archaeological inventory survey recommended</td>
</tr>
<tr>
<td>Ah Sam and Cleghorn 2003</td>
<td>Archaeological assessment</td>
<td>St. John’s Church</td>
<td>Concluded no historic properties had been recorded in project area previously, and no evidence suggesting possibility of such properties found; no further work recommended</td>
</tr>
<tr>
<td>Mann and Hammert 2003</td>
<td>Archaeological field inspection</td>
<td>Kawaihui Marsh</td>
<td>Project area lies within SIHP # -2029, Kawaihui Marsh archaeological cultural-historical complex; no observable surface deposits</td>
</tr>
</tbody>
</table>
Figure 24. Portion of the 1998 Mokapu USGS 7.5-minute topographic quadrangle, showing previously identified historic properties within and adjacent to the project area.
### Site Description

<table>
<thead>
<tr>
<th>Site Name / TMK</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>360 5 - - - McAllister (1933) designated Holomakani Heiau as Site 369. Heiau on Ulumawao Ridge, northeast of quarry, not within current project area; name means “wind running or racing,” and heiau believed to have been built by high chief ‘Olopana in twelfth century; Holomakani thought to have been destroyed during early 1900s agriculture clearing (Sterling and Summers 1978:229); in 1987 a heiau found on slopes below Pahukini, same location where McAllister found Holomakani Heiau; TMK: [1] 4-2-014:002</td>
<td></td>
</tr>
<tr>
<td>370 - - - - McAllister (1933:186) designated “Kawainui pond” as Site 370; “once a large inland fishpond”; site known for Makalei tree that attracted fish, edible sediments that “resembled starch”, and associated with goddess Hauwahine; anyone from Kawainui Marsh, in particular the area known as Wai‘auia, “had royal blood in his veins and . . . [had] precedence over ali‘i from other sections” (McAllister 1933:186).</td>
<td></td>
</tr>
<tr>
<td>1 - - - Heiau documented by McAllister as Site 371. Its large 43 m (140 ft) x 9.1 m (30 ft) high terrace dominates Kawainui Marsh; 8OXSǀ means “night inspiration”; said to have been built in a night by Menehune; spring beneath the structure used for washing pigs prepared in the temple oven (Akuni Ahau in Sterling and Summers 1978:234); 8OXSǀ said to have been built by high chief ‘Olopana in twelfth century and is a luakini or state-class of heiau, important enough to accommodate preparations of war and other highly important state matters; McAllister (1933:14, 134) also notes modern graves are within the heiau; TMK: [1] 4-2-013:002</td>
<td></td>
</tr>
<tr>
<td>1 - - - Featuring 2022 32 Cluster 1 Site 1 Site 1 Series of terraces from marsh edge upslope, a long retaining wall upslope, ruins of a historic house, a spring, excavation yielded charcoal dates in range of AD 353-655 and AD 529-965; artifact found on surface; Erkelens (1993:26) conducted extensive vegetation clearing, subsurface testing, and remapped site</td>
<td></td>
</tr>
<tr>
<td>1 - - - Cluster 7 - Site 4 Mounds, wall remnants, a terrace Makali‘i Slope Cluster; TMK: [1] 4-2-013:010</td>
<td></td>
</tr>
<tr>
<td>1 - - - Feature 1998 34 Cluster 10, 11 - Cluster 10: 12 features including retaining walls, L-shaped alignments of rocks, terraces, a roadbed, a level terrace or platform, surface scatter; Cluster 11: two retaining walls; site includes 1Ɨ3ǀKDNX o Hauwahine.</td>
<td></td>
</tr>
<tr>
<td>1 - - - Cluster 11 Site 6 Site 6 Site 6 Fieldwork of 1998, 1999, 2000, 2001, and 2002 conducted; most excavation focused on mid-late 19th century through early 20th century deposits, although prehistoric and historic remains were also significant. Site 6 is located about 200 yards west-southwest of Site 4, and consists of an area of 5 acres. Analysis of the site shows that Site 6 is part of a larger complex of structures, and that the site may have been used for a variety of purposes.</td>
<td></td>
</tr>
</tbody>
</table>


---

**References:**

- Akuni Ahau in Sterling and Summers 1978:234
- McAllister 1933:14, 134
- Erkelens (1993:26) conducted extensive vegetation clearing, subsurface testing, and remapped site
- Site 6 is located about 200 yards west-southwest of Site 4, and consists of an area of 5 acres. Analysis of the site shows that Site 6 is part of a larger complex of structures, and that the site may have been used for a variety of purposes.
### Site Description

#### Site Name / TMK

<table>
<thead>
<tr>
<th>Site Name / TMK</th>
<th>Site Description</th>
<th>Archivist</th>
<th>1977</th>
<th>1978</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>2026 36 Cluster 12</td>
<td>Agricultural terrace that extends along marsh edge: 67 m long NE/SW; 14 m wide SE/NW; single-course high walls; rusting crane</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2027 37 Cluster 15</td>
<td>Stone wall rectangular enclosure, linear pile of rocks, terrace, surface artifacts</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2028 38 Cluster 14</td>
<td>Two walls that meet at a right angle'Ulukahiki Walls; TMK: [1] 4-2-006:004 or 007</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2029 39 Cluster 13 Site 7</td>
<td>Complex of agricultural fields consisting of basalt boulder alignments documented (Cordy 1978, Allen-Wheeler 1981); additional subsurface testing identified lithic debitage, volcanic glass flakes, and basalt adze at 70-97 cm below surface just above water table; mound of river cobbles may represent a local adaptation to water control utilizing immediately available resources (mounding river cobbles) (Mann and Hammatt 2003); grinding stone and habitation remnants identified (Hammatt 2013).</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2030 40</td>
<td>Subsurface cultural layer consisting primarily of marine midden with pit features and hearths; majority of site contained modern disturbance</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2031 41</td>
<td>Athens (1983a) conducted archaeological excavations on 3ǀKƗNĐSX.njNDQRQRVORSHSULRUWR residential development; no pre-Contact agricultural features identified; features dated to post-1900s or post-1950s; however, traditional Hawaiian occupation and tool manufacturing evident as a dense distribution of basalt flakes and very large grinding stone found</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2032</td>
<td>Historic structure remains, surface and subsurface, mound to 2 meters elevation.</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2033</td>
<td>Historic stone wall remains, surface and subsurface</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2034 86</td>
<td>Historic walls</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2035 87</td>
<td>Historic wall</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2036 88</td>
<td>Historic linear rock mound / wall remnant</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>2037 89</td>
<td>Pre-Contact agricultural terrace complex</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
<tr>
<td>3739 85</td>
<td>Pre-Contact terraces (may be Holomakani Heiau Site 360)</td>
<td>50-80-11-51</td>
<td>50-Oa-G6-52</td>
<td>50-Oa-G6-53</td>
<td>50-Oa-G6-54</td>
</tr>
</tbody>
</table>

### Notes

- Athens (1983a) conducted archaeological excavations on 3ǀKƗNĐSX.njNDQRQRVORSHSULRUWR residential development; no pre-Contact agricultural features identified; features dated to post-1900s or post-1950s; however, traditional Hawaiian occupation and tool manufacturing evident as a dense distribution of basalt flakes and very large grinding stone.
- Historic structure remains, surface and subsurface, mound to 2 meters elevation.
- Historic stone wall remains, surface and subsurface.
- Historic walls and historic wall.
- Historic linear rock mound / wall remnant.
- Pre-Contact agricultural terrace complex.
- Pre-Contact terraces (may be Holomakani Heiau Site 360).
<table>
<thead>
<tr>
<th>TMK / Site Name</th>
<th>Site Description</th>
<th>Date of Collection</th>
<th>CFS #</th>
<th>CFS ±</th>
<th>Crop Year</th>
<th>Crop Year ±</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-2-013:038</td>
<td>Terrace and habitation complex</td>
<td>1980</td>
<td>Bishop Museum 50-Oa-G6-1980</td>
<td>06/21/91</td>
<td>1980</td>
<td>06/21/91</td>
</tr>
</tbody>
</table>
### Site Description

<table>
<thead>
<tr>
<th>Site Name/TMK</th>
<th>Site Description</th>
<th>Site Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSH 3</td>
<td>Concrete slab of unknown function, likely associated with early twentieth century Japanese habitation</td>
<td>Holding tank of unknown function, possibly a concrete structure of unknown function; possibly a foundation</td>
</tr>
<tr>
<td>CSH 4</td>
<td>Holding tank of unknown function; possibly a concrete structure of unknown function</td>
<td>Broken basalt fragment with petroglyphs on one face, observed in a modern stone alignment</td>
</tr>
<tr>
<td>CSH 5</td>
<td>Stairway composed of placed asphalt pieces with two basalt stone alignments</td>
<td>Large basalt grinding stone</td>
</tr>
<tr>
<td>CSH 6</td>
<td>Large basalt grinding stone</td>
<td>Large basalt grinding stone</td>
</tr>
</tbody>
</table>

### Background Research

**McAllister (1933)** also reported on Kawainui pond (Site 370):

Site 370. Kawainui pond, once a large inland fishpond, Kailua. The pond belonged to the ali'i. Any person coming from this section, particularly Wai'alia, which is near the small bridge near the sea side of the Mackay radio and telegraph station, had royal blood in his veins and could go where he wished, apparently taking precedence over ali'i from other sections. My informants, John Bell and Mahoe, were both much impressed with this fact. Hauwahine was the goddess of this pond, as well as of Pa'ea pond, Laie (Site 277), where she stayed only when leaves and other refuse covered that pond. At other times she departed to Kailua. The old Hawaiians at Kailua, however, insist that she never left Kawainui.

This pond was the site of the Maka-Lei tree, a famous mythological tree which had the power of attracting fish. Beckwith (9, p. 21) has a note concerning it, and Emerson (35, p. 17, note) writes:

It did not poison, but only bewildered and fascinated them [the fish]. There were two trees bearing this name, one a male, the other a female, which both grew at a place in Hilo, called Pali-ali. One of these, the female, was, according to tradition, carried from its root home to the fishponds in Kailua, Oahu, for the purpose of attracting fish of the neighboring waters. The enterprise was evidently successful.

Solomon Mahoe said that from this pond a soil was taken which resembed starch. John Bell remembers eating of this soil when he was with Kalakau. The area is now swamp land. [McAllister 1933:186]

In the last 20 years, over 25 reports of inadvertent finds of human skeletal remains have been made in Kailua, on the sandy beach berm of Coconut Grove and Kā'anapali Beach. As with other nearshore sandy areas in Hawai'i, clearly Kailua was used for burial of the dead; however, these burial remains are not nearly as extensive as the hundreds of human burials discovered at nearby Mōkapu Peninsula (Snow 1974).

#### 3.2.1 Archaeological Studies Conducted in the Vicinity of Kawainui Marsh

Most relevant for the Kawainui Marsh Master Plan Update are more than two dozen archaeological studies conducted between the 1970s and the 2010s. Section 3.2.2 discusses the seven reports specific to the Hāmākua Marsh and Pu'u o 'Ehu portion of the study area.

##### 3.2.1.1 Bordner (1977)

Archaeological Research Center Hawaii, Inc. conducted an archaeological reconnaissance survey in association with the planned expansion of the existing landfill site in Kapaa. Bordner (1977) observed that the area had seen little recent modification or alteration, but no historic properties were identified within the study area; therefore, it was concluded that the area was not extensively utilized during the pre-Contact period.

##### 3.2.1.2 Ewart and Tuggle (1977)

An archaeological reconnaissance survey and historic literature review of Kawainui Marsh was undertaken in 1977 by Ewart and Tuggle (1977). Their somewhat U-shaped study area...
consisted of an area of higher ground between Maunawili and Kahana Iki Stream at the south end of the marsh, and the slopes between the marsh and Quarry Road as far north as the Kapa’a Quarry on the west and the southeastern slopes between the marsh and modern developments as far north as St. John’s Lutheran Church on the east. As a result of the reconnaissance survey, nine (Site 1 through Site 9) archaeological features were identified, six of which (Site 1 through Site 6) are (Table 4 and Figure 25).

Table 4. Brief summary of nine sites reported by Ewart and Tuggle (1977:18-25)

<table>
<thead>
<tr>
<th>Site #</th>
<th>General Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SE marsh, north of Ulupō Heiau by a spring</td>
<td>Group of terraces with long retaining wall upslope and ruins of a post-Contact house</td>
</tr>
<tr>
<td>2</td>
<td>SE marsh, NW of Ulupō Heiau</td>
<td>Poorly defined terraces, numerous stone mounds, and two post-Contact house ruins</td>
</tr>
<tr>
<td>3</td>
<td>SE marsh, NW end of Uluaa St</td>
<td>Terraces and mounds (one associated with a pipe, hence post-Contact)</td>
</tr>
<tr>
<td>4</td>
<td>SE marsh, west of ‘Ulukahiki St</td>
<td>Two mounds and some small wall fragments; also a fragment of a wall located on top of the bluff</td>
</tr>
<tr>
<td>5</td>
<td>SE marsh, west of ‘Ulukahiki St</td>
<td>Remains of at least three post-Contact buildings</td>
</tr>
<tr>
<td>6</td>
<td>SE marsh, west of ‘Ulukahiki St</td>
<td>Unusual earthen mounds in a hau grove</td>
</tr>
<tr>
<td>7</td>
<td>W side of marsh, east of Quarry Rd</td>
<td>Low stone alignment forming a terrace, running at right angles to it; the wall and terrace abut at their SE corners</td>
</tr>
<tr>
<td>8</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
<tr>
<td>9</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
</tbody>
</table>
Three site maps (Sites 1–3), all of which state “after Cordy 1977,” are included in the report. Ewart and Tuggle’s (1977) Site 1 conforms with Cordy’s (1977) Site 1, SHIP # -2022. Their Site 2 consisted of “poorly defined terraces and numerous stone mounds” (Ewart and Tuggle 1977:19) and is the Konohiki Site, SHIP # -2057. Site 3 (SHIP # -2059) consisted of “terraces and mounds similar to those of Site 2. A pipe found protruding from one of the mounds was assumed to be historic (Ewart and Tuggle 1977:19). Additional research was recommended for these sites.

Ewart and Tuggle’s (1977:23) Sites 4 through 6 were adjacent to ‘Ulukahiki Street. Site 4 (SHIP # -2024) was disturbed and consisted of wall fragments and mounds. Site 5 (SHIP # -3962) consisted of three historic buildings and Site 6 (SHIP # -3963) was “some unusual earth mounds” (Ewart and Tuggle 1977:23). These sites were evaluated as having “very poor research prospects. They are all isolated, badly disturbed, and for the most part, historic sites. Their status is recommended to be considered as MARGINAL.” (Ewart and Tuggle 1977:24).

A single terrace and stone wall (Site 7; SHIP # -3965) was on the west side of the marsh, and two abandoned modern house sites (Sites 8 and 9; SHIP # -3964) were near the H-3. Although no other cultural remains were noted in the remainder of the project area, the authors note that cultural deposits may exist in the area between Maunawili and Kahana Iki Stream and along the marsh periphery. Due to historic surface alterations and vegetation coverings, these areas were not visible to ground surveyors. Subsequently, the authors recommended archaeological monitoring in the area between Maunawili and Kahana Iki Stream. No map was provided for this site and the description was brief. Their evaluation of Site 7 is lumped with an evaluation of Sites 4 through 6 that “offer very poor research prospects. They are all isolated, badly disturbed, and for the most part, historic sites. Their status is recommended to be considered as MARGINAL” (Ewart and Tuggle 1977:24).

3.2.1.3 Cordy (1977a, b)

Cordy (1977a) completed a cultural resource study involving historic background research and a reconnaissance survey for the proposed City and County sewer line in Kawainui Marsh. The Cordy (1977a) archaeological study area extended along virtually the entire southeast side of the marsh. Study results indicated the only archaeological remains found during the reconnaissance survey existed on the Kūkanono-Pōhaku area. Seven archaeological sites were identified in the project area, consisting of clusters of terraces, walls, mounds, and historic houses (Table 5, Figure 26 through Figure 30). Cordy’s (1977a) designated Sites 1 through 6 are relatively discrete and small and are all located on the Kūkanono/Pōhaku slope. The author concluded the sewer line alignment would not affect most of the sites identified, and recommended no further archaeological work. However, the author did indicate the Kūkanono and Pōhaku sites to be of significant value and further recommended that any future work in the vicinity should be preceded by additional archaeological work.

Cordy’s (1977a) work (including a “Supplement 1” [1977b] of the same August 1977 date) included analyses of historic aerial photographs in which he noted faint rectangular markings in the marsh that appeared to be evidence of former agricultural fields in the marsh. It appears that no formal designation for this patchwork of former fields was made in the

<table>
<thead>
<tr>
<th>Site #</th>
<th>General Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N Kūkanono slope between Kailua Rd and marsh</td>
<td>Cluster of terraces, U-shaped enclosure, and wall by a spring</td>
</tr>
<tr>
<td>2</td>
<td>W Kūkanono slope between Kailua Rd and marsh</td>
<td>Terraces, mounds, a rectangular enclosure, a walled depression, and a historic house</td>
</tr>
<tr>
<td>3</td>
<td>Central Kūkanono slope between Kailua Rd and marsh</td>
<td>Two walls (6 m long, 1 m wide, 1.0-1.5 m high; 5 m long, 0.5 m wide, 0.5 m high)</td>
</tr>
<tr>
<td>4</td>
<td>Pōhaku slope between W end of Uluoa St and marsh</td>
<td>Cluster of ten mounds, nine terraces, one wall, and a cement foundation (Historic House # 4)</td>
</tr>
<tr>
<td>5</td>
<td>Pōhaku slope between Manu Mele St and marsh</td>
<td>Walls and mounds; main wall 10 m long, 0.5 m wide, 0.4 m high; mounds 2 x 2 m</td>
</tr>
<tr>
<td>6</td>
<td>W Kūkanono slope between W end of Manu ‘O’i’i St and marsh</td>
<td>Terrace (7 m long, 0.6 m high) and canal (12 m long, 1 m wide, 0.6 m deep)</td>
</tr>
<tr>
<td>7</td>
<td>Off the marsh in Pōhaku area</td>
<td>Faint rectangular markings on aerial photographs suggestive of former agricultural fields in the marsh</td>
</tr>
</tbody>
</table>
Cultural Surveys Hawai‘i Job Code: KAILUA 49

Background Research

LRFI for the Kawainui Master Plan Update, Kailua, Ko‘olaupoko, O‘ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

Figure 26. Cordy's (1977a:35) site locations

Figure 27. Cordy's (1977a:36) Site 1 (SHIP # 2022)

Diagram: Site Locations (1977a:37) and locations
Background Research

LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034

Figure 28. Cordy's (1977a:38) Site 2 (SIHP # 3957)

Figure 29. Cordy's (1977a:38) Site 4 (SIHP # 3959)
Cordy (1977a) work (or in the accompanying “Supplement 1”). The following year, Cordy (1978, see below), addresses this agricultural complex as “Site 7” (building sequentially on the designations of Sites 1 through Site 6 in the Cordy 1977 studies). Cordy’s (1978) discussion of “Site 7” encompasses a large area east of Maunawili Stream along the slopes of Pōhakupu from Kalania‘ole Highway to the southern most extreme of Kākanono slope.

3.2.1.4 Cordy (1978) and Morgenstein (1978)

A second phase of archaeological investigation in relation to the proposed City and County sewer line was undertaken less than a year later by Cordy (1978). The second phase was initiated after the first study concluded an intensive cultural survey should be conducted to characterize and describe the sites, and to make an accurate determination of probable significance. In the initial 1977 study, many aerial photographs were reviewed. Several of the aerial photographs showed faint parallel lines extending into the marsh. Review of a series of aerial photographs (ca. 1940) suggested Kawainui Marsh from the mouth of Maunawili Valley to Kākanono included a number of faint, rectangular areas that could be abandoned agricultural fields (Cordy 1977:33).

As a result of the preliminary aerial photograph review, Cordy excavated three test units (Trenches 1, 2, 4) within his designated Site 7 and one test unit (Trench 3) within his designated Site 5. All four test trenches were located east of Maunawili Stream in the immediate vicinity of Pōhakupu slope. Test Trenches 1 and 2 were excavated across two stone walls that were 45 and 25 cm below surface. Cordy concluded the stone walls were associated with taro cultivation. A basaltic glass fragment was also recovered in situ and dated. Test Trench 4 was excavated across a visible stone wall. Cordy (1978:5) concluded associated stratigraphic layers suggest the stone wall may have been used for crops other than taro. Test Trench 3 was located on the Pōhakupu slope. No stone walls were identified, although the presence of charcoal suggested agricultural use. This study was significant in demonstrating that buried cultural deposits are still present and intact below the existing ground surface of the marsh.

Cordy (1978:5) defined “Site 7” (SIHP # -2029) as “part of a large walled agricultural complex in the marsh at the mouth of Maunawili Valley” and provided a map showing his understanding at the time of the extent of “Site 7” (see Figure 30 through Figure 32). In casual discourse amongst those concerned with the cultural resources of Kawainui, “Site 7” came to refer to much larger ill-defined areas of the marsh in which agricultural field walls and agricultural or cultural deposits were thought to possibly be present.

Morgenstein (1978) described the geological features present within the four trenches that he had excavated with Cordy (1978). Morgenstein collected soil samples from each stratum to conduct pollen and spore identification to determine the presence of taro and rice. His laboratory analysis indicated Trenches 1 and 2 contained taro pollen. Morgenstein also determined the walls within the two trenches were constructed at the same time. Trench 3 was not analyzed, and Trench 4 results were ambiguous with a possibility for taro.

3.2.1.5 Watanabe 1988

In 1988, Farley Watanabe, U.S. Army Engineer Division, monitored dredging and vegetation removal during excavations of the Kawainui Marsh levee (Watanabe 1988). Two features were
Figure 31. 1949 Kawainui Marsh aerial photograph showing the boundary of Cordy (1978) Site 7 (SIHP # -2029) (RM Towill Corp.)

LRFI for the Kawainui Master Plan Update, Kailua, Koʻolaupoko, Oʻahu
TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

Figure 32. Portion of the 1998 Mokapu Point USGS topographic quadrangle, showing the boundary of Cordy (1978) Site 7 (SIHP # -2029)

LRFI for the Kawainui Master Plan Update, Kailua, Koʻolaupoko, Oʻahu
TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)
identified during monitoring of the southern portion of the levee. T-1 was a possible agricultural field wall or fishpond wall on the mauka side of the levee. The feature extended approximately 1 m by 0.5 m at the base of the levee, extending beneath it. T-2 consisted of waterworn basalt cobbles and boulders on the mauka side of the levee. Watanabe (1988:2) identified the feature as “either a cultural feature (i.e. agricultural field wall, fishpond wall) or a natural layer of stream gravels and cobbles.” No map showing feature locations is included in the document; locations are described by their distance from survey stakes.

3.2.1.6 Clark (1980); Kelly and Clark (1980)

Jeffrey T. Clark, working with the Bishop Museum for the Trustees of Castle Estate, prepared a phase I archaeological inventory survey of Castle Estate Lands around the Kawainui Marsh. His work presents a general historical background, a summary of previous research, and the results of an archaeological survey that focused on the south portion of the marsh.

Clark reported his survey results in terms of four geographic segments, designated Segments I through IV. He presented his findings by “archaeological loci” or “cluster” and by Bernice Pauahi Bishop Museum (BPBM) site number, which he correlated with the finds reported in prior studies (see Table 3) (Figure 33 through Figure 39).

Of Clark’s 15 identified archaeological loci, nine (60%) are in his Segment I (the Kūkanonō Slope), three (20%) are along his Segment II (the Kapa’a Quarry Road slope), and three (20%) are in the south central portion of the marsh. No archaeological sites were identified in Segment III, the southernmost portion of the study area.

Eleven of Clark’s clusters were previously identified during archaeological investigations. He noted the three clusters within Segment IV (Clusters 8, 9, 13) were outside his study area and not addressed in the report. However, Clark (1980a:27) reported Cluster 9, Ewart and Tuggle’s (1977) Site 6, were “natural features” based on the lack of “cultural activity” in the vicinity.

Three archaeological loci were identified on the Kapa’a Quarry Road slope (Clusters 10, 11, and 12). Clusters 10 and 11 conform to BPBM Site 50-Oa-G6-33; Cluster 12 conforms to BPBM Site 50-Oa-G6-36.

The Clark (1980) description of BPBM Site 50-Oa-G6-36, also known to him as Cluster 12, reads as follows:

Site 50-Oa-G6-36

This site is located in Segment II along the marsh edge at a point some 500 meters north of the intersection of Kalaniana’ole Highway and Quarry Road. It consists of a single cluster, [Clark Cluster designation #] 12, which has a single feature, a large terrace. The terrace walls extend for 65 meters along the marsh edge in a northeast-southwest direction and for 14 meters southeast-northwest. The walls appear to be a single course high and are marked by a somewhat sporadic occurrence of rocks. The terrace itself constitutes a relatively flat region ranging from 0.5 to 1.5 meters above the surrounding marsh. An old, rusting, dilapidated crane, some 80 m north of the southerly wall, is the most prominent feature of the area. [Clark includes a photo of the vicinity.]
Background Research

LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

Figure 34. Clark's (1980:44) Site 50-Oa-G6-33; SIHP # -2023, 1Ɨ3ǀKDNX o Hauwahine

Figure 35. Clark's (1980: Sheet 1) SIHP # -2022, historic residence and piggery, labeled as Site 50-Oa-G6-32, Feature Cluster 1; and SIHP # -3957, labeled as Site 50-Oa-G6-32, Feature Cluster 1; and...
Figure 36. Clark's (1980: Sheet 2) SIHP # -3957, labeled as Site 50-Oa-G6-32, Feature Cluster 2; and SIHP # -3961, labeled as Site 50-Oa-G6-32 Feature Cluster 6

Figure 37. Clark's (1980: Sheet 3) SIHP # -3959, Moomau Agricultural and Habitation Complex, labeled as Site 50-Oa-G6-32, Feature Cluster 4
In the early twentieth century a number of roads and houses were in the site’s immediate area. It may be that BPBM Site 50-Oa-G6-36 relates largely, or entirely, to these early twentieth century constructions.

Clark’s three site identifications in the south central marsh include designated Clusters 8 and 9 (no BPBM Site number given) and Cluster 13 (identified with BPBM Site # 50-Oa-G6-39). Clark (1980:27) asserts, “Clusters 8, 9, and 13 are located in Segment IV and are therefore outside the specific project area” and presents no data at all for these sites. Clark equated his Clusters 8 and 9 with Ewart and Tuggle’s Sites 5 and 6 (see Table 3).

Clark (1980:72) presented three C14 dates from his work: AD 529-965 and AD 353-655 from his BPBM Site 50-Oa-G6-32 (on the southeast side of Kawainui near the sewage treatment plant) and AD 706-898 from his BPBM Site 50-Oa-G6-33 (on the northwest margin of Kawainui). These were perceived as very early dates for Polynesian settlement and were viewed skeptically by some (Athens 1983:79; Neller 1982b:30-33) but found support from others (Erkelens 1993:56).

Based on his and previous findings, Clark (1980a:86) recommended archaeological monitoring for all subsurface activities in and within the lands surrounding Kawainui Marsh.
feature cluster 4 within LCA 6099:1 (Neller 1982:24). Neller noted the presence of a grinding stone (seemingly the same grinding stone shown on Athens 1983a map)—which would become a distinctive artifact type associated with the margins of Kawainui.

Neller (1982:30-33) took issue with early dates reported for Kawainui.

3.2.1.11 Athens (1983a)

Athens (1983a) documented archaeological excavations on the Pāhaku-Kūkanono Slope of Kawainui Marsh within BPBM Sites # 50-Oa-G6-32 (SIHP # -2022) and 50-Oa-G6-41 (SIHP # -2031). Features including dryland terraces, stone mounds, and flat-topped stone mounds were investigated (Figure 40 through Figure 42). “Excavation revealed that all the surface features were built in the most recent soil layers after A.D. 1900; some features may be quite recent” (Athens 1983a:1). Athens concluded the surface structures had been built in the early twentieth century by Chinese during the course of intensive gardening after the decline of rice farming in the marsh—with many features post-dated AD 1930 (Athens 1983a:69). One small area of undisturbed pre-Contact deposits (an earth oven) was identified and dated to between the thirteenth and fifteenth centuries. Athens (1983a:70-71) discussed the evidence of early occupation given by Clark, noting that samples not from in situ features were somewhat suspect.

Athens included certain pollen studies in his Appendix A of pollen analysis of samples from BPBM Site # 50-Oa-G6-32, Feature 116 and Appendix D Palynological Study of Some Angiosperms of Ethnobotanical Interest—the latter was likely an effort to build up literature as a reference collection. The pollen results for Kawainui were not very hopeful—“Because of oxidation, coupled with disturbance and erosion at this site, the pollen and spore flora is poorly preserved” (Athens 1983a:76).

3.2.1.12 Athens (1983b)

In 1983, J. Stephen Athens (1983b) documented 11 excavation units in Site 50-Oa-G6-40, the HARC site originally located and excavated by Allen-Wheeler (1981); it was later designated as SIHP # -2030. The site, located at the southeast end of Kawainui Marsh, consisted of marine midden, artifacts, and subsurface features including hearths and pits. Radiocarbon dates indicated occupation of the site sometime in the mid-thirteenth to early fifteenth century. Midden analyses indicated a change through time in the exploitation pattern. Athens suggested the use of the Kailua accretion barrier for habitation may have begun about the same time as the occupation of the site. This study demonstrated the potential for significant archaeological deposits within the sandy deposits of the previously disturbed residential neighborhoods along the seaward margin of Kawainui Marsh.

3.2.1.13 Barrera (1984a)

Chinagio, Inc. performed an archaeological survey for the Kailua Road interceptor sewer, Maunawili wastewater pumping station and force main, and Kūkanono wastewater pump station. The literature review indicated the Maunawili site was located on an old kuleana, while the Kūkanono site was located on the edge of an old kuleana. No historic properties had been recorded previously at either site; likewise, no surface historic properties were observed during
Background Research

LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

TMKs: 
- 4-2-003
- 4-2-013
- 4-2-016
- 4-2-017
- 4-2-103
- 4-4-034

Figure 41. SIHP # -2022, labelled Site 50-Oa-G6-32, Features 113, 114, 150, 152, and 153 (Athens 1983a:14)

Figure 42. SIHP # -2022, labelled Site 50-Oa-G6-32, Features 123 and 140 (Athens 1983a:30)
the archaeological survey. Further work was recommended only at the location of the Kīkākinolo Pump station, due to the presence of archaeological remains in the immediate vicinity.

3.2.1.15 Kawachi (1988)

Carol Kawachi of the SHPD performed a field check at Kapa’a Ridge based on a phone call from a party concerned that the planned Kapa’a Quarry would destroy an alleged heiau site. She observed a high rock wall, tumbled and covered with grass. The main feature was a large, level terrace measuring approximately 30 m by 15 m. The high rock wall/terracing had two corners, roughly obtuse. Closer inspection revealed three levels of wall terracing. Above the large, level area was another narrow, level area behind a large boulder terrace facing. Kawachi (1988) called the site a terrace and it was designated SIHP # -3937, however, she suggested this might be the Holomakani Heiau described by McAllister (1933, Site 360).

3.2.1.15 Pantaleo and Cleghorn (1989)

The Bishop Museum conducted a reconnaissance survey of the proposed Windward Park. Five historic properties, spanning both the pre- and post-Contact periods, were recorded. These included a traditional Hawaiian agricultural complex, a possible heiau or large habitation site, historic rock walls, and a linear rock mound (SIHP #s -2034 through -2037 and -3739). All five were deemed to be significant, and an intensive survey was recommended.

SIHP # -2034 consisted of two rock walls (Features 1 and 2). Feature 1 was 50 m long, 50-80 cm high, and constructed of stacked angular and subangular basalt boulders. It may have functioned as a boundary marker. Feature 2 was a core-filled rock wall, approximately 15 m long, 50 cm high, and constructed of angular and subangular basalt boulders.

SIHP # -2035 consisted of a rock wall (Feature 1) and a mound (Feature 2). Feature 1 was approximately 75 m long and 50-60 cm high, with a collapsed downslope end. Upslope, the wall measured 50 cm to 1 m high and was constructed of large angular and subangular basalt boulders with cobble fill. A barbed wire fence strung on wooden posts ran parallel to the wall. Feature 2 was north of Feature 1 and was an irregularly shaped rock mound constructed of piled angular and subangular basalt cobbles.

SIHP # -2036 was a linear mound of angular and subangular basalt cobbles, upslope of Kapa’a Quarry Road. This may be the remnants of a collapsed wall.

SIHP # -2037 was a complex consisting of five features. It was bounded by a dry streambed to the north, Kapa’a Quarry Road to the east, Kailua Drive-in to the south, and a steep ridge to the west. Feature 1 was a rock-faced terrace constructed of two courses of angular and subangular basalt boulders. It was perpendicular to the dry streambed and was probably a small, irrigated agricultural terrace at one time. Feature 2 was an alignment of angular and subangular basalt boulders. It is associated with Feature 1 and possibly functioned as a stream retention wall. Feature 3 was an oval-shaped rock mound, upslope from Feature 1 atop a raised soil mound. Feature 4 was a C-shaped rock alignment constructed of angular and subangular basalt boulders with cobble fill. This feature may have functioned as a temporary habitation site; however, a single shovel test yielded no cultural deposit. Feature 5 was an alignment constructed of angular and subangular basalt boulders with cobble fill. It was located in a noni (Morinda citrifolia) patch perpendicular to the dry stream bed, but was not connected to it.

Figure 43. Plan and profile of SIHP # -3739 (possibly Holomakani Heiau Site 360)
Cultural Surveys Hawai'i Job Code: KAILUA 49

Background Research

3.2.1.18 Erkelens (1993)

shaped terrace (Feature 2) (Figure 43). Feature 1 was situated on a moderate slope, on the edge of a deep-cut, dry stream bed. The surface of the terrace was relatively level and filled with soil, although possible sections of pavement were observed as exposures of angular and subangular basalt cobbles scattered on the surface. Feature 2 was located upslope, along a dirt road, and was constructed of angular and subangular cobbles. It may have functioned as a possible (Holomakani Heiau Site 360) or a habitation area.

previously identified. He reported, “There are densely vegetated portions of the site that still remain unexplored by our survey” and that “more features are present” (Erkelens 1993:29).

International Archaeological Research Institute, Inc. (IARII) (Athens 1990) carried out an archaeological investigation for a flood control project at the north end of Kawainui Marsh. . . at Kukanono there is no evidence of colluvial or alluvial flows occurring that could have moved large volumes of sediment recently or in the past . . . While it is certain that Kawainui Marsh has been in-filled by deposition, evidence from Kukanono suggests Hawaiian agricultural practices had little impact on this long-term natural process. The majority of the sediment deposited in Kawainui is more proved to consist only of levee fill and previously dredged sediment. The paleoenvironmental investigations of Athens and Ward (1991) were highly successful. These results, coupled with those of Hammatt et al. (1990), did much to broaden our understanding of pre-Contact, anthropogenic environmental change in the Hawaiian lowlands.

In 2000, CSH conducted an archaeological inventory survey for the Kawainui Marsh Park (Kikiloi et al. 2000), which is also called Kapa'au Park. The park is adjacent to the north-northwest margin of Kawainui Marsh at the mouth of Kapa'au Stream. Proposed improvements included the construction of an 18,000 sq ft, 49 stall parking lot, restrooms, landscaping, walkways, and picnic facilities. No surface cultural materials were identified. Backhoe testing revealed modern fill sediments associated with the construction of the Kawainui drainage system. Sandy marsh type sediments were found at a depth of 1.25-1.5 m below the current land surface. Prior to fill events during the pre-contact period, the area was open water channels in the marsh for flood control. There was concern for impacts to archaeological resources within/surrounding the marsh. The objective of the study was 1) to investigate the location of Native Hawaiian use including shoreline habitation, fishponds, and agricultural sites. The study included the construction of an 18,000 sq ft, 49 stall parking lot, restrooms, landscaping, walkways, and picnic facilities. No surface cultural materials were identified. Backhoe testing revealed modern fill sediments associated with the construction of the Kawainui drainage system. Sandy marsh type sediments were found at a depth of 1.25-1.5 m below the current land surface. Prior to fill events during the pre-contact period, the area was likely the result of runoff from Kahanaiki and Maunawili Streams over the millennia rather than the result of rapid deposition from Hawaiian induced erosion. The pollen results from this study were notable, particularly the finding that future mining was conducted on a small area at the north end of the marsh and was not associated with any particular site or structure. The U.S. Army Corps of Engineers proposed construction of the US Army Corps of Engineers proposed construction of a large-scale development project and conducted sediment sampling at various locations within the marsh. The site was identified as a possible archaeological resource by the Museum of the University of Hawaii. The project was submitted to the Native Hawaiian Heritage Center for review and analysis. The results of the study demonstrated that the marsh sediments were not suitable for harbor development. The project was subsequently abandoned.

The pollen results from this study were notable, particularly the finding that future mining was conducted on a small area at the north end of the marsh and was not associated with any particular site or structure. The U.S. Army Corps of Engineers proposed construction of the US Army Corps of Engineers proposed construction of a large-scale development project and conducted sediment sampling at various locations within the marsh. The site was identified as a possible archaeological resource by the Museum of the University of Hawaii. The project was submitted to the Native Hawaiian Heritage Center for review and analysis. The results of the study demonstrated that the marsh sediments were not suitable for harbor development. The project was subsequently abandoned.

A preliminary identification of certain macro-botanical finds as possibly being remains of Polynesian introduced plants was also performed. A preliminary identification of certain macro-botanical finds as possibly being remains of Polynesian introduced plants was also performed.
Figure 44. Location of Erkelens (1993) project area on the Kākanono slope

Figure 45. Detail of Erkelens (1993) project area on the Kākanono slope

Figure 46. Radiocarbon dates from the slopes around Kawainui (Erkelens 1993:54)
Segment 1 extended from the southern end of the Kawainui Dike (or Levee Road) to the vicinity of Ulupō Heiau. Findings included the following:

The Waimanalo Irrigation System, SHIP # 50-80-15-4042, consisting of a pump house, pipes, and a canal. The pump house structure was roughly rectangular and constructed predominantly of mortared basalt boulders. The remains of some large-diameter iron pipes were within the structure. The associated canal extended from the pump house out into the Kawainui Marsh; its bed was in standing water and mud. The canal sidewalls were lined with dry masonry basalt boulders in the vicinity of the pump house structure. Farther from the pump structure these sidewalls were earthen. Both the canal and the pump structure were overgrown with kahū trunks.

Stone alignments, ceramic fragments, bottles, and what appeared to be a portion of a historic roadway or trail were observed west of the Waimanalo Irrigation System. The remains were described as "indistinct" and most likely dated to the historic period (McDermott et al. 2000:58).

SHIP # 50-80-11-2027, Kākanono Habitation Site, Feature 3, a single basalt boulder rectangular enclosure, was the only feature that had not been affected by bulldozing in the vicinity associated with construction of the Kawainui Nui Vista Subdivision. The Pāhakupa Sewage Treatment Plant was also dismantled in the 1990s and replaced by the Kawai Nui Vista Subdivision.

Near Ulupō Heiau, SHIP # -2022, Kawainui Terraces, consisted of stacked basalt boulder retaining walls constructed prehistorically and utilized historically. The rectangular terraces were actively used for small-scale agriculture for lo'i, or wetland taro pond fields. Foundations of a historic piggery, another SHIP # -2002 feature, were also observed.

The only SHIP # -3958 feature observed was a drainage channel that extended from a spring, both of which were dry at the time (McDermott et al. 2000:66). McDermott et al. (2000:66) findings at SHIP -3957 consisted of numerous stacked stone features including clearing mounds, enclosures, wall alignments, a historic house site, and irrigation features such as an 'anawai that dated to the pre-Contact and historic periods.

Segment 2 continued from Ulupō Heiau to the vicinity of Castle Medical Center. This segment passed along the Kākanono slope through areas in use by the Knott ranching operation. Historic properties within Segment 2 included SHIP #s -2031, -3999, and -3960, consisting of traditional Hawaiian grinding stones for adze manufacture and historic and modest pre-Contact stacked stone features; SHIP # -3961, consisting of six most likely historic agricultural features; and SHIP # -2029, buried pre-Contact and historic agricultural field walls in the level surface of the marsh itself that were not visible (McDermott et al. 2000:70). SHIP # -2024, consisting of five small features, a terrace, and a mound, was not confirmed (McDermott et al. 2000:73). However, several large, irregular, linear alignments containing boulders over 1 m in diameter, the result of bulldozer clearance, were noted.
During the field inspection of the Coconut Grove parcel, the vast majority of the parcel's land surface consisted of disturbed calcareous sand deposits with evidence that dumping of construction materials and construction-related sediments had been taking place within the parcel for some time. The land surface contained asphalt and concrete fragments and piles of bulldozer push and/or dump truck deposited sediments.

The sandy land surface, although disturbed, appeared to be natural. However, in the early 1900s as part of a copra producing development, large portions of the Coconut Grove area that were once natural sand dunes were bulldozed level in preparation for the planting of the coconut grove for which the area became known. It is unclear exactly what effect this grading had on the project area, but the deposition of a substantial amount of sand was likely and very possible. The preparation of the Coconut Grove subdivision areas in the 1950s and 1960s could also have affected the project area through associated grading and deposition of sediment. Therefore, it was uncertain whether the sandy deposits in the Coconut Grove parcel were historically disturbed natural sand deposits or mechanically deposited. The northwestern portion of this section, adjacent to the Kawainui Neighborhood Park, consisted of a marshy, wetland-type ground surface and vegetation that was a possible natural wetland area.

In consultation with SHPD, an archaeological inventory survey of the entire project area was recommended. Sampling of the calcareous sand deposits within the Coconut Grove parcel was recommended to determine the presence or absence of cultural deposits related to traditional Hawaiian land use or in situ human burials. Subsurface testing of former marsh sediments buried by the recent fill deposits in the Mōkapu parcel was recommended to confirm potentially useful paleoenvironmental information. Testing of the possible natural wetland area in the northern end of Coconut Grove was also recommended. The possibility for cultural deposits was based on Athens' (1983b) findings at the HARC site (SHP # -2030) off Kāhili Street, also on the interior portion of the Kāliaa accretion sand bar.

3.2.1.23 Ah Sam and Cleghorn (2003)

Pacific Legacy, Inc. conducted an archaeological assessment for the construction of a proposed sanctuary at St. John’s Church in Kāliaa. Ah Sam and Cleghorn’s (2003) examination of the project area indicated no historic properties had been recorded in the project area, and that the potential for subsurface archaeological remains was low. No further work was recommended.

3.2.1.24 Mann and Hammatt (2003)

In 2003, CSH was contracted to provide an archaeological assessment for the Kawainui Gateway Park project, for an approximately 20-acre portion of the southwest portion of the study area for the Kawainui Marsh Wetland Restoration and Habitat Enhancement project (Mann and Hammatt 2003).

The project was to create a series of pond systems as a habitat for endangered bird species. A 1977 archaeological reconnaissance study (Cordy 1977a, b) of Kawainui Marsh conducted by the Army of Engineers’ archaeologist, Dr. Ross Cordy, had indicated a conceptual layout of lo‘i walls observed on a series of historic aerial photographs within Cordy’s “Site 7,” and in the immediate vicinity of the project area. Therefore, the primary goal of the Mann and Hammatt (2003) archaeological investigation was to confirm the presence or absence of lo‘i walls within the project area and to provide appropriate mitigation measures to ensure the integrity of any surface or subsurface cultural deposits. That project area was understood to lie within SHP # -2029, the Kawainui Marsh archaeological cultural-historical complex, deemed eligible for listing on the National Register in 1979.

CSH archaeologists conducted a walk-through survey, consulting historic maps and aerial photographs compiled during the historic overview. No boulder-alignments consistent with lo‘i walls or rice paddies were observed on the surface and there was no surface indication of any remaining archaeology. However, two linear vegetation alignments running east to west in the central aspect of the project area were observed. These linear vegetation alignments appeared, at the time, to correspond to two LCA boundaries (LCAs 2544:1 and 6969:2).

After additional research on the meets and bounds of the two LCAs, a second field inspection was undertaken. Based on the information in the Māhēle descriptions and the Royal Patents, the linear vegetation alignments were indeed consistent with the boundaries for LCAs 2544:1 and 6969:2. However, no indication of any surface archaeological findings other than the alignment of vegetation was present.

Backhoe test excavations were carried out to investigate subsurface deposits in the vicinity of the two linear vegetation alignments. Two units were selected for backhoe testing, one unit in the vicinity of LCA 2544:1 and a second unit in the vicinity of LCA 6969:2. Both test units were positioned perpendicular to the two linear vegetation alignments in anticipation of transecting a segment of a lo‘i wall associated with LCAs 2544:1 and 6969:2. The locations of trenches 1 and 2 are shown on Figure 47.

The stratigraphy was consistent in both test units. Strata I and II were associated with the present grass mat and consisted of a dark grayish brown to dark brown sandy loam. Stratum III consisted of a very dark brown clay loam, oxidized with a reddish brown staining observed throughout the stratum. This staining is consistent with cultivation and may correspond to the old A horizon. Cultural materials collected in situ included a basalt adz recovered 97 cm below surface in Trench 2. Abundant basalt waterworn river cobbles were observed throughout the trenches. In both Trench 1 and Trench 2, a mound of river cobbles was observed in an isolated area of the trench profile. It is not clear what purpose or function this may have played in either lo‘i or rice cultivation. Charcoal flecking was diffused throughout Stratum III. Stratum IV is considered the cultural layer. Stratum IV consists of a very dark gray waterlogged sticky clay. This stratum may correspond to the natural river bed. The water table was observed approximately 115 cm below surface. Stratum V consists of a dark gray sandy clay loam with a layer of basalt river cobbles aligned 2 m below surface.

In addition to the three in situ artifacts recovered, several basalt flakes were collected from the dirt pile during excavations; their in situ origins are unknown. No basalt boulder alignments,
Figure 47. TMK: [1] 4-2-013 showing location of Mann and Hammatt (2003), Test Trenches 1 and 2.

Limited subsurface testing within the project area identified a modest number of historic and traditional Hawaiian artifacts, some of which appeared to be linked with habitation based on a house lot footprint that appears on an 1899 map, considered to be components of SIHP # -2029. Limited subsurface testing did not expose subsurface cultural deposits or modification within the project area. The documentation of backhoe test trenches excavated along LCA boundaries and within possible twentieth century house lots failed to identify any associated rock or sediment walls (lo‘i walls), foundations, or associated features.

Sediment coring at two locations within Kawainui Marsh provided additional palynological and radiocarbon data. Radiocarbon analysis suggested the uppermost strata within the project area consisted of deposits of decomposed plant matter overlying relatively modern alluvium. Radiocarbon analysis of Core Sample 2 indicated that, minimally, the upper 36 cm of the 103 cm core sample (upper 35%) was composed of modern-aged sediment. The relative vertical thickness of modern-aged deposition within Kawainui Marsh indicated the proposed project’s subsurface impact posed little or no threat to subsurface historic properties within the project area.

Project recommendations included an archaeological monitoring program to address the impact of subsurface disturbance within the project area, and preservation, in the form of protection through avoidance, for the two components of SIHP # -2029 (grinding stone and habitation area) identified during the project. In consultation with SHPD on 2 June 2011, Mike
Vitousek and Deona ("Nona") Naboa recommended monitoring, including post-review of historic properties, if any were encountered during construction activities. As an example, data recovery work would be conducted if historic walls were found, and this would be documented in a data recovery report prepared and submitted to the SHPD. The archaeological monitoring plan would codify that should additional historic properties be identified during construction activities, any such properties might be appropriately subject to additional data recovery documentation (to be determined in consultation with the SHPD). Furthermore, the SHPD suggested a synthesis evaluation of any historic properties encountered in relation to the Kawainui Marsh historic site should be included in the data recovery report. This would be an additional point to be codified in a draft archaeological monitoring plan for SHPD review.

In the discussion with the SHPD it was tentatively agreed that the grinding stone should be left in place and avoided, that the historic house area by the bamboo stand should be avoided, and that they could both be regarded as features of the Kawainui Marsh historic property. No further archaeological work was recommended for SIHP # -7199 (road remnant).

3.2.1.27 Zapor and Shideler 2016

In 2016, CSH conducted a modest study consisting of background research and a field inspection in support of the DLNR/DOFAW hau (Hibiscus tiliaceus) brush clearing project at Kawainui Marsh. During the field inspection, all historic properties and potential historic properties were flagged for avoidance; no archaeological monitoring was recommended for the proposed project. One previously identified historic property, SIHP # 50-80-15-4042, was identified during fieldwork. SIHP # 4042, the Waimānalo Irrigation System, was described by McDermott et al. (2000:60) as a “system of pumps, pipelines, tunnels, and ditches that conducted water from Kawai Nui Marsh to the Waimānalo sugar cane fields until the early 1950s.” During this 2016 study, Zapor and Shideler (2016) recorded a concrete pump house foundation with associated pipes and canal that are components of SIHP # -4042 (Figure 48).

In addition, nine potential new historic properties within the study area were designated as CSH 1–9. CSH 1–3 represent remnants of one or more early twentieth century habitation(s) that belonged to one or both of two Japanese families. Kailua historian Dr. Paul Brennan, who accompanied the archaeologists during their field inspection, related that a Mr. Masaki Tashiro had maintained the pump station facility and lived quite close by with his family, and that there was a second home in the immediate vicinity belonging to the Sumida family (Mr. Sumida is understood to have been a house building contractor). These features were located approximately 50 m south of the pump station foundation. CSH 1 is most likely a remnant portion of a basalt stone walkway that at one time led to the house site (Figure 49). CSH 2, located just south of CSH 1, is the remnant of a bathroom with portions of plumbing, concrete foundation, and porcelain fragments still remaining (Figure 50). CSH 3, directly west of CSH 2 across a small dry streambed, is a concrete slab of unknown function (Figure 51).

CSH 4, in the middle of the project area, appeared to have been a holding tank of unknown function, possibly a cistern, privy, or cesspool (Figure 52). The feature consisted of a concretelined holding tank with placed basalt boulders lining the downslope side; a copper pipe was observed protruding from the west corner of the structure. A small hole was observed in the top...
Figure 49. Plan view of CSH 1, walkway with a basalt boulder border (from Zapor and Shideler 2016:23)

Figure 50. Plan view of CSH 2, bathroom remnant (from Zapor and Shideler 2016:25)

Figure 51. Plan view of CSH 3, concrete slab of unknown function (from Zapor and Shideler 2016:27)

Figure 52. Plan view of CSH 4, holding tank (from Zapor and Shideler 2016:29)
of the structure allowing the inside to be viewed; standing water and rubble remained inside the structure. The upslope side and top of the structure were mostly buried in alluvial soil.

Directly south of CSH 4, approximately 2 m away, was a concrete structure of unknown function documented as CSH 5 (Figure 53). The structure appeared to be a foundation but was thought not to have been part of a house due to the style of construction and materials used. The structure ran generally east to west and was covered thickly in hau.

CSH 6 was observed approximately 5 m west of CSH 5 and consisted of a broken basalt stone fragment with a single petroglyph on one face (Figure 54). This fragment was observed in a modern stone alignment, most likely built by the homeless living in the area in the twenty-first century, and had been removed from its original context. The petroglyph comprised a triangle with a circle and two curved lines protruding from the top line. The basalt stone was clearly different than other surrounding stones, and the original location was not observed within the surrounding area; however, a small basalt stone alignment was observed 5 m west of CSH 6 that contained similar basalt stones, but no visible petroglyphs. CSH 7 and CSH 8 were at the southwestern edge of the traversed project area and consisted of two large basalt stones that have been hand-flattened and smoothed on the top side (Figure 55 and Figure 56). The stones are interpreted as grinders used by Native Hawaiians during pre-Contact habitation of the area.

CSH 9 was at the northwest edge of the traversed project area and consisted of a stairway constructed of placed asphalt pieces and two associated basalt stone alignments (Figure 57). There was no context remaining in the area to place the feature, but according to Dr. Brennan, the Japanese families that occupied the area in the nineteenth century had terraced gardens; therefore, CSH 9 may be associated with those gardens.

3.2.1.28 Martel and Hammatt 2017

CSH (Martel and Hammatt 2017) carried out an archaeological inventory survey for a Wastewater Pump Station project by Kailua Road at the east corner of the marsh (TMK: [1] 4-2-016:004 por.). No additional historic properties were identified (other than Kawainui Marsh/Fishpond [SIHP # -370]).

3.2.2 Archaeological Studies Conducted in the Vicinity of Hāmākua Marsh and Pu’u o ‘Ehu

Relevant archaeological studies for Hāmākua Marsh and Pu’u o ‘Ehu are described below.

3.2.2.1 Clark (1977); Clark and Connolly (1977)

In 1977, Kualoa Archaeological Staff conducted an archaeological surface survey for the extension of Hāmākua Drive between Hahani and Akoakoa streets (Clark 1977; Clark and Connolly 1977). A portion of the project area was included in the survey, south of Kaelepulu Stream in an area described as “the pasture land at the foot of Pu’u o Ehu” (Clark 1977:1). Bulldozing and land fill were observed north of the stream. Disturbance south of the stream included “a large earth mound” (Clark 1977:1). Possible remnants of terrace walls were observed adjacent to the mound. Site survey of a proposed road corridor briefly describes stone alignments, a large earth mound and wall alignments, and a house site (SIHP # -4699). Note that the SIHP numbers referred to in Clark (1977) have not been used by archaeologists conducting more recent archaeological investigations.
Figure 55. Photograph of CSH 7, basalt grinding stone, view to southwest (from Zapor and Shideler 2016:34)

Figure 56. Photograph of CSH 8, basalt grinding stone, view to east (from Zapor and Shideler 2016:35)

Figure 57. Photograph of CSH 9, asphalt walkway and basalt boulder alignments, view to east (from Zapor and Shideler 2016:36)
A possible T-shaped hekau (SIHP # -4700) was found “at the base of Puu o Ehu ridge, southwest of the road corridor and Ka'elepulu Stream” (Clark 1977:2). The site was “fairly disturbed” with areas “in extremely deteriorated condition” due to cattle grazing (Clark 1977:2). The hekau was described as follows:

The top of the ‘T’ formation is oriented roughly north-south (approx. 10 degrees west of North). From south to north the structures seen are as follows: A partially destroyed paved basalt stone platform with a well-defined west face has exterior alignments and faces constructed of dark grey basalt boulders. The interior pavement (fill) is of fist-sized and smaller basalt rocks. A possible sharpening stone fragment (a large, broken, angular basalt boulder) with circular peckings was found in the northwest corner. A few weathered coral fragments, a broken muller, several dense basalt flakes, and four small holes (either image, or post, holes) were found on the surface. The platform is approximately 11 x 9 meters in size and ranges from .4 to .9 meters in height. Adjacent to, and connected with this platform, is another partially [sic] destroyed platform of the same construction, and approximately the same dimensions. The second platform however, is paved mostly with coral and has a visible interior alignment of basalt boulders—a roughly rectangular notched alignment, possibly the remains of an interior structure. A sharpening stone fragment, basalt flakes, and broken pieces of old bottle glass (dark green) were found on the surface. The structure which connects these platforms appears to be a small (3 x 2 meter) causway-like structure, evidenced by a mound and basalt boulder alignments. Both platforms support a meager growth of ha'akam trees.

Adjacent to the second stone platform is a roughly rectangular grass mound which may be the remains of two separate structures. The mound is approximately 16 x 9 meters in size, and has exterior basalt alignments. There is a small rock mound (3 x 3 meters) covered with dirt in the northern section of this feature. Adjacent to the grass mound is an area about 40 meters in length that is littered with basalt rocks. If structures existed in this area, they have been broken down completely. A fish-shaped basalt boulder (about .5 x .4 meters in size) was found in this area. Some areas of rock alignments are present here also. To the north of this area is approximately 25 meters of what appear to be portions of one or more stone alignments with evidence of interior alignments. It appears that the structures in this area have been partially destroyed, with the remaining intact portions in relatively good condition. A sharpening stone fragment was found on the surface of the platform(s) on the north end.

Adjacent to these structures, and right at the edge of the stream are rock alignments, one being roughly circular. Rock alignments can also be seen in the stream bank, in the water.

The perpendicular portion of the ‘T’ is a basalt rock alignment approximately 3 to 4 meters in width and 70 meters in length. This structure is highly deteriorated and it was not possible to ascertain original structural shape or function. The alignment extends from near the center of the highly deteriorated horizontal portion of the ‘T’ to the edge of the stream, where submerged basalt alignments were also found. [Clark 1977:2]

Quebral et al. (1991:32; see Section 3.2.2.4) later documented habitation platforms “located at the approximate center of a site complex previously recorded by Stephen Clark (1977).”

3.2.2.2 Morgenstein (1982); Hommon (1982)

In 1982, Science Management, Inc. conducted an archaeological survey for Hānākua Drive from Hahani Street to Akoakoa Street, adjacent to the southern portion of the current project area and extending south (Morgenstein 1982).

Morgenstein (1982:3) also reports the subsurface testing within the terrace identified by Clark (1977) contained recent fill materials. These same recent fill materials were observed on the surface within the vicinity of Clark’s (1977) terrace. Subsequently, ten test pits were excavated. Subsurface testing revealed one potential agricultural feature, a “bund” (embankment used to control the flood of water) thought to be associated with post-Contact rice farming, located along the mauka side of Ka'elepulu Stream. Two more of the test pits contained marsh mounds however, all of the remaining seven test pits contained fill that extended from the surface to between 15 to a maximum of 60 cmbs (Morgenstein 1982:111). Fill sediments overlie agricultural field sediments that “show excellent organic preservation and may contain early historic and prehistoric data concerning ethnohistory” (Morgenstein 1982:15). Fill materials were associated with the construction of the Ka'elepulu sewer in 1969, and with housing development after 1969 (Morgenstein 1982:12).

Hommon (1982:14) also determined that sites (SIHP #s -4699, -4700) identified by Clark (1977) were modern features.

3.2.2.3 Barrera (1984b)

In 1984, Barrera conducted an archaeological reconnaissance survey of Ka'iau Makai, located immediately east of the current project area in the location of Safe-way (Barrera 1984b). No surface historic properties were observed. Barrera also inspected subsurface cross-sections of exposed trenches excavated for on-going road construction between the two study parcels (TMKs: [1] 4-2-001:005, 056). No subsurface archaeological features were observed.

3.2.2.4 Quebral et al. (1992)

In 1991, IARII conducted an archaeological inventory survey for the proposed Kailua Gateway development, a retirement community, along the mauka side of Ka'elepulu Stream (Quebral et al. 1992), and encompassing the Hānākua Marsh portion of the current project area, including Pu‘u o‘Ehu. Four historic properties (Figure 58) were observed: SIHP #s -4428 (two habitation platforms), -4429 (lithic scatter), -4430 (lithic scatter), and -4431 (two enclosures of unknown function). The house site previously identified by Clark (1977) was determined to be “a fortuitous formation of boulders and cobbles, perhaps the result of bulldozing” (Quebral et al. 1992:31).

SIHP # -4428, habitation platforms, was reported to be “located at the approximate center of a site complex previously recorded by Stephen Clark (1977) but apparently not relocated by...
Morgenstein (1982) or Hommon (1982)" (Quebral et al. 1992:32). Clark (1977:2) reported the structure was a possible heiau with associated features. Quebral et al. (1992:32) describe the features as follows:

Feature 1 is a roughly square-shaped, platform measuring 8.5 m by 7.5 m with a maximum height of 0.9 m. The platform appeared to have 3 distinct levels or tiers. The central and uppermost tier of this feature is less than 1 m by 1 m in area, having a distinctive basil-like plant at its northwest comer. The platform is constructed of small to medium basalt boulders that line the sides and small to large cobbles of coral and basalt that fill the interior. A basalt flake was observed and collected from the immediate exterior of its southwest comer, and another flake was collected from its approximate central interior.

Feature 2 is a rectangular-shaped platform located ca. 1 m south of Feature 1. This feature measures 10 m (N-S) by 6 m with a height range of 0.2-0.5 m. The platform sides are also aligned with small and medium sized boulders, the interior is filled mainly with basalt cobbles and a few small boulders. Only a few pieces of coral cobbles were found on this platform at its northwestern comer. The eastern side and northeastern comer are tumbled in that only segments of the east side are visible. A large, mostly subterranean boulder is visible of the northeast comer.

[Quebral et al. 1992:32]

SIHP # -4429, lithic scatter, consists of two areas concentrated on “two ridge toes” separated by approximately 30 m. The two areas encompass a diameter of approximately 10-20 m. The south area contained seven basalt flakes, one of which was removed by the archaeologists. The north area was described as “a slightly larger area,” containing a possible adze fragment (Quebral et al. 1992:34).

SIHP # -4430, lithic scatter, north of SIHP # -4430, consisted of concentrations of volcanic glass flakes and shatter, and basalt flakes. A possible anvil stone or mortar that contained a “water-worn pebble pestle” was also found (Quebral et al. 1992:34).

SIHP # -4431, two enclosures, “consisted of adjacent stone structures that extend from the base of a dry channel” (Quebral et al. 1992:35–36). The site was “situated on the northern slopes of a ravine located at the approximate center of the landward development area at an elevation of 15 to 20 ft above sea level” (Quebral et al. 1992:36). The features lacked cultural material, and were thus possibly agricultural features. A description of only one of the features was included in the report; the feature closest to the channel was described as follows:

. . . roughly square in shape measuring 2 x 2 m with a height range of 0.2 to 0.5 m. This feature could actually be three parallel short terraces except the corners are fairly evident although collapsing, and its interior appears to be filled with small basalt boulders and a few coral and limestone ones. At its northeast comer, a rectangular structure measuring 2 m (N-S) by 1.2 m extends upslope. The moderately sloping interior of this feature is filled with small boulders (one is a large piece of weathered coral) and a few pockets of reddish brown silt. It is only single boulder high but it may have been much higher and level. [Quebral et al. 1992:36]
Quebral et al. (1992:5) also reported on a former quarry within the center of the project area and an access road. The road, extending from the quarry site toward the south following the base of the ridge then turns toward Há mâkua Drive as it parallels the residential area of Há mâkua Place. Asphalt remnants near the quarry site suggest the probability that the section of the access road adjacent to the quarry site was paved while the remaining sections were gravel-filled. [Quebral et al. 1992:5]

Evidence of cattle grazing within the southern portion of the project area, adjacent to residential development, included “a horse pen, several watering troughs, and extensive fencing” (Quebral et al. 1992:25).

Quebral et al. (1992:37–38) recommended recording SIHP #s -4428 and -4431, “including the preparation of accurate plan maps and profiles.” Subsurface testing was recommended to determine the sites’ ages and function. Quebral et al. (1992:38) stated there was a possibility additional sites were in the vicinity of SIHP # -4428. Subsurface testing was also recommended to determine the extent of SIHP #s -4429 and -4430 (Quebral et al. 1992:37–38). A thorough survey of the north portion of the project area, “just north of the quarry,” was also recommended; the area “has a deep gully that opens into a wide flat area” that “may have been channelled for agricultural purposes” (Quebral et al. 1992:38).

3.2.2.5 Hammatt et al. (1993)

In 1992, at the request of Engineering Concepts, Inc., CSH conducted a field survey and historical research for the proposed Kailua 272 Reservoir on Pu’u o ‘Ehu (Hammatt et al. 1993), and within the current project area. No historic properties were observed during the survey, and historic research indicated there was probably never any significant utilization (i.e., agricultural or habitation) along the ridgeline. A large stone and cement platform for an old reservoir and an abandoned metal tank reservoir were observed. Numerous cattle trails extended along the hill line, exposing underlying soil layers that lacked cultural materials. However, research indicated that Pu’u o ‘Ehu, the high point of the ridge, some 1,500 ft southeast of the project area, was an important point of reference within the Kailua area. Based on the absence of archaeological sites within the project area, no further research was recommended.

3.2.2.6 Collins and Nees (2007)

In 2006, Pacific Consulting Services, Inc. (PCSI) conducted an archaeological inventory survey on the slope of Pu’u o ‘Ehu, southeast of Kawainui Marsh and Kaiala Road (Collins and Nees 2007). Findings during the pedestrian survey included homeless encampments, fence posts made from telephone poles, and a modern road leading to a water tank outside the project area. No cultural material or deposits were found during shovel testing. Based on the lack of findings, an archaeological assessment was prepared with no further archaeological work recommended (Collins and Nees 2007:10).

3.2.2.7 Fong et al. (2007)

CSH conducted archaeological monitoring for the Kanehe Street, Há mâkua Drive, and Keolu Drive sewer project in Kailua. No significant historic properties were documented; but the vicinity was still regarded as archaeologically sensitive due to the presence of Jauca sand.
Figure 59. Hānākua Marsh overview, Hānākua Drive in background; HECO pole to right, view to north

Figure 60. Section of a faced wall, appears to be in the same location as SIHP # -4428, habitation complex, view to southeast

Figure 61. Upper surface of SIHP # -4428, showing sorting, view to south

Figure 62. Overview of site that appears to be in the same location as SIHP # -4428, habitation complex, view to north
Figure 63. Raised roadway constructed by DOFAW; Hāmākua Marsh to right, view to west

Figure 64. Abandoned road corridor that extends north/south through Hāmākua Marsh, view to north

Figure 65. Abandoned road corridor that extends north/south through Hāmākua Marsh, view to south

Figure 66. Asphalt and rock and mortar remnants that may have supported a bridge or road extension leading from Hāmākua Drive to the abandoned corridor, view to southeast
A water drainage feature extends from the intersection of Kailua Road and Hāmākua Drive into the northern portion of Hāmākua Marsh, just east of the Hāmākua Bridge on Kailua Road (Figure 69).

4.2 Pu‘u o ‘Ehu

The field inspection of Pu‘u o ‘Ehu followed an existing trail that had been previously marked with red flagging tape. The trail was accessed from a wet drainage that extended uphill from the edge of Kailua Road to and along the ridgeline (Figure 70).

Proposed project plans for the area include the maintenance of a foot trail along the Pu‘u o ‘Ehu ridgeline and vegetation restoration of the entire hillside (see Appendix A).

At the top of the ridge, a large concrete platform for a former water tank was observed (Figure 71). This structure was previously identified by Hammatt et al. (1993:24) and is depicted as a water tank on the 1952 USGS topographic map (see Figure 21). The interior of the concrete platform contained sand with some stacked rocks on the sand surface (Figure 72). A second structure identified by Hammatt et al. (1993:24) as an abandoned metal tank reservoir was not found during the current field inspection.

A recently installed wire fence marks the property line between the State of Hawai‘i property and private property in the eastern portion of the ridge (Figure 73). Vegetation along the fence line has been cleared, exposing a loosely stacked retaining wall along the slope (Figure 74).

A triangulation station at the summit consists of a concrete base inscribed with “Aug 25 1992” on the northwest edge and “Pu‘u o Ehu” on the northeast edge (Figure 75 through Figure 77). Figure 78 shows one of several geodetic datum markers beneath and around the triangulation station. An American flag that can be seen from downtown Kailua has been inserted and cemented into the center of the triangulation station (Figure 79).

The existing trail continued to the south, into dense vegetation (Figure 80). No evidence of a former quarry was found or visible due to the heavy vegetation.
Figure 69. Drainage extends from intersection of Kaiaku Road and Hāmākua Drive into the north portion of Hāmākua Marsh, view to southeast

Figure 70. Drainage ditch extending uphill from Kaiaku Road to the beginning of the Puʻu o ʻEhu ridge trail, view to east

Figure 71. Concrete platform for a former reservoir with sand in the center of structure, view to southeast

Figure 72. Recently stacked rocks on surface of sand within former reservoir platform, view to southeast
Figure 73. Recently installed wire fence marks the property line between the State and private property in the eastern portion of the ridge, view to west

Figure 74. Recently cleared area on the ridge with loosely stacked retaining wall, view to northwest

Figure 75. Triangulation station, view to east

Figure 76. Northwest edge of triangulation station inscribed with “Aug 25 1992,” view to south
Figure 77. Northeast edge of triangulation station inscribed with “Puu o Elu,” view to south

Figure 78. One of several geodetic datum markers beneath and around triangulation station, view to east

Figure 79. American flag in triangulation station at summit of Pu’u o ‘Ehu, view to southeast

Figure 80. Southern portion of Pu’u o ‘Ehu ridge trail continued to contain dense vegetation, Enchanted Lakes neighborhood in background, view to south
4.3 Kawaihui Marsh

The field inspection for the Kawaihui Marsh portion of the project area began on the eastern side of the marsh nearest the Hānākua Marsh and the intersection of Kailua Road and Hānākua Drive, and continued in a clockwise direction around the marsh. Field inspection areas were generally divided by archaeological site area and/or access. The following subsections include background and previous archaeological information, proposed project plans, and the results of the field inspection. Project- and area-specific recommendations are presented in Section 5.

4.3.1 Former ITT Site

This area is traditionally known as Wai’aaula, and is also referred to as the “former ITT site” since it was previously owned by International Telephone & Telegraph (ITT) World Communications and was the location of the Mackay Radio Tower (see Section 3.1.5). The area was accessed from an entrance off Kailua Road.

Proposed project plans for the area include the construction of one or more structures (hale), a parking area, a hula mound, a planned reinterment site location, and a pedestrian/maintenance path extending toward the levee with a viewing deck and interpretive signage (see Appendix A). Vegetation plans include Native Hawaiian and cultural plantings as well as the use of a wetland vegetation buffer.

During the field inspection, evidence of the Mackay Radio Tower was identified, which included a concrete foundation inscribed “1928,” the year the radio tower was installed (Figure 81). Additional concrete foundations were observed within the open water portion of the marsh that may be related to the tower construction (see Figure 81). The former ITT site location and the surrounding marsh have been significantly transformed by the development of Kailua Road, the adjacent City and County of Honolulu Pump Station, and Kawaihui Canal (Figure 82). The adjacent marsh wetland was also recently restored as a waterbird habitat by the Army Corps of Engineers (Martha Yent, personal communication 2013). Additional infrastructure present within the former ITT site includes an unpaved roadway that extends parallel to Kailua Road and the Kawaihui Marsh levee and trail (Figure 83 and Figure 84).

4.3.2 Waimanalo Irrigation System

The Waimanalo Irrigation System area extends southwest from the levee to behind St. John Lutheran Church and the northeast edge of the Kawaihui Vista neighborhood. During the field inspection, the area was referred to as the Waimanalo Irrigation System site because of the location of an abandoned pump house and ancillary features associated with the Waimanalo Irrigation System (SHIP # 50-80-15-4042). The entire area is overgrown with hau, however, a system of trails associated with numerous homeless camps enabled pedestrian access. The area was accessed from the Kawaihui levee parking area.

Proposed project plans for the area include a foot trail and concrete drainage culvert (see Appendix A). Vegetation plans indicate the maintenance of a wetland vegetation buffer and restoration of the dense hau growth.
The field inspection proceeded southwest from the Kawainui Marsh levee to within the hau overgrowth. The area contained evidence of homeless camps, which utilized locally available basalt stone to construct low stacked alignments (Figure 85). A line of concrete fence posts was observed within the hau growth extending to a filled rectangular concrete foundation (Figure 86 and Figure 87). This foundation was previously identified by McDermott et al. (2000:56) as a pump house associated with the Waimanalo Irrigation System (SIHP # 50-80-15-4042) (see Figure 24 and Table 3). On the south side of the foundation a U-shaped mortared basalt structure extends into the marsh and beneath the water surface (Figure 88). According to McDermott et al. (2000:56), this U-shaped structure contains some large-diameter iron pipes that extend into the marsh. The pump house was used to pump water from Kawainui Marsh into the irrigation system (see Section 3.2.1.20).

The field inspection continued through the dense hau along Kailua Road and behind St. John Lutheran Church to the edge of the Kawainui Vista neighborhood along Hanale Place. The area contained numerous abandoned homeless camps littered with modern trash as well as scattered basalt outcrops and boulders. A retaining wall constructed of large stacked basalt boulders was observed beneath the edge of Kailua Road (Figure 89). A collapsed cement and concrete well was identified amongst the homeless camp debris (Figure 90) behind St. John Lutheran Church. A basalt grinding stone surface was observed along the hillside northeast of the Kawainui Vista Neighborhood (Figure 91).

4.3.3 Kawainui Vista

The Kawainui Vista area includes the area behind the Kawainui Vista neighborhood southwest to the boundary of the Ulupō Heiau State Historical Park. The area contains numerous fine-grain basalt outcrops that form a steep bluff over the marsh overgrown with hau. The area was accessed from a small foot path extending from the piggery located downslope from Ulupō Heiau.

Proposed project plans for the area include the construction of a 365-ft long boardwalk placed approximately 100 ft from the Kawainui Vista neighborhood TMK boundary (see Appendix A). Vegetation plans include the maintenance of a wetland vegetation buffer along the Kawainui Vista boundary.

All or portions of two previously identified historic properties are located within the Kawainui Vista Area, SIHP #s -2022 and -2027. SIHP # -2022 includes a series of terraces, a long retaining wall, ruins of a historic house, and a spring that extends into the Ulupō Heiau State Historical Park area to the southwest. SIHP # -2027 is a rectangular basalt stone enclosure.

During the field inspection, SIHP # -2022 could not be confirmed, which is consistent with more recent archaeological surveys. Erkelens (1993:28) had difficulty distinguishing sites in this area during his reconnaissance survey and McDermott et al. (2000:60) noted the sites had been bulldozed. SIHP # -2027 was identified during the field inspection at the top of the basalt bluff that overlooks the southwest side of the Kawainui Vista neighborhood. SIHP # -2027 is a rectangular enclosure constructed of one to two courses of basalt boulders, many of which appear to be upright and possibly inset (Figure 92 and Figure 93). The enclosure measures approximately 2.5 by 3.5 m.
Figure 85. Abandoned homeless camp with modern constructed basalt alignments, view to southeast.

Figure 86. Concrete fence post alignment leading to pump house, view to east.

Figure 87. SIHP # 50-80-15-4042, rectangular northern portion of the Waimanalo Irrigation System pump house, view to southeast.

Figure 88. SIHP # 50-80-15-4042, U-shaped southern portion of the Waimanalo Irrigation System pump house, view to east.
Figure 89. Basalt boulder retaining wall downslope of Kailua Road, view to east

Figure 90. Concrete well structure, view to northeast

Figure 91. Basalt grinding stone surface, view to southeast

Figure 92. SIHP # 50-80-11-2027, rectangular enclosure, view to northeast
4.3.4 Ulupō Heiau

The Ulupō Heiau area includes the portion of the Ulupō Heiau State Historical Park located behind the Kailua Baptist Church Parcel and the YMCA. Vegetation clearing and maintenance efforts have exposed several previously identified historic properties in the area. The area also includes active taro loʻi and native plantings watered from the springs that emanate from beneath Ulupō Heiau. The area was accessed via the parking lot behind the YMCA.

Proposed project plans for the area include the establishment of a foot trail with interpretive signage (see Appendix A). Vegetation plans include the maintenance of a wetland vegetation buffer as well as vegetation restoration.

The Ulupō Heiau area includes four previously identified historic properties, SHIPs 50-80-11-0371, -2022, -3957, and -3958, all of which were located during the field inspection.

The field inspection of this area began at the base of Ulupō Heiau (SHIP # -0371) at a spring outlet (Figure 94 and Figure 95). Heading northeast of Ulupō Heiau, several features of SHIP # -2022 were encountered including the remains of an historic residence including a slab inscribed “Oct 18, 1947,” a piggery constructed of low-walled concrete or mortared basalt enclosures, and other cement slabs inscribed “Keith Texiera” and “1949” (Figure 96 through Figure 100). Heading downslope from Ulupō Heiau to the north, features of SHIP # -3958 were observed including a basalt stone terrace supporting a metal pipe (Figure 101). A cut trail at this location through thick hau growth facilitated access to SHIP # -3957, the “Konohiki Site” within LCA 7147 that was awarded to Kahele, konohiki of Kawainui. Observed features of SHIP # -3957 included several stacked basalt stone clearing mounds and a basalt stone house platform with paving and mortared basalt stairs (Figure 102 and Figure 103). A polished basalt stone considered to be a possible game piece was observed during the field inspection at the base of one of the SHIP # -3957 clearing mounds and collected by Martha Yent of State Parks. The artifact (Artifact 1) was photographed in situ and GPS location data was recorded (Figure 104).

4.3.5 Kīkanono

The Kīkanono area includes the portion of the Ulupō Heiau State Historical Park located along the vegetated slope behind the Kīkanono neighborhood parallel to Manu Mele Street from the wastewater pump station at Manu ʻŌō Road to the DOFAW jurisdiction boundary behind Castle Medical Center. The area was accessed from both Manu ʻŌō Road and DOFAW Management and Research Station off Ulukahiki Street.

Proposed project plans for the area include the establishment of a foot trail with interpretive signage, viewing decks, and a potential boardwalk (see Appendix A). Vegetation plans include the maintenance of a wetland vegetation buffer as well as vegetation restoration.

Previously identified historic properties within the Kīkanono area include SHIPs -2024, -2028, -2029, -2031, -3959, and -3960.

The field inspection began from the wastewater pump station at Manu ʻŌō Road. Several features of SHIP # -3959 were observed including basalt stone walls, alignments, terraces, and clearing mounds (Figure 105). Basalt grinding surfaces were also observed on boulders near the margin of the marsh (Figure 106). No evidence of the submerged basalt stone walls associated
Figure 94. SIHP # -0371, base of Ulupō Heiau, view to south

Figure 95. SIHP # -0371, modified spring outlet at base of Ulupō Heiau, view to west

Figure 96. SIHP # -2022, historic residence, view to north

Figure 97. SIHP # -2022, inscription including “Oct 18, 1947” associated with historic residence, view to north
Figure 98. SIHP # -2022, historic piggery, view to north

Figure 99. SIHP # -2022, inscription including “1949” near historic piggery, view to southwest

Figure 100. SIHP # -2022, inscription including “Keith Texiera” near historic piggery, view to north

Figure 101. SIHP # -3958, basalt stone terrace supporting a metal pipe, view to south
Figure 102. SIHP # -3957, basalt stone clearing mound, view to west

Figure 103. SIHP # -3957, mortared basalt stairs leading to the paved basalt stone house platform, view to northwest

Figure 104. SIHP # -3959, Artifact 1, a possible basalt stone game piece, view to southeast

Figure 105. SIHP # -3959 site area showing grinding surfaces in foreground, view to southeast
The Mokulana Peninsula area extends from the DOFAW Management and Research Station campus along Ulukahiki Street, to the west end of Mokulana Peninsula. The area was accessed from both the DOFAW Management and Research Station off Ulukahiki Street and a gated access road off Kalaniana'ole Highway onto the Mokulana Peninsula.

Proposed project plans for the area include the expansion of the DOFAW campus to include an education pavilion, program staging area, greenhouses, and a nursery surrounded by a perimeter fence (see Appendix A). A foot trail with viewing decks, interpretive signage, and possible bridges or boardwalks is planned along the marsh side of the perimeter fence. An interpretive pavilion is planned for the former location of the Matsuda store (see Section 3.1.4). A parking lot, foot trail with interpretive viewing pavilions, a program staging area, and maintenance access and storage are also planned for Mokulana Peninsula. Vegetation plans include the maintenance of a wetland vegetation buffer, vegetation restoration, and open lawn areas.

Previously identified historic properties within the Mokulana Peninsula area include SIHP #s -2028, -2029, and -3962.

The field inspection began at the DOFAW Management and Research Station campus. The campus is located within the area formerly occupied by Knott's Ranch, a working cattle ranch from 1969 to 2010. Remnants of the cattle ranch were observed around the DOFAW campus (Figure 110 and Figure 111). Bulldozer push piles were observed in the vicinity of SIHP # -2028, a site complex including basalt stone walls that could not be located during the field inspection (Figure 112).

DOFAW wildlife biologist Jim Cogswell identified the location of several partially buried or submerged basalt stone wall sections identified during the construction of the Army Corps of Engineers ponds 1 through 11 (Figure 113 through Figure 118). These basalt stone wall sections are considered to be features of SIHP # -2029. No evidence of either SIHP #s -3962 (three historic buildings) or -3963 (earthen mounds) were identified.
Figure 107. SIHP # -3960 complex including a possible burial mound in foreground and a terrace in background, view to northeast

Figure 108. SIHP # -3960 basalt stone wall, view to north

Figure 109. SIHP # -3960, Artifact 2, a basalt adze preform, view to northwest

Figure 110. Former Knott’s Ranch corrals located east of the DOFAW campus, view to west
Corps of Engineers ponds 1 through 11 (Figure 113 through Figure 118). These basalt stone wall sections are considered to be features of SIHP # -2029. No evidence of either SIHP # s -3962 (three historic buildings) or -3963 (earthen mounds) was identified during the field inspection.

In a site visit with SHPD on 19 January 2017, a remnant concrete slab and raised concrete gas pump island was observed (), however they have not been formally documented. It is likely the former gas station in which it is the remaining remnant of, was once part of what has been referred to as the former center of Kailua. The historic buildings identified as SIHP # -3962 may also be remnants of this once-thriving area.

4.3.2 Kalaniana'ole Highway/Kapa'a Road

The Kalaniana'ole Highway/Kapa’a Road area extends from the west end of Mokulana Peninsula along Kalaniana’ole Highway to the intersection of Kapa’a Road and along Kapa’a Road to the Cash Ranch property. The area was subject to a reconnaissance-level pedestrian inspection in 2010 in support of the Kawainui Marsh Wetland Restoration and Habitat Enhancement project (Hammatt 2013). The area can be accessed from a locked gate along Kapa’a Quarry Road. The current field inspection did not cover the Kalaniana’ole Highway/Kapa’a Road area because of the recent coverage and documentation provided by Hammatt (2013a) (see Section 3.2.1.26).

The proposed project plans for the area include a boardwalk from Mokulana Peninsula to the Kalaniana’ole Highway/Kapa’a Road intersection, a parking lot at the intersection, and an unpaved maintenance access/trail that extends roughly parallel to Kapa’a Quarry Road with foot trail offshoots including interpretive signage, lookouts, and a boardwalk observation deck (see Appendix A). Vegetation plans include the maintenance of a wetland vegetation buffer, vegetation restoration, open lawn areas, and native forest plantings.

During the Hammatt (2013a) reconnaissance survey, portions of two historic properties were identified including features associated with SIHP # -2029, the Kawainui Marsh archaeological-cultural-historic complex and SIHP # -7199, a road remnant that continues north to the Cash Ranch property.

4.3.3 Cash Ranch

The Cash Ranch area includes the former Cash Ranch property located adjacent to Nā Pōhaku o Hauwahine along Kapa’a Quarry Road. Wes Cash, the former lessee, reported that his father-in-law, Charles Nolan (a.k.a. Pinky) leased the land in 1968 to raise quarter horses for racing. Cattle were added later. A person named Bevares ran cattle in the same area before Pinky. The Cash Ranch area was accessed from a gated entry off Kapa’a Quarry Road.

Proposed project plans for the area include the construction of a State Parks Education Center that includes several structures, a viewing deck, a parking area, and a service drive (see Appendix A). Foot trails are also planned through the Cash ranch property, connected to Nā Pōhaku o Hauwahine, and potentially to Holomakani Heiau located on the west side of Kapa’a Quarry Road. Vegetation plans include the maintenance of a wetland vegetation buffer, vegetation restoration, and open lawn.
Figure 113. SIHP #-2029 wall section exposed in Pond 1, view to west

Figure 114. SIHP # -2029 wall sections exposed in Pond 2 with Pond 3, view to northeast

Figure 115. SIHP # -2029 wall section exposed in Pond 3, view to northeast

Figure 116. SIHP # -2029 wall section exposed in Pond 5, view to northwest
One previously identified historic property is present within the area. SIHP # -3965, a basalt stone terrace, was located during the field inspection.

The field inspection began at the gated entry to the Cash Ranch area and followed an abandoned road that extended to the south (Figure 119). Several ranch buildings near the entrance were in the process of being demolished (Figure 120). The abandoned road may be a continuation of SIHP # -7199, the road remnant documented by Hammatt (2013) within the Kalaniana‘ole Highway/Kapa‘a Road area. The majority of the ranch was overgrown with dense vegetation as cattle grazing has ceased. Ranching infrastructure on the property included portions of fence lines that extended parallel to Kapa‘a Quarry Road and along the edge of the marsh (Figure 121). The field inspection continued along the edge of the marsh and identified SIHP # -3965, a small basalt stone terrace, on a steeply sloping embankment (Figure 122). A discarded iron plow blade (Artifact 3) was encountered at the top of the slope on level ground near SIHP # -3965 and left in place (Figure 123). A lithic flake composed of fine-grain basalt was identified in a level area near an intermittent drainage and collected by Martha Yent of State Parks. The artifact (Artifact 4) was photographed in situ and GPS location data was recorded (Figure 124).

The field inspection continued to an open lawn area presently being maintained by Ke Kahua and a basalt stone hale are present within the open lawn (Figure 125 and Figure 126). The open lawn area is accessed from a dirt road that extends down from the ranch entrance. A water retention pond is located along the north side of the road near the open lawn area (Figure 127). The pond was constructed by rice farmers ca. 1920s as a water retention pond from which water was pumped (Wes Cash, personal communication 2013). No walls or constructed surfaces were observed around the pond.

4.3.4 Nā Pōhaku o Hauwahine

Nā Pōhaku o Hauwahine is a prominent basalt outcrop located just north of the Cash Ranch property. ‘Ahahui Mālama I Ka Lōkahi, a nonprofit coalition “devoted to the preservation of native species and ecosystems, and the importance of their relationship to Hawaiian culture” is in the process of restoring the native forest and vegetation at Nā Pōhaku o Hauwahine (‘Ahahui Mālama I Ka Lōkahi 2012). In the process, dense vegetation including areas completely covered in hau are being cleared. The area was accessed from a pull-off along Kapa‘a Quarry Road.

Proposed project plans for the area include the incorporation of the existing foot trail at Nā Pōhaku o Hauwahine into the Master Plan (see Appendix A). Vegetation plans include continued vegetation restoration.

One previously identified historic property is present within the area. SIHP # -2023, a wall complex, was confirmed during the field inspection. Additional potential historic properties were also observed.

The field inspection followed the existing foot trail system at Nā Pōhaku o Hauwahine led by Kaimi Scudder of ‘Ahahui Mālama I Ka Lōkahi. The top of the basalt outcrop provided an overview of the entire marsh (Figure 128). The locations of several wall sections near the top of the outcrop were noted by Martha Yent and Kaimi Scudder, but were covered by vegetation. The field inspection continued down the face of the outcrop toward the marsh. Several grinding
Figure 119. Possible extension of SHIP # -7199, an unpaved road leading from the Cash Ranch to the south, view to south

Figure 120. Buildings on the Cash Ranch property ready for demolition, view to northwest

Figure 121. Portions of fence lines within the Cash Ranch property, view to southwest

Figure 122. SHIP # -3965, basalt stone terrace, view to west
Figure 123. Artifact 3, iron plow blade, view to east

Figure 124. Artifact 4, basalt lithic flake, view to north

Figure 125. Ke Kahu O Kūal'i modern ahu, view to north

Figure 126. Ke Kahu O Kūal'i modern ahu, view to east
Figure 127. Water retention pond at Cash Ranch, view to northeast

Figure 128. Overview of Kawaihui Marsh from Nā Pōhaku o Hauwahine, view to south

Cultural Surveys Hawai‘i Job Code: KAILUA 49
LRFI for the Kawainui Master Plan Update, Kailua, Ko‘olaupoko, O‘ahu

4.3.1 Model Airplane Park

The Model Airplane Park area includes the portion of the project along Kapa‘a Quarry Road fronting City and County of Honolulu property including the area in front of the transfer station and the Model Airplane Park. The area was accessed from the Model Airplane Park parking lot.

Proposed project plans for the area include the construction of a Hawaiian cultural complex including a hale, a potential caretaker residence, parking lots, a gathering area, and a hula mound (see Appendix A). The foot trail from Nā Pōhaku o Hauwahine would be extended to the area using a boardwalk and would continue parallel to Kapa‘a Quarry Road. A large area adjacent to the existing model airplane park would be used for a marsh vegetation processing area. Vegetation plans for the area include open lawn, the maintenance of a wetland vegetation buffer, and Native Hawaiian and cultural plantings.

No previously identified historic properties are known at this location. A portion of the Model Airplane Park was previously used as a municipal landfill.

The field inspection of the area included a walk-through of the large open field at the Model Airplane Park (Figure 134). The remainder of the area includes dense vegetation.

4.3.2 State Park Reserve

The State Park Reserve area includes the remainder of the marsh area along Kapa‘a Quarry Road to Mōkapu Boulevard and the Kawainui Canal. The area was accessed by pull-offs along Kapa‘a Quarry Road.

Proposed project plans for the area include a continuation of the foot trail with trail parking along Kapa‘a Quarry Road leading to a boardwalk that extends to the inlet of Kawainui Canal, and the construction of Kilaha‘o Park (see Appendix A). The park is proposed to include an educational center, restrooms, a parking area, a hule wa‘a and canoe launch, a storage structure, and showers. Vegetation plans include the maintenance of a wetland vegetation buffer, open lawns, and Native Hawaiian and cultural plantings.

No previously identified historic properties are known at this location.

The field inspection of the area identified areas of recent dumping and push piles containing asphalt and debris (Figure 135 and Figure 136). The majority of the area consisted of dense vegetation composed of exotic grasses (Figure 137).
Figure 129. Grinding surfaces on basalt outcrop at Nā Pōhaku o Hauwahine, view to south

Figure 130. Artifact 5, basalt adze preform, view to west

Figure 131. Basalt stone alignment at Nā Pōhaku o Hauwahine, view to southeast

Figure 132. Basalt wall section at Nā Pōhaku o Hauwahine, view to southeast
Figure 133. Area referred to as the navigation site, view to east

Figure 134. Model Airplane Park overview, view to east

Figure 135. Area south of Kapa’a Quarry Road with push piles and recently dumped garbage, view to west

Figure 136. Push pile that contains asphalt and debris located adjacent to the Kalaheo High access, view to east
Figure 137. Dense vegetation observed along Mōkapu Boulevard, view to south

Section 5 Summary and Recommendations

The archaeological literature review of Kawainui and Hīmāku Marsh documented traditional and historical background information, previous archaeological study areas, and previously identified historic properties within the project area. On 4 December 2013 and 9 December 2013, CSH archaeologists, accompanied at times by Martha Yent of State Parks, DOFAW wildlife biologists Katie Doyle (at Hīmāku Marsh) and Jim Cogswell (at Kawainui Marsh), and Sandy Adamson and Kaimi Scudder, board members of ‘Aha‘ai Mālama I Ka Lōkahi, completed an archaeological field inspection of the project area, targeting areas of proposed development and previously identified historic properties. The field inspection included general confirmation of historic property site areas, documentation of potentially new historic properties, GPS location of selected archaeological features and surface-collected artifacts, and photographic documentation of the entire project area.

Several potential historic properties were identified during the field inspection. Potential historic properties include the large concrete platform for a former water tank on Pu‘u o ‘Ehu, remnants of the former ITT site and Mackay Radio Tower at Wai‘aula, the concrete well structure behind the Kawainui Vista neighborhood, and the water retention pond at Cash Ranch. Potentially new archaeological features and artifacts associated with SIHP # -2029, the Kawainui Marsh archaeological cultural-historic complex were also identified, including a basalt grinding surface behind the Kawainui Vista neighborhood, a basalt wall section at Nā Pōhaku o Hauwhine, and four lithic artifacts (Artifacts 1, 2, 4, and 5) collected by Martha Yent.

Recommendations

The proposed Kawainui Marsh Gateway Park project comprises two noncontiguous parcels: the Mōkapu site, north of Oneawa Canal, and the Coconut Grove site, south of Kawainui Community Park. No surface historic properties were identified at either parcel during an archaeological assessment of the project area (Mann et al. 2001). During that study, the sediments within the Mōkapu site were found to be disturbed. Juca sand and soil deposits. The parcel had been disturbed extensively, having been used as a construction material dump site with debris at least two meters thick covering the surface. Because the proposed project will only impact the upper three feet of fill material, the underlying marsh sediments will not be disturbed.

In a letter dated 11 July 2002 (LOG NO.: 30243, DOC NO.: 0207E10; Appendix B), the SHPD agreed “that if ground disturbance in the Mokapu Site area does not exceed the depth of fill material, there will be ‘no effect’ on significant historic sites.” However, the archaeological assessment by Mann et al. (2001) also pointed out two areas with the potential for paleoenvironmental deposits—one at the modern drainage at the southwestern end of the Mōkapu site parcel and one at the northern end of the Coconut Grove parcel. Furthermore, the majority of the surface at the Coconut Grove site consists of calcarcous sand deposits, which appear to be natural, although previously disturbed. Because the sand may still contain remnants of traditional Hawaiian land use, including human burials and other subsurface features related to Native Hawaiian habitation, Mann et al. (2001) recommended an AIS with subsurface testing for the Coconut Grove site. Therefore, SHPD made the following recommendations in the 11 July 2002 letter (LOG NO.: 30243, DOC NO.: 0207E10; Appendix B):
(1) Prior to carrying out any ground disturbance, the applicant shall ensure that a qualified archaeologist conducts an archaeological inventory survey with subsurface testing within the Coconut Grove Site. A report of the findings should be provided to our office for review and approval. If significant historic sites are found, and if they will be adversely affected by the proposed park development, then an acceptable mitigation plan will need to be prepared and executed prior to any ground disturbance.

(2) If more detailed information (e.g., site plans) indicates that the two areas with potential for containing paleoenvironmental deposits will be adversely affected by the planned park development, then the applicant shall ensure that these areas are appropriately investigated during any archaeological inventory survey work, and that the findings are included in a report of findings.

In addition, AIS fieldwork is recommended for the following areas:

1. Hāmākua; wetland expansion and roadway modification. Because the lithic scatter site (SIHP # -4430) inland of Hāmākua’s wetland may be affected by excavation activities for wetland expansion, an AIS is recommended. Because other historic properties may be affected by the realignment of DOFAW’s new access road, AIS is also recommended at this location.

2. Kawainui SPR, Pōhakea
3. Kapa’a. AIS should be conducted for the cultural and educational complex site for areas planned for structures or major site development.

4. Kawainui SPR, Kālēheo. Design plans associated with the hale wa’a structure will be designed not to exceed the depth of fill material, however, an AIS is recommended should the disturbance of soils underlying the fill material be deemed necessary.

5. Ulupō Heiau SHP. An AIS is recommended for areas for the pedestrian and foot trails, as well as accessory structures.

6. Mokulana Peninsula. An AIS is recommended for areas for the pedestrian and foot trails, as well as accessory structures.

7. Hāmākua and lower Pu‘ulēlua. An AIS is recommended for areas for the pedestrian and foot trails, as well as accessory structures.

AIS fieldwork will include a survey conducted to document all previously identified historic properties to AIS-level documentation, as well as to document any known or unknown potential historic properties within the areas planned for development. The AIS will predominately consist of a 100% coverage survey and documentation of impacted areas; however, subsurface testing may also be warranted within areas of proposed ground disturbance. Consultation with SHPD regarding AIS testing strategy is recommended prior to fieldwork. Mitigation recommendations following AIS fieldwork may include archaeological monitoring, data recovery, and/or preservation.

Furthermore, an archaeological monitoring plan (AMP) for wetland restoration and upland reforestation activities was approved by the SHPD in June 2015 (Yucha et al. 2015). The plan includes full-time, on-site archaeological monitoring for ground disturbing work within the wetland. The plan, which addresses the Kahanaiki area, will be amended to include any additional wetland areas planned for restoration activities. The amended plan may include on-site and/or on-call monitoring for ground disturbing work within the wetland. The AMP includes the following monitoring methods to ensure no adverse impact to any newly identified historic properties, nor to existing SIHP # -2029:

a. An archaeologist will do a surface sweep of each vegetation management area or smaller “pod” with the contractor prior to initiation of vegetation cutting/removal within the pod.

b. The archaeologist will identify any areas of potential concern and establish a “caution tape” buffer of at least ten feet around each area of concern.

c. The contractor will ensure that no work or impacts occur within each buffer.

d. The archaeologist will complete a 100% surface survey of each pod following vegetation cutting/removal.

e. The archaeologist will document and obtain SIHP numbers for any historic properties that are newly identified within each pod.

f. Should SHPD request data recovery excavations for any newly identified historic properties, the fieldwork and results will meet the requirements of HAR §13-278. Data recovery excavations will be guided by the following research objectives:

1) Refine the timeframe for major vegetation changes(s) within Kawainui, and

2) Synthesize any newly identified historic property into a broader spatial, temporal, and functional understanding of the Kawainui Marsh Archaeological Cultural-Historical Complex (SIHP # -2029).

The existing Kahanaiki area AMP will be amended to include any additional areas for upland reforestation when programmed for implementation. The same monitoring methods will be implemented if additional upland reforestation plans use the same methodology as that of the Kahanaiki area; otherwise, revised monitoring methods will be developed in consultation with SHPD.

With regards to a DOFAW Kawaihui-Hāmākua Management and Research Station Storage Building project in the current study area, SHPD initially requested that the work proceed under an archaeological monitoring program. However, SHPD subsequently conducted a site visit of the research station and determined that no surface historic properties were present in the vicinity of the proposed building. In a letter dated 19 February 2016 (LOG NO.: 2015.03177; DOC NO.: 1602KM24; Appendix B), the SHPD made a revised determination of “no historic properties affected” for the proposed storage building project. It is recommended that the additional structures planned in the DOFAW Management and Research Station area does not require further archaeological work.
Section 6 References Cited

Ah Sam, Jessica A. and Paul L. Cleghorn

ʻAhahui Malama I ka Lokahi

Allen-Wheeler, Jane

Athens, J. Stephen
1983a Archaeological Excavations on the Pōhāka-pā-Kūkanono Slope, Kawai Nui Marsh O‘ahu. MS 033183, Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Athens, J. Stephen

Athens, J. Stephen

Athens, J. Stephen and Jerome V. Ward

Aviation Daily

Barnes, Shawn and Hallett H. Hammatt
2008 Archaeological Monitoring Report for the Kūkanono Wastewater Pump Station Force Main Partial Replacement Project, Kailua Ahupua’a, Ko‘olau Poko District, Island of O‘ahu Tax Map Key (TMK: (l) 4-02-013: 038 (por.) & 039 (por.). Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Barrera, William
1984a Archaeological Survey for the Kailua Road Interceptor Sewer, Maunawili Wastewater Pumping Station and Force Main, and Kukanono Wastewater Pump Station And Force Main, Kailua, Oahu. Chiniago, Inc., Honolulu.

Bowser, George

Brennan, Paul W. and Diane C. Drigot

Bushnell, O.A.

Chamberlain, Levy

Char, Wai Jane and Tin-Yuke Char

Chun, L.T.

Chun, Michael J. and Gordon L. Dungan
1981 Environmental Aspects of Kapa’a Landfill, Wainui, O‘ahu, Hawai‘i. Water Resources Research Center, University of Hawai‘i at Mānoa, Honolulu.

Clark, Jeffrey T.

Clark, Stephen D.
1977 Site Survey Report: Proposed Road Corridor for the Extension of Hāmākua Drive Between Hōhō Drive and Alakai Drive in Kailua, Site No 50-89-11-4699 and 4699-1-700. Hāmākua Archaeological Staff, City and County, Honolulu.
Clark, Stephan D. and Robert D. Connolly, III
1977 Archaeological Reconnaissance Survey of the Proposed Improvements of Hāmākua Drive from Hahani Street to Akoaoka Street, Kailua, Koʻolaupoko, Hawaiʻi. City and County, Honolulu.

Collins, Sara and Richard Nees
2007 An Archaeological Assessment Report for the Proposed Kailua Road Permanent Rockfall and Landslide Mitigation Project Kailua, Koʻolaupoko, Island of Oʻahu, TMKs: (1) 4-2-001, 014 & 017. Pacific Consulting Services, Inc., Honolulu.

Cordy, Ross
1977a A Cultural Resources Study for the City and County of Honolulu’s Permit Request: Kawainui Marsh Sewerline (Oahu), Archaeological Reconnaissance and Pre-1850 Literature Search. U.S. Army Corps of Engineers, Pacific Ocean Division, Honolulu.

Coulter, John Wesley and Chee Kwon Chun

Creed, Victoria S. and Rodney Chingioji

Donn, John M.
1906 Oahu. Hawaii Territory Survey map, by John M. Donn. Registered Map 2374. On file at the Hawaiʻi Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl Street, Room 210, Honolulu.

Driqat, Diane C.
1982 Ho’omea auao No Kawai Nui (Educating About Kawai Nui). University of Hawaiʻi at Mānoa, Honolulu.

Dye, Thomas S.
1992 Kailua Archaeology. Lecture, 19 November.

Erkelens, Conrad

Ewart, Ned D. and Myra F. Tuggle

Fong, Jeffrey W.K., Douglas F. Borthwick, and Hallett H. Hammatt

Foose, D.E., E.L. Hill, S. Nakamura, and F. Stephens

Fornander, Abraham

Groza, Randy, Michelle F. Pammer, and Hallett H. Hammatt

Hall, Walter

LRFI for the Kawainui Master Plan Update, Kailua, Koʻolaupoko, Oʻahu
TMKs: [1] 4-2-001, 002, 003, 004, 005, 006, 007, 008, 009 (various parcels)
Hammatt, Hallett H., Michael Pfeffer, and Victoria S. Creed 1990 Archaeological Inventory Survey of Kailua 272 Reservoir and Access Road, Kailua, Ahupua’a of Kailua, Island of O’ahu TMK 4-2-03:9, 16 and a portion of 17. Cultural Surveys Hawai’i, Inc., Kailua, Hawai’i.


Hawai’i State Archives 1930s Photograph of Matsuda family store and residence.

Hawaiian Historical Society 1885 Photograph of Kawainui.


Kailua Historical Society 2009 Kailua-in the Wsps of the Malanai Breeze (Kailua i ke oho o ka Malanai). Kailua Historical Society, Kailua, Hawai’i.


Kawachi, Carol 1988 Kapa’a (Ulimawao) Ridge Field Check (TMK 4-2-14:2), Historic Preservation Office, State of Hawai’i, Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai’i.


Keckowai, Samuel K. 1922 Makaki the Famous Fish-Attracting Stick of Moa’ula Nui Akea. Translation from Hawaiian newspaper Ka Nupena Kuko’o, 6 January.


Kikiloi, Scott T., Matthew McDermott, and Hallett H. Hammatt 2000 Archaeological Inventory Survey for the Kawainui Marsh Park Improvement Area Kailua, Ahupua’A Kailua, Island O’ahu (TMK 4-2-17, por. 04). Cultural Surveys Hawai’i, Inc., Kailua, Hawai’i.


Kraft, John C. 1980c Summary of Results of the Kawai Nui Marsh Study.

Leone, Diana

MacDonald, G.A. and A.T. Abbott
1974 Volcanoes in the Sea, University of Hawaii Press, Honolulu.

Mann, Melanie M. and Hallett H. Hammatt

Mann, Melanie M., Matthew McDermott, and Hallett H. Hammatt
2001 Archaeological Assessment of the Proposed Kawai Nui Gateway Park, Ahupua’a of Kailua, District of Ko’olaupoko, Island of O’ahu (TMK: 4-2-16: por. 1; 4-2-17. por. 20; 4-4-34.25, 37). Cultural Surveys Hawai’i, Inc., Kailua, Hawai’i.

Manhoff, Milton and Mituo Uyehara

Martel, Thomas III and Hallett H. Hammatt
2017 Archaeological Inventory Survey Report for the Kailua Road Wastewater Pump Station Project, Kailua Ahupua’a, Ko’olaupoko District, O’ahu, TMK: [1] 4-2-016.004 por. Cultural Surveys Hawai’i, Inc., Kailua, Hawai’i.

McAllister, J.G.

McDermott, Matthew, Kristina W. Bushnell, Victoria S. Creed, Scott T. Kikiloi, and Hallett H. Hammatt
2000 Archaeological Assessment and Background Literature Search for the Proposed Circle-Kawai Nui Gateway Trail Project, Kailua Ahupua’a, District of Ko’olaupoko, Island of O’ahu. Cultural Surveys Hawai’i, Inc., Kailua, Hawai’i.

Morgenstein, Maurice


Mulrony, M.A.

Neller, Earl

Office of Hawaiian Affairs

O’Hare, Constance R., David W. Shideler, Michael E. Rivera, and Hallett H. Hammatt
2014 Archaeological Monitoring Report for Cultural Resources Support for a Remediation Investigation/Feasibility Study (RI/FS) at Pali Training Camp FUDS Project Number H99H0027701 Kailua and Waimānalo Ahupua’a, Ko’olaupoko District, O’ahu, Hawai’i TMKs: [1] 4-1 (various plats and parcels) and [1] 4-2 (various plats and parcels). Cultural Surveys Hawai’i, Inc., Kailua, Hawai’i.

Pacific Business News

Pakil, Pilahi

1976 Oral history communication to Muriel Seto, Kailua.

Pantaleo, Jeffrey and Paul Cleghorn
1992 Archaeological Inventory Survey, Phase I, Kailua Gateway Development, Kailua, O’ahu, Hawai’i. International Archaeological Research Institute, Honolulu.

Ramsar Convention on Wetlands

Ramsar Convention Bureau

Schmidt, Robert C.

Cultural Surveys Hawai'i Job Code: KAILUA-49

References Cited

Snow, Charles

Soehren, Lloyd J.

Stannard, David E.

Stearns, Harold Thornton

Sterling, Elspeth P. and Catherine C. Summers (Editors)

Summers, Catherine C.

Thrum, Thos. G.
1906 Heiaus and Heiau Sites Throughout the Hawaiian Islands. Thrum’s Hawaiian Annual for 1906. Thomas G. Thrum, Honolulu.


1929 Hawaiian Almanac and Annual for 1929. Thomas G. Thrum, Honolulu.

Tulchin, Jon and Matthew McDermott
2007 Burial Site Component of an Archaeological Data Recovery Plan for a Project at 408 A Uluhiu Street, Kailua Ahupua'a, Ko'olaupoko District, Oahu Island TMK: [1] 4-3-052:027. Cultural Surveys Hawaii, Inc., Kailua, Hawai'i.

Vitousek, Michael
2010 Inadvertent Discovery of Human Remains in a Cabinet at the St. Anthony’s Church Administrative Building, 148 Makawao St, Kailua Ahupua’a, Ko’olaupoko District, Island of O‘ahu, TMK # (1) 4-3-028:010. State Historic Preservation Division, Kapolei, Hawai‘i.

U.S. Army Corps of Engineers

U.S. Department of Agriculture

1936 Mokapu Point USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

1952 Mokapu Point USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

1998 Mokapu Point USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Heritage Conservation and Recreation Service

U.S. War Department
1919 U.S. War Department 7.5-minute topographic map, Mōkapu Point Quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

1943 U.S. War Department 7.5-minute topographic map, Mōkapu Point Quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

Wilcox, Carol

Wuat, Nina

Wyllie, R.C.
1848 Answers to Questions Proposed by His Excellency, R.C. Wyllie, His Hawaiian Majesty’s Minister of Foreign Relations, and Addressed to all the Missionaries in the Hawaiian Islands. Department of Foreign Affairs, Honolulu.

Reference:
LRFI for the Kawainui Master Plan Update, Kailua, Ko’olaupoko, O‘ahu. TMK: [1] 4-2-080, 4-2-081, 4-2-082, 4-2-083, 4-2-084 and 4-2-085 (various parcels)
Young, Peter

Yucha, Trevor, David W. Shideler, and Hallett H. Hammatt
2015 Archaeological Monitoring Plan for the Kawaiwi Marsh Wetland Restoration and Habitat Enhancement Project, Kailua Ahupua’a, Ko‘olau District, O‘ahu TMKs: [1] 4-2-013:005 (por.), 022 (por.), and 043 (por.). Cultural Surveys, Hawai‘i, Kailua, Hawai‘i.
LRFI for the Kawainui Master Plan Update, Kailua, Ko'olaupoko, O'ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)
Appendix B  SHPD Correspondence
TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 (various parcels)

February 19, 2016

Mr. David Smith, O‘ahu Branch Manager
Division of Forestry and Wildlife
Department of Land and Natural Resources
2095 Makaha Heights Drive
Honolulu, HI 96822

Dear Mr. Smith:

SUBJECT: Chapter 488 Historic Preservation Review - REVISED COMMENTS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

Thank you for the opportunity to provide revised comments regarding the Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) - Kawainui Management and Research Station Storage Building Project. The original submittal was received on August 18, 2015, and indicated DOFAW proposes to construct a storage building in a former portion of the 14.5 acres comprising the Kawainui-Oahu Complex Management and Research Station. The proposed 3,960 sq. ft. storage building is designed to accommodate DOFAW vehicles, equipment, supplies, administrative activities, and additional storage area. In response to the original submittal, the State Historic Preservation Division (SHPD) requested the project proceed under an archeological monitoring plan with explicit procedural provisions regarding access and agency of construction equipment and machinery, treatment of inadvertent discovery of historic properties (non-burial and burial), and consultation with the community and other concerned groups (September 14, 2015, Log Nos. 2015-84377, 2015-84258).

In response to SHPD’s letter dated September 18, 2015, DOFAW requested SHPD staff conduct a site visit of the research station. On January 26, 2016, SHPD archeologists (Kimo Nakamura and Susan Labry) conducted a site visit. DOFAW provided copies of updated project plans and clarified that the proposed storage facility will be constructed within the footprint of an existing garage facility in the back yard and will be slab-on-grade with a retaining wall on the back side of the building. The retaining wall will stabilize the southwest hillside with minimal ground disturbance. SHPD staff examined the southwest hillside and determined no surface/historic properties were present in the vicinity of the proposed building. The staging area for associated construction equipment will be opposite of the proposed building within an area previously graded and currently used as parking and staging area for DOFAW vehicles.

Based on revised project plans and project scope of work, and examination of the back yard during the January 26, 2016 site visit, SHPD’s revised determination is no historic properties affected for the proposed project.

Please note that the event that surface or subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, or sand deposits are identified during the project undertaking, cease work in the immediate vicinity of the find, protect the find from additional disturbance, and contact the State Historic Preservation Division at (808) 488-4017.

LRFI for the Kawainui Master Plan Update, Kailua, Ko‘olau, O‘ahu

TMKs: [1] 4-2-003, 4-2-013, 4-2-017, 4-2-03, and 4-4-034 (various parcels)
Mr. David Smith  
February 18, 2016  
Page 2

Please contact Kurti dokushine at (808) 652-8027 or at Kurti.Mikusukin@hawaii.gov for questions or concerns regarding this letter.

Ahiho,

Susan A. Lebo  
Susan A. Lebo, PhD  
Archaeology Branch Chief

c: Ronald A. Sato, ACHEP Planners (sato@hhf.com)
Cultural Impact Assessment for the Kawainui Marsh Master Plan Update Project,
Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu
TMKs: [1] 4-2-003:017 and 030; 4-2-013:005, 010, 022, and 038; 4-2-016:002 and 015; 4-2-017:020; 4-2-103:018 and 035; and 4-4-034:025

Prepared for
Helber Hastert & Fee, Planners, Inc.

Prepared by
Nicole Ishihara, B.A.,
Brittany Beauchan, M.A., and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: KAILUA 48)

September 2017

Draft

Reference
Cultural Impact Assessment for the Kawainui Marsh Master Plan Update Project, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMKs: [1] 4-2-003:017 and 030; 4-2-013:005, 010, 022, and 038; 4-2-016:002 and 015; 4-2-017:020; 4-2-103:018 and 035; and 4-4-034:025 (Ishihara et al. 2017)

Date
September 2017

Project Number(s)
Cultural Surveys Hawai‘i Inc. (CSH) Job Code: KAILUA 48

Agencies
State of Hawai‘i Department of Health/Office of Environmental Quality Control (DOH/OEQC)

Land Jurisdiction
The project area is primarily located within the Kawainui Marsh. These lands are owned by the State of Hawai‘i. The project area is depicted on a 1998 Mokapu Point U.S. Geological Survey (USGS) quadrangle.

Agencies
DOH/OEQC

Project Location
Kawainui Marsh

Project Description
In 1994, a master plan was created for Kawainui’s wetland and surrounding upland areas referred to as Kawainui Marsh (Kawainui). The State of Hawai‘i, Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) in partnership with the Division of State Parks (DSP) will be updating the previous master plan. The updated master plan is intended to implement future improvements to Kawainui Marsh in partnership with the Division of State Parks (DSP) to support DOFAW and DSP plans to help sustain, enhance, and educate the public about the natural and cultural resources associated with the complex. The proposed plans include wetland restoration and habitat expansion; upland reforestation; a perimeter pedestrian path with some boardwalks crossing wetlands; DOFAW Management and Research Station improvements; program staging areas; educational pavilions; profuse interpretive signage for resources and archaeological sites; an Education Center for visitors; continued establishment of cultural centers to support Hawaiian cultural practices, education, and stewardship partnerships; parking lots in designated areas; and a park site that also accommodates canoe storage and launch into Kawainui Canal.

Project Acreage
The project acreage is approximately 988 acres.

Document Purpose
This cultural impact assessment (CIA) was prepared to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts to cultural beliefs, practices, and resources.
Kailua praising the taro gardens of the area; with legends about the goddess, Hi‘iaka, and her companion, Wahine-oma‘o, visiting the marsh; with legends about the mythological giant/chieftain Olomana, whose name is borne by Mount Olomana; with mele about Kawainui; with the ancient Hawaiian belief that the channel underneath Pu‘u o ‘Ehu, which is adjacent to the southern portion of the project area, is the coital connection between the male fishpond, Kawainui, and the female fishpond, Ka‘elepulu, thereby giving the area great mana (spiritual or divine power).

4. Radiocarbon dating of organic soil in Kailua demonstrates human habitation in the area for at least 1,000 years, and perhaps 1,500 years. Archaeological research definitively shows expansion of agriculture in Kailua beginning AD 1200-1300. Radiocarbon dates obtained from the vicinity of the project area—at the Hekili Street archaeological inventory survey by CSH (Tulchin and Hammatt 2007), demonstrate human occupation at AD 1440 to AD 1520.

5. An ancient ‘auwai (irrigation ditch) at the edge of Kawainui marsh was used in the 1900s to supply millions of gallons of water to the Waimanalo Sugar Mill. A pumping station removed water from the marsh in a wooden pipe and diverted it to the sugar mill, which was the biggest employee on the windward side.

6. Kawainui Marsh is associated with the history of rice farming, at one time hosting three rice mills run by Chinese immigrants.

7. In early nineteenth century years, Kailua was extensively used to cultivate rice, sugar, and other crops. Ranching and dairy farming were also conducted.

8. With the expansion of the Pali Highway connecting Honolulu to windward communities, the post-World War II years brought a development boom to Kailua and neighboring ahupua‘a (traditional land division extending from the mountain to the sea). Weekend beach homes and residential developments replaced the ahupua‘a development boom to Kailua and neighboring

9. The project area is situated within the sand berm of Kailua which was utilized as a settlement by indigenous Hawaiians. It is likely to contain additional subsurface deposits, including burials.
Plan, Kailua, Ko'olaupoko, O'ahu

+ƗPƗNXD0DVWHU

CIA for the Kawainui-Master Plan include a complete discussion of all historic properties. Hawaii’s unique “sense of place” that preserve, enhance, and perpetuate the community’s cultural heritage is a critical component of Kailua’s Master Plan. This includes the protection of all archaeological, cultural, and natural resources of Kailua (e.g., use of native and Polynesian architecture and construction plans and specifications should be provided to the public by the project team.

Previous archaeological studies have indicated the presence of various parcels of cultural and natural resources within the project area, including Native Hawaiian burials, archaeological features, and wetlands. These resources are of significant cultural and historical importance to the people of Kailua and surrounding communities.

Recommendations

1. In the event of an inadvertent discovery of human remains, the area will be cordoned off, and all activities will cease immediately. The site will be reported to the State Historic Preservation Division (SHPD) and the Native Hawaiian Burial Site Specialist. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

2. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

3. The northern to northeastern portion of the project area borders the northern to northeastern portion of the project area borders the northern to northeastern portion of the project area.

4. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

5. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

6. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

7. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

8. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

9. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

10. Any such facility, if necessary, should be established, maintained, and monitored in full consultation with cultural and lineal descendants of Kailua.

Impacts and Recommendations

Consultation

The findings of the archaeological surveys conducted during the preliminary site visit were summarized in a report titled "Archaeological and Cultural Surveys Hawaii (KAILUA 48) Management Summary.

The survey data, including potential cultural resources, were documented and shared with relevant stakeholders, including cultural and historical resources agencies, and community members. Based on the preliminary survey data, a list of individuals who shared their mana' o and 'ike about the project area and Kailua Ahupua'a was compiled.

The consultation process included meetings with representatives from the Hawaii State Historic Preservation Division (SHPD), the National Park Service, and other local and state agencies. The findings of the consultation process were shared with the project team and the public.

Results of Community Consultation

1. Jan Becket, author, photographer, and retired teacher from Jan Becket, author, photograph...
introduced plant species for landscaping); and that preserve, enhance, and perpetuate the cultural resources of Kailua. Findings from this report reaffirm the importance of maintaining the consultation process with stakeholders, including Kailua lineal and cultural descendants.

7. The community articulated concerns regarding the protection and conservation of water resources, and the restoration of archaeological and agricultural sites. Members of the community recommended the mat currently covering the marsh be managed, and invasive species such as papyrus and bull rush be removed. In addition to the removal of invasive species, the community recommended the replanting of native plants (including food plants) and the reestablishment of lo‘i kalo in the vicinity of Kawainui Marsh. The community additionally recommended that water, currently diverted to Waimānalo through the Mauanwili Ditch, be redirected back into Kawainui Marsh.

8. The community expressed their support for the preservation and restoration of the Kawainui and Hāmākua marshes. The community shared their visions for the area, and recommended the marshes remain as resources for educators as well as Hawaiian cultural practitioners.

9. Upon consultation with stakeholders, it was suggested that additional scientific studies be conducted on Kawainui-Hāmākua Marsh; a suggestion was made that a mitigation plan be drafted to address potential issues that may arise as a result of increased site use.

Table of Contents

Management Summary .................................................................................................................. vii

Section 1 Introduction ................................................................................................................ 1
  1.1 Project Background .......................................................................................................... 1
  1.2 Document Purpose ........................................................................................................... 1
  1.3 Scope of Work .................................................................................................................... 1
  1.4 Environmental Setting ..................................................................................................... 8
  1.4.1 Natural Environment .................................................................................................... 8
  1.4.2 Winds, Rain, and Seas of Ka‘uha‘a .............................................................................. 11
  1.4.3 Built Environment ........................................................................................................ 16

Section 2 Methods .................................................................................................................. 17
  2.1 Archival Research ........................................................................................................... 17
  2.2 Community Consultation ............................................................................................... 17
  2.2.1 Scoping for Participants ............................................................................................. 17
  2.2.2 “Talk Story” Sessions ................................................................................................. 17
  2.2.3 Interview Completion ................................................................................................. 18

Section 3 Ka‘au and Mo‘olelo ............................................................................................ 19
  3.1 Ka‘au and Mo‘olelo of Ka‘uha‘a Ahupua‘a ................................................................ 19
  3.1.1 Ka‘u Mo‘olelo no Ka‘uha‘a ..................................................................................... 19
  3.1.2 Okomana ................................................................................................................... 21
  3.1.3 Story of Pupūhulanu ................................................................................................. 21
  3.1.4 Ku‘ilo-loa and Ka‘ulu ............................................................................................... 23
  3.1.5 Mākālehi Tree .......................................................................................................... 23
  3.2 Wahih Pane of Ka‘uha‘a Ahupua‘a ............................................................................. 25
  3.2.1 Coastal Ka‘uha‘a ....................................................................................................... 26
  3.2.2 Inland Ka‘uha‘a ......................................................................................................... 32
  3.2.3 Nai Aka Hele (Trails) ............................................................................................... 39
  3.3 ‘Olelo Nō’ea (Proverbs) ................................................................................................ 40
  3.3.1 ‘Olelo Nō’ea #903 ................................................................................................... 41
  3.3.2 ‘Olelo Nō’ea #791 ................................................................................................... 41
  3.3.3 ‘Olelo Nō’ea #866 ................................................................................................... 41
  3.3.4 ‘Olelo Nō’ea #1801 ................................................................................................ 41
  3.3.5 ‘Olelo Nō’ea #2092 ................................................................................................ 42
  3.3.6 ‘Olelo Nō’ea #2848 ................................................................................................. 42
  3.4 Oli (Chants) .................................................................................................................... 42
  3.4.1 Hauwahine ............................................................................................................... 43
  3.4.2 Oli Komo no Kawainui ............................................................................................ 43
  3.4.3 Mo‘olelo (Song) ...................................................................................................... 44
  3.5 Mele (Song) .................................................................................................................... 44
  3.5.1 Āpuahea .................................................................................................................... 45
  3.5.2 Hamanohamo Wailea ............................................................................................. 45
  3.5.3 ‘Auehea Wale ‘O e Kahalakea ................................................................................ 46

Section 4 Traditional and Historical Background ................................................................. 50
  4.1 Early Historic Period ....................................................................................................... 51
  4.1.1 Fresh Water Resources............................................................................................. 52
List of Figures

Table showing figures and their corresponding pages:

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1998 Mokapu Point USGS topographic quadrangle with project areas depicted in red</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2013 Google Earth aerial imagery with project areas outlined in red</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>TMK: [1] 4-2-003 with portion of Kawainui Marsh project area and entire Hānāʻulu Marsh project area highlighted in red (Hawaiʻi TMK Service 2014)</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>TMK: [1] 4-2-014 with portion of Kawainui Marsh project area highlighted in red (Hawaiʻi TMK Service 2014)</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>TMK: [1] 4-2-016 with upper portion of the Kawainui Marsh project area</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>TMK: [1] 4-2-016-013 with portion of Kawainui Marsh project area</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>1998 Mokapu Point USGS topographic quadrangle depicting soil survey data and project area</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Photo of the second and third peaks, Pākū and Ahīkī, respectively, looking toward Waimānalo (CSH 2010)</td>
<td>22</td>
</tr>
<tr>
<td>9</td>
<td>Photo of Kalapawai Market, n.d. (courtesy of Erling Hedemann, Jr.)</td>
<td>29</td>
</tr>
<tr>
<td>10</td>
<td>Photo of Kaʻōhao (Lanikai) from Alāʻa Point, ca. 1920-1930s (Hawaiʻi State Archives)</td>
<td>29</td>
</tr>
<tr>
<td>11</td>
<td>Photo of Kaʻelepulu Fishpond, commonly known as Enchanted Lake, with Kaʻūlua and the Mokolu Islands in the background (CSH 2010)</td>
<td>33</td>
</tr>
<tr>
<td>12</td>
<td>Photo of Kaʻelepulu Pond (also known as Enchanted Lake) with surrounding residential neighborhood; note the field in the back of the pond and over the hill, which is Kawainui, n.d. (Hawaiʻi State Archives)</td>
<td>38</td>
</tr>
<tr>
<td>13</td>
<td>2013 Google Earth Aerial Imagery with project areas outlined in red and LCA overlay</td>
<td>57</td>
</tr>
<tr>
<td>14</td>
<td>1899 Wall map of Kaʻula showing the locations of ʻili within and in the vicinity of the project area</td>
<td>60</td>
</tr>
<tr>
<td>15</td>
<td>Stream and loʻi kalo system mauka of Kawainui, 1885 (Hawaiian Historical Society)</td>
<td>62</td>
</tr>
<tr>
<td>16</td>
<td>1906 Hawaiian Government Survey map by Donn shows all of Kaʻula, extending into Kāneʻohe, as grazing lands (yellow highlighted boundary) with the southeasternmost portion of Kawainui Marsh as rice and taro lands (blue striped area)</td>
<td>64</td>
</tr>
<tr>
<td>17</td>
<td>Kaʻula Fruit Stand in Kōkānōca ca. 1930s (Edna Nishikawa Kimura and Some Nishikawa) (Wu 2013)</td>
<td>65</td>
</tr>
<tr>
<td>18</td>
<td>Nishikawa family with their truck farming equipment in Kōkānō (Wu 2013)</td>
<td>66</td>
</tr>
<tr>
<td>19</td>
<td>Matsuda family store and residence ca. 1930s (Hawaiʻi State Archives)</td>
<td>66</td>
</tr>
<tr>
<td>20</td>
<td>Portion of 1919 U.S. Army War Department fire control map, Waimanalo Quadrangle with project area depicted in red; note a series of roads can be found on the perimeter of the project area and to the south is a rice mill</td>
<td>68</td>
</tr>
</tbody>
</table>

CIA for the Kawainui–Hilākina Master Plan, Kailua, Koʻolau, Oʻahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

CIA for the Kawainui–Hilākina Master Plan, Kailua, Koʻolau, Oʻahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

CIA for the Kawainui–Hilākina Master Plan, Kailua, Koʻolau, Oʻahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
Figure 71. Possible complex of pre-historic and/or historic-era features within the southeastern to eastern portion of the project area, view to northwest (photograph provided by Mr. Jan Becket)

Figure 72. Panoramic view of Kawainui Marsh with the peaks of Olomana, Paku'i, and Ahiki visible in the far right middle ground, view to south

Figure 73. The head of the mo'o Ha'awihine, as identified by Mr. Jan Becket for CSH

Figure 74. Possible representation of a kohe; Mr. Becket noted this may be associated with the mo'o Ha'awihine Ha'awihine, known to be the kia'i of Kawainui Marsh

Figure 75. Portion of northeast corner of Ulupō Heiau with khulula tree in foreground, view to southeast (photograph provided by Mr. Jan Becket)

Figure 76. General overview of Ulupō Heiau, view to southeast

Figure 77. General overview of loi'ili located immediately northwest of Ulupō Heiau, view to northwest

Figure 78. One of two pools utilized for the washing of pigs prior to placement in the "temple oven"; recent ho'okupu visible within the far right foreground, view to southeast

Figure 79. Remnants of Kukapoki Heiau (photograph provided by Mr. Jan Becket)

Figure 80. Portions of Kukapoki Heiau still visible within a thicket of hau (photograph provided by Mr. Jan Becket)

Figure 81. General overview of wall remnants within lower Manawāli Valley; the walls are associated with historic taro and coffee cultivation

Figure 82. Letter from Representative Cynthia Thielen regarding the proposed Kawainui-Hāmākua Master Plan project

Figure 83. Overview of the Aloha 'Aina Units (worksheet provided by Mr. Herb Lee; Pacific American Foundation 2014)

Figure 84. The culture-based education model utilized for the Aloha 'Aina Units (worksheet provided by Mr. Herb Lee; Pacific American Foundation 2014)

Figure 85. Letter and comments regarding the proposed Kawainui-Hāmākua Master Plan project from Hawaii's Thousand Friends

Figure 86. Letter and comments regarding the proposed Kawainui-Hāmākua Master Plan project from Hawaii's Thousand Friends (page 2)

Figure 87. Letter and comments regarding the proposed Kawainui-Hāmākua Master Plan project from Hawaii's Thousand Friends (page 3)

List of Tables

Table 1. LCA parcels within and in the vicinity of the project area

Table 2. Previous archaeological studies in the vicinity of the project area (SiHP # 50-80-11 prefixed unless otherwise noted)

Table 3. Kawainui and Hāmākua Marsh archaeological sites—correlation of site numbers and descriptions

Table 4. Brief summary of nine sites reported by Ewart and Tuggle (1977:18–25)

Table 5. Brief summary of sites reported by Cordy (1977a:34–42)

Table 6. Results of community consultation
Section 1  Introduction

1.1 Project Background

At the request of Helber Hastert & Fee (HHF) Planners, Cultural Surveys Hawai‘i Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Kawainui-Hāmākua Master Plan project, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, Tax Map Keys (TMK): \[1\] 4-2-003:017 and 030; 4-2-013:005, 010, 022, and 038; 4-2-016:002 and 015; 4-2-017:020; 4-2-013:018 and 35; 4-4-034:025. The project area consists of 988 acres including the Hāmākua Marsh and the adjacent Pu‘u‘oehu Ridge hillside. The project area is depicted on a U.S. Geological Survey (USGS) quadrangle (Figure 1), aerial photograph (Figure 2), and tax map plats (Figure 3 through Figure 6) depict the project area.

In 1994, a master plan was created for Kawainui’s wetland and surrounding upland areas referred to as Kawainui Marsh (Kawainui). The State of Hawai‘i, Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) in partnership with the Division of State Parks (DSP) will be updating the previous master plan. The updated master plan is intended to implement future improvements to Kawainui-Hāmākua to support DOFAW and DSP plans to help sustain, enhance, and educate the public about the natural and cultural resources associated with the complex. The proposed plans include wetland restoration and habitat expansion; upland reforestation; a perimeter pedestrian path with some boardwalks crossing wetlands; DOFAW Management and Research Station improvements; program staging areas; educational pavilions; interpretive signage for resources and archaeological sites; an Education Center for visitors; continued restoration at Ulupō Heiau; three areas identified for establishing cultural centers to support Hawaiian cultural practices, education, and stewardship partnerships; parking lots in designated areas; and a park site that also accommodates canoe storage and launch into Kawainui Canal. Additional information on the Kawainui-Hāmākua Master Plan project is available online from the Environmental Impact Statement Preparation Notice at the following address:


1.2 Document Purpose

This CIA was prepared to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts to cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control’s Guidelines for Assessing Cultural Impacts) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance Criterion c, pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still
Introduction

CIA for the Kawainui Marsh, Kailua, Ko‘olau Peninsula, O‘ahu

Figure 2. 2013 Google Earth aerial imagery with project areas outlined in red
(Hawai‘i TMK Service 2014)

Table 1. Project Areas and TMKs

<table>
<thead>
<tr>
<th>TMK</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-2-003</td>
<td>Kawainui Marsh</td>
</tr>
<tr>
<td>4-2-013</td>
<td>Kawainui Marsh</td>
</tr>
<tr>
<td>4-2-016</td>
<td>Kawainui Marsh</td>
</tr>
<tr>
<td>4-2-017</td>
<td>Kawainui Marsh</td>
</tr>
<tr>
<td>4-2-103</td>
<td>Kawainui Marsh</td>
</tr>
<tr>
<td>4-4-034</td>
<td>Kawainui Marsh</td>
</tr>
</tbody>
</table>

Figure 3. TMK: [1] 4-2-003 with portion of Kawainui Marsh project area and entire Hānākua Marsh project area highlighted in red
(Hawai‘i TMK Service 2014)
Figure 4. TMK: [1] 4-2-016 with upper portion of the Kawainui Marsh project area (Hawai‘i TMK Service 2014)

Figure 5. TMK: [1] 4-2-013 with portion of Kawainui Marsh project area highlighted in red (Hawai‘i TMK Service 2014)
Cultural Surveys Hawai'i Job Code: KAILUA 48

Introduction

The scope of work for this CIA includes the following:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.

2. Review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities and to the identification and description of cultural resources, practices, and beliefs associated with the parcel, and/or other practices, uses, or traditions associated with the parcel and its environs.

3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and its environs.

4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

1.3 Scope of Work

1.4 Environmental Setting

1.4.1 Natural Environment

Kai'upu is the largest valley on the windward side of O'ahu, and the largest ahupua'a (land division extending from the uplands to the sea) of the Ko'olaupoko District (approximately 15 km by 11 km). Flanked by the ahupua'a of Kailua to the northeast, the ahupua'a of Waimanalo to the southeast, the ae'ohule (Banyan) Ridge to the northwest, and Manoa Ridge to the southwest, the natural boundaries for the sides of the rectangle. The fourth side of the rectangle is the reef line of Kailua Bay.

The current project area encompasses the entire Kawainui Marsh Complex, which comprises approximately 11,885 acres of land according to the Boundary Commission Review of the mid-nineteenth century, but in fact extends approximately a mile out to sea, to the reef edge. The current project area encompasses the entire Kawainui and Hanahara Marsh Complex, which comprises approximately 11,885 acres of land according to the Boundary Commission Review of the mid-nineteenth century, but in fact extends approximately a mile out to sea, to the reef edge.

Figure 6. TMK: [1] 4-2-103 with portion of Kawainui Marsh project area depicted in red (Hawai'i TMK Service 2014)
Hawaiian Islands, measuring 414 hectare (ha). This former traditional Hawaiian fishpond is approximately 1.5 m above sea level. Hāmākua Marsh is just downstream of Kawainui Marsh (Ramsar Convention on Wetlands 2013).

Kawainui Marsh is situated within a Ko'olau volcano caldera. Kahanakiki Stream, the western of the two major streams feeding Kawainui Marsh, and Maunawili Stream, which runs roughly parallel just 250 m to the east, intersect in the southwest portion of the project area. The present effects of siltation and eutrophication obscure the extent to which these two streams actually channel water flow. Kapā Stream, an intermittently flowing stream, enters the marsh from the northwest, near the quarry. Oneawa Canal, also called Kawainui Canal extends makai (toward the ocean) from the marsh’s northeast corner.

Information developed by the State of Hawai‘i Department of Land and Natural Resources for the Ramsar nomination (Ramsar Convention Bureau 2005) describes Hāmākua Marsh as “a remnant floodplain that once connected Kawainui Marsh to Ka‘elepulu Pond (also referred to as Enchanted Lake).” Water that flowed from Kawainui Marsh to Hāmākua Marsh has been diverted since the 1960s construction of a flood-control levee adjacent to Kawaiui. Due to the 1966 flood control project, thousands of gallons of water that flowed into the pond from Kawainui Marsh were diverted. Factors such as environmental pollution from construction and storm drains combine to negatively impact the lake that continues to host tilapia, barracuda, mullet, and milkfish in its brackish waters.

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area includes the following soil types (Figure 7): Marsh (MZ), Pearl Harbor clay (Ph), Hanalei silty clay (HnA), Papaa clay (PYF), Papaa clay, (PYE), Stony steep land (tSY), Lolekaha silty clay (LoC), Alaeula silty clay (AeE), and Kawailapai stony clay loam (KlaB).

Marsh (MZ) consists of wet, periodically flooded areas covered dominantly with grasses and bulrushes or other herbaceous plants. It occurs as small, low-lying areas along the coastal plains. Water stands on the surface, but marsh vegetation thrives. The water is fresh or brackish, depending on proximity to the ocean. [Foote et al. 1972:95]

Pearl Harbor clay (Ph). This series consists of very poorly drained soils on nearly level coastal plains on the island of Oahu. These soils developed in alluvium overlying organic material . . . Permeability is very slow. Runoff is very slow to ponded, and the erosion hazard is no more than slight . . . Workability is very difficult. [Foote et al. 1972:112]

Hanalei silty clay, 0 to 2 percent slopes (HnA). This soil is on stream bottoms and flood plains . . . Permeability is moderate. Runoff is very slow, and the erosion hazard is no more than slight . . . Roots penetrate to the water table. Flooding is a hazard. [Foote et al. 1972:38]

Papaa clay, 35 to 70 percent slopes (PYF). This soil has convex, very steep slopes . . . [It] formed in colluvium and residuum derived from basalt . . . Permeability is slow. Runoff is rapid, and the erosion hazard is severe. This soil is used for pasture. [Foote et al. 1972:110]
There were we, with the Malanai breeze. There were we, with the Malanai.
1.4.2.2 Rains

Each small geographic area on O'ahu had a Hawaiian name for its own rain, wind, and seas. Kailua was no exception to this naming practice. According to Akana and Gonzalez (2015), rainfall was a precious legacy from our kūpuna, the Hawaiian name for our own rain, wind, and seas (see Section 3.4). Rain names are a precious legacy from our kūpuna, who were keen observers of the forces of nature. They knew that one place could have several types of rain, each distinct from the other. They knew that when a particular rain would fall, its color, its duration, its intensity, its path, its sound, its scent, and its effect on the land and their lives. Rain names are a treasure of cultural, historical, and environmental information. [Akana and Gonzalez 2015:146–147, 2015:151–152]

The built environment within the project area is comprised of a series of bays, a large body of water, and a series of roads. The project area is located on the southeastern coast of O‘ahu, in the town of Kailua, and includes the waters of Kawainui Marsh, the western portion of Kawainui Marsh, and several unimproved roadways along the coastal area. The built environment includes one- and two-lane roads, as well as high- and low-traffic roadways including Kalama Beach Road, Pu‘unene Road, and Headington Drive.

Traditionally, the seashore and ocean areas were vital to resource extraction in the coastal community. The ocean was divided into smaller divisions, stretching from the farthest reaches of the sea to the nearest point of departure. These areas were used for resource extraction, ceremonial activities, and as points of departure for canoes. The ocean was also used for healing purposes, and the healing properties of some of the older Hawaiians were attributed to the ocean.

The built environment includes the levee constructed along the northeastern (mauina) of Kawainui Marsh, the model airplane park near the “outer edge of the ‘A‘alapapa reef,” and the area known as Kalae‘ohua, which means “the point of the mouth.” The area is located, supported varied fauna (Edmondson 1946:5). The ample supply of marine fauna, in turn, allowed humans to successfully carry on their honored professions. The ocean and seashore areas were also noted for their spiritual significance. This significance is ascribed to the ocean’s literal connection to an “elder geography” (Andrade 2014:4), and the ocean functions as a reminder of the ocean’s varied fauna (Clark 1977:171). This place name was a direct reference to the “varied fauna” of the area, including the young forms of reef fish such as ‘ohua (purple jacks), pua‘alii, kapa‘ai (surgeonfish), he‘e (octopus), and ‘uhu (pelagic surgeonfish; Teuthidae). Additionally, this area was known for its kala‘awā (seaweed gathering) and the white sand and water of our reef-protected strand and moana (strip of the beach over which waves ran after they had broken). This area was also known for its kalama (redfish; Acanthurus xanthopterus), and kula‘ai (giant conch; Strombus gigas). The area was also known for its ‘ōhe‘ai kila‘aua (convict tang), which was also the name of a nearby pond; waters from the pond were utilized in salt-making (Clark, J. 1977:171). This place name was a direct reference to the “varied fauna” of the area, including the young forms of reef fish such as ‘ohua (purple jacks), pua‘alii, kapa‘ai (surgeonfish), he‘e (octopus), and ‘uhu (pelagic surgeonfish; Teuthidae). Additionally, this area was known for its kala‘awā (seaweed gathering) and the white sand and water of our reef-protected strand and moana (strip of the beach over which waves ran after they had broken). This area was also known for its kalama (redfish; Acanthurus xanthopterus), and kula‘ai (giant conch; Strombus gigas). The area was also known for its ‘ōhe‘ai kila‘aua (convict tang), which was also the name of a nearby pond; waters from the pond were utilized in salt-making (Clark, J. 1977:171). This place name was a direct reference to the “varied fauna” of the area, including the young forms of reef fish such as ‘ohua (purple jacks), pua‘alii, kapa‘ai (surgeonfish), he‘e (octopus), and ‘uhu (pelagic surgeonfish; Teuthidae). Additionally, this area was known for its kala‘awā (seaweed gathering) and the white sand and water of our reef-protected strand and moana (strip of the beach over which waves ran after they had broken). This area was also known for its kalama (redfish; Acanthurus xanthopterus), and kula‘ai (giant conch; Strombus gigas).
Section 2   Methods

2.1 Archival Research

Research centers on Hawaiian activities including *ka'ao* (legends), *wahi pana* (storied places), *ʻōlelo no'eau* (proverbs), *oli* (chants), *mele* (songs), traditional *moʻolelo* (stories), traditional subsistence and gathering methods, ritual and ceremonial practices, and more. Background research focuses on land transformation, development, and population changes beginning with the early post-Contact era to the present day.

Cultural documents, primary and secondary cultural and historical sources, historic maps, and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH library. Other archives and libraries including the Hawai'i State Archives, the Bishop Museum Archives, the University of Hawai'i at Mānoa's Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau.org 2014), the State Historic Preservation Division (SHPD) Library, the State of Hawai'i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives are also repositories where CSH cultural researchers gather information. Information on Land Commission Awards (LCAs) were accessed via Waibona 'Aina Corporation's Māhele database (Waibona 'Aina 2000), the Office of Hawaii Affairs (OHA) Papakilo Database (Office of Hawaii Affairs 2015), and the Ava Konohiki Ancestral Visions of 'Aina website (Ava Konohiki 2015).

2.2 Community Consultation

2.2.1 Scoping for Participants

The cultural department commences our consultation efforts by utilizing our previous community contact list to facilitate the interview process. We then review an in-house database of *kiʻi pono* (elders), *kamaʻāna* (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs; includes Hawaiian Civic Clubs and those listed on the Department of Interior’s NHO list), and community groups. CSH also contacts agencies such as SHPD, OHA, and the appropriate Island Burial Council where the proposed project is located for their response to the project and to identify lineal and cultural descendants, individuals and/or NHO with cultural expertise and/or knowledge of the study area. CSH is also open to referrals and new contacts.

2.2.2 “Talk Story” Sessions

Prior to the interview, CSH cultural researchers explain the role of a CIA, how the consent process works, the purpose project, the intent of the study, and how their *ʻike* (knowledge) and *manaʻo* (thought, opinion) will be used in the report. The interviewee is given an Authorization and Release Form to read and sign.

“Talk Story” sessions range from the formal (e.g., sit down and kāʻa [consultation, discussion] in the participant’s place of choice over set interview questions) to the informal (e.g., hiking to cultural sites near the study area and asking questions based on findings during the field outing). In some cases, interviews are recorded and transcribed later.

CSH also conducts group interviews, which range in size. Group interviews usually begin with set, formal questions. As the group interview progresses, questions are based on interviewees’ answers. Group interviews are always transcribed and notes are taken. Recorded interviews assist the cultural researcher in 1) conveying accurate information for interview summaries, 2) reducing misinterpretation, and 3) adding missing details to *moʻolelo*.

CSH seeks *kōkua* (assistance) and guidance in identifying past and current traditional cultural practices of the study area. These aspects include general history of the *ahuwā'a* (traditional land division extending from the mountain to the sea); past and present land use of the study area; knowledge of cultural sites (for example, *wahi pana*, archaeological sites, and burials); knowledge of traditional gathering practices (past and present) within the study area; cultural associations (*ka'ao* and *moʻolelo*); referrals; and any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the study area.

2.2.3 Interview Completion

After an interview, CSH cultural researchers transcribe and create an interview summary based on information provided by the interviewee. Cultural researchers give a copy of the transcription and interview summary to the interviewee for review and ask that they make any necessary edits. Once the interviewee has made those edits, CSH incorporates their *ʻike* and *manaʻo* into the report. When the draft report is submitted to the client, cultural researchers then prepare a finalized packet of the participant’s transcription, interview summary, and any photos taken during the interview. We also include a thank you card and honoraria.

It is important that CSH cultural researchers cultivate and maintain community relationships. The CIA report may be completed, but CSH researchers continuously keep in touch with the community and interviewees throughout the year—such as checking in to say hello via email or by phone, volunteering with past interviewees on community service projects, and sending holiday cards to them and their *ʻohana* (family). CSH researchers feel this is an important component to building relationships and being part of an *ʻohana* and community.

"I ala no ka la'i i ke kumu—the branches grow because of the trunk," is an *ʻōlelo no'eau* (#1261) shared by Mary Kawena Pukui with the simple explanation; “Without our ancestors we would not be here” (Pukui 1983:137). As cultural researchers, we often lose our *kiʻi pono* but we do not lose their wisdom and words. We routinely check obituaries and gather information from other community contacts if we have lost our *kiʻi pono*. CSH makes it a point to reach out to the *ʻohana* of our *kiʻi pono* who have passed on and pay our respects including sending all past *kiʻi pono* to read and sign.
Section 3. Ka'ao and Mo'olelo

Hawaiian storytellers of old were greatly honored; they were a major source of entertainment and their stories contained teachings, while intertwining elements of Hawaiian lifestyle, genealogy, history, relationships, arts, and the natural environment. (Pukui and Green 1995:IX).

According to Pukui and Green (1950), storytelling is not merely a matter of telling a tale but also of passing along a culture. Stories are often full of knowledge and double meanings. (1986:18) Ka'ao may be thought of as oral literature or legends, often fictional or mythic in origin, and have been "consciously composed to tickle the fancy rather than to inform the mind." They are not "narratives to "teach" something," but rather, "narratives of wonder." A key distinction is made between oral stories that may be described as "oral" and those that are "written" in the sense of being recorded in a written form. Written texts may be oral stories that have been recorded in another medium, or they may be entirely new works that are not based on oral traditions.

In differentiating ka'ao and mo'olelo, it may be useful to think of ka'ao as expressing devolving into the mossy (realms of the gods), discussing the exploits of gods; mo'olelo a primordial, more, and down on the other hand, the realm of human, as a primal, romantic, and down in reality, the distinction between ka'ao and mo'olelo may not be so clear. Ka'ao, in other words, is a "legend, tale [...], romance, [and/or], fiction" (Pukui and Elbert 1986:108). Mo'olelo are often intimately connected to a tangible place or space (wahi pana).

Both ka'ao and mo'olelo provide important insight into the development of the mainland area. "Oral" traditions, as expressed in oral mo'olelo, are often thought to have originated in the mainland area and have been "consciously composed to tickle the fancy rather than to inform the mind." According to the organization, the Thousand Friends of Hawaii, the mo'o is "a bird is Hauwahine, the leaves of the ahulani are green." According to the organization, the Thousand Friends of Hawaii, the mo'o is "a bird is Hauwahine, the leaves of the ahulani are green." When the mele was completed by her, all the birds disappeared and it became dark again. [Hawaii's Thousand Friends 2017; see Section 6.4.8]

The Malanai wind is found in Kailua and when she saw us, she splashed water, the birds gathered in flight, the sun bright again. [Hawaii's Thousand Friends 2017; see Section 6.4.8]
Olomana translates to "forked hill" (Pukui et al. 1974:170). Olomana rises 1,643 ft from the valley floor. The extinct volcano of Olomana has two neighboring peaks, Pali'a and Ahiki. Pali'a, the great warrior of Kana'i and son of Ka-lua-o-Palena ("the pit of Palena," chief of half of Kaua'i) and Mahinui ("great champion," daughter of Hina) had two natures: one of a man and the other of spirit (Beckwith 1970:414). In search of an adventure, Pali'a stood at a lookout near the village of Kaa-i-kemel and threw his club while clinging on to one end. Pali'a arrived at Nualolo at Ka-maile then flew on to Ka'ena Point on O'ahu and onto Wai-kele where he met Ahu-a-Pau, chief of O'ahu who was presiding over games. Kamai-kaahui, the shark-man, was terrorizing the country. If Pali'a slayed Kamai-kaahui he would win the Ahu-a-Pau's daughters, Ke-alamikioi and Ka-lehua-wai.

Ahu-a-Pau sent Pali'a on a circuit without forewarning him of beings he would encounter. Pali'a set out on his journey and met Olomana, the 36-ft warrior who oversaw the lands spanning from Makapu'u Poi to Wai-kele. Olomana, casting down pieces of his body. One portion of the giant's body hurled toward the sea was called Mahi-nui; the large peak that remained was named Olomana (Beckwith 1970:415).

Another legend describes the giant Olomana jumping from Kaua'i to the O'ahu peak that bears his name. Traditions related to early creation stories also mention Olomana (Creed and Chiogioji 1991:33). One of these is the Story of Pupuhuluana, which credits Olomana with helping to bring food back to the islands after it was sequestered by the angered goddess Haumea (see Section 3.1.3).
In other variations, Kaulanaikapokii, daughter of Hina and 'Olopana, is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

In other variations of the legend, it is Kana, a ward of Hina, and Makalei who were affected by a terrible drought that could summon fish from Kawainui. Reported located near the present-day Hānalei Bridge (Hānalei Bridge) in the Hanalei Valley. It was described as a never-failing strong reminder of the chiefs' responsibility of stewardship to the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

In other variations, O'ahu, Kaua'i, Maui, and Hawai'i were affected by a terrible drought that could summon fish from Kawainui. Reported located near the present-day Hānalei Bridge (Hānalei Bridge) in the Hanalei Valley. It was described as a never-failing strong reminder of the chiefs' responsibility of stewardship to the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

The islands of O'ahu, Kaua'i, and Hawai'i were affected by a terrible drought that could summon fish from Kawainui. Reported located near the present-day Hānalei Bridge (Hānalei Bridge) in the Hanalei Valley. It was described as a never-failing strong reminder of the chiefs' responsibility of stewardship to the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

In other variations of the legend, it is Kana, a ward of Hina, and Makalei who were affected by a terrible drought that could summon fish from Kawainui. Reported located near the present-day Hānalei Bridge (Hānalei Bridge) in the Hanalei Valley. It was described as a never-failing strong reminder of the chiefs' responsibility of stewardship to the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

In other variations, Kaulanaikapokii, daughter of Hina and 'Olopana, is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

In other variations, O'ahu, Kaua'i, Maui, and Hawai'i were affected by a terrible drought that could summon fish from Kawainui. Reported located near the present-day Hānalei Bridge (Hānalei Bridge) in the Hanalei Valley. It was described as a never-failing strong reminder of the chiefs' responsibility of stewardship to the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

In other variations, Kaulanaikapokii, daughter of Hina and 'Olopana, is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."

Kaulanaikapokii is called upon by Keaomelemele to guard the land and the sea. Another battle was fought in which Kuililoloa was torn to pieces, therefore dogs are small to this day. 'After this he continued on his way until he met Kuililoloa [Beckwith 1970:432]."
Kailua literally means “two seas,” most likely describing the currents (Puki et al. 1974:69).

As McGregor makes clear, the saying became known that those of Kailua “fish on the sand,” meaning “to seek one’s livelihood while standing in the shallows.” This tradition implies a bountiful Kailua where even the mud was regarded as edible.

The natural environment includes a sand bar upon which Kailua Town stands, the mountains which surrounded the area, and the man-made structures associated with Keaomelemele and all the others. When she arrived there, she told Ku, Hina, Olopana, Paliuli, their friends and the others not to exclaim if they should see a big tree rising from the sea directly below Kailua. They agreed and did as they were told.

As soon as she had ceased speaking, the tree was rising up out of the sea and still in the Kailua area, at the place called Waolani, which was available from Kawainui (see Section 3.1.5). Reportedly located near the present day town of Kailua, Kona, the ‘menehune’ (legendary race of small people who worked at night, building fishponds, quarries, petroglyphs, gaming sites, and canoe landings) were present. It was a time where the winds had a bountiful Kailua where even the mud was regarded as edible. The reason for their shouting was that when it reached the fresh water pond of Kawainui, all the Menehune on Waolani pond and lay still. If anyone who reads this tale is a stranger who may visit Kailua, they can refer to natural geographic locations such as natural and human-made structures that may constitute wahi pana (legendary or storied places of an area). These legendary or storied places may include a variety of naturally occurring places, as well as places that may not have a connection to any particular story. Ka’ao and Mo’olelo poetically describes an area while revealing its historical or legendary significance (Landgraf 1994:v).

As noted in the Section 1.4.2, the goddess Hi‘iaka became enamored with “the handsome Ka’ao and Mo’olelo, nascent imagery that express a commonplace fact of the Hawaiian religion and family religious practices are also sacred. These types of natural and human-made structures that may constitute wahi pana are legendary or storied places of an area. These legendary or storied places may include a variety of naturally occurring places, as well as places that may not have a connection to any particular story. These legendary or storied places may include a variety of naturally occurring places, as well as places that may not have a connection to any particular story.
Kailua Beach Park is a 30-acre public park located at the eastern portion of Kailua Bay. Its name comes from the Ka'elepulu Canal, which drains into the bay here and is sometimes dammed by a sand bar. Children located in the middle of the park (Clark, J. 1977:174).

The Ka'elepulu Canal provides excellent swimming grounds (Clark, J. 1977:173–174). In the past, a stream could be found in the region of the park (Clark, J. 1977:175). The sandy beaches and sloped ocean floor make this a popular park. The name Ka'elepulu means "skyfruit" (Makali'i 76:30). The area from Ka'iwa (reef) was known for its seaweed and was called 'A'alapapa or "the fragrant shelf" (Clark, J. 1977:175).

Kainalu is an improper Hawaiian word but was devised by the developers to appeal to potential buyers (Clark, J. 1977:175). The name was intended to translate to "royal sea" or "heavenly sea," which in proper Hawaiian terms would have been Kailani. The name is in honor of the wife of King Kamehameha III (Kauikeaouli). When he had spoken to her, so in like manner he spoke to the second woman. He then left the women and proceeded to meet Lonoikamakahiki of Hawai'i Island, after the women were beaten at a game of Kamehameha's favorite pastime (Clark, J. 1977:174).

The northern portion of Kailua Beach is located in the middle of the park (Clark, J. 1977:174). The original name for the point was known as Popo'oka'ala or Popo'o. (personal communication). The area of Mokulua called Wailea ("pleasing water") was known for its papa (reef) covered in seaweed and was called 'A'alapapa or "the fragrant shelf" (Clark, J. 1977:175). The offshore island of Flat Island, the islet is a State Bird Refuge. Although people are permitted to land on the island, seabirds who call Popoi'a home are protected by law and cannot be disturbed.

The name of the place Ka'ao (a.k.a. "Kaloa") comes from the tale about the "tying" of the two islands, which are the "year" or game resembling a rope (Clark, J. 1977:175). This story is a literary expression of the two islands, which are the "tied" women and the reef, as seen from above. In the past, people made offerings at the ko'a (fishing shrine) that was once located in the middle of the land in an area known as Kalapawai (personal communication). Kailua Beach Park was an area of coconut grove. A portion of the land was leased to a storekeeper (corner of Kalaheo Avenue and Kailua Road), the man adopted the name Kalapawai for his storefront (Figure 9). Kalapawai Market still remains at the corner of Kalaheo Avenue and Kailua Road. The area of Kalapawai was said to have been an excellent surfing area frequented by the gods such as Lono. In the early 1900s, a parcel of land was sold to Solomon Makalawana, who built a coconut grove. In 1908, the Hawaiian Copra Company wanted to invest into another business venture on the windward side of Kailua and started planting coconut. It was located on a 200-acre tract known as Mon一口a (bonefish; also known as Castle Point (also known as Castle Point). In the early 1900s, a parcel of land was sold to Solomon Makalawana, who built a coconut grove. In 1908, the Hawaiian Copra Company wanted to invest into another business venture on the windward side of Kailua and started planting coconut. It was located on a 200-acre tract known as Mon一口a.
3.2.1.5 Cave at Alāla Point

This cave is described by Sterling and Summers (1978):

Charles Kamanu, Sr., Solomon Mahoe, Jr., and Nawelu have each mentioned the cave at Alāla Point, running through to Mid-Pacific Country Club grounds. Both entrances are blocked up. Solo Maho, Jr., said his grandmother told him that this was used as a refuge cave in times of trouble. [Sterling and Summers 1978:238]

See also Guardian Rocks (Section 3.2.1.6 below). Kamehameha III stayed in this cave on a fishing trip to Kailua.

3.2.1.6 Guardian Rocks (Kane-pōli)

The Guardian Rocks were basalt rocks commemorating the coming of Kane-pōli to Kamehameha III:

(Site 17) Kane-pōli (pronounced by Mahoe, Kane-pʻūlʻu) at Naweluʻs place are several large rocks. These were guards and when he came there he found them scattered about on the lot (on Kawaiula Road, opposite Kai-lani camp). He had collected a few of them and these are close together now, another about 10 feet away. They are basalt. Another, which he states is now covered by earth (next door garden) is a coral rock, with the imprint of a manʻs leg upon it.

The story connected with these rocks is of the time of Kamehameha III. The King was in Kailua on a fishing expedition, staying in the cave at the foot of Alāla Point . . . [see Section 3.2.1.5]

Kane-pōli was a man who was born, grew up, and died in one day. He belonged to Kuli-ouou. The King sent for him to come to Alāla and he came . . . “perhaps he flew, I don’t know” . . . The stones were guards set to watch for his coming. When he arrived it was getting dark, and as night fell, he slipped on the coral stone, leaving an imprint ‘of his leg’ on it, and was killed. This stone was ‘His leg’. . . ‘Where the rest of his body is, nobody knows.’ [Sterling and Summers 1978:238]

3.2.1.7 Islands and Reef off Kaʻōhao

Sterling and Summers (1978:240) cite McAllister’s notation regarding this place: “The reef with small islands off of Kaʻōhao were built by the Menehune [legendary race of small people who worked at night, building fishponds, roads, temples] in one night for the protection of the people. The menehune did not finish the work.” The Boundary Commission review for Kaʻelepulu showed the “fishing right of this land was over one mile from the shore and just outside the breakers, the tabu fish was the ‘Uhu,’ but the people went to law, and it was decided that the reef bounded the fisheries, so this was thrown open. Thus the Mokulua Islands and Pupoia Island are integral parts of the ahupuaʻa of Kailua” (Boundary Commission 1892, Oahu 2:89).

3.2.1.8 Nā Mokulua

These are the islands referenced by Clark (1977), located offshore at Mokulua. They are described as follows:
At day-break when the people of Kailua saw the strangers, they inquired where they had come. Obdurate to their queries they related the story as she had ordered.

The kama'aina notified Kalauawa, the ruling chief of Kailua who immediately prepared to see the strangers who were in his domain. On his arrival he noticed that the women were behind a screen and that the stranger who addressed him was the most beautiful one of the group. He informed her that he had come to see the women he had heard were very beautiful. She replied that she was married to a chief of Kailua and that the men were not there. She asked him to enter and then he threw back the curtain and saw that it was a beautiful woman whom he had seen in his dreams. She then gathered the others together and they talked for a while.

This behavior seemed very peculiar to Chief Kalauawa, so much so, that it was discussed between Kalauawa’s wife and the King at the yearly council of Kou. The King, soon after, asked his wife if she was in fact the high ranking chiefess. She confirmed she was his wife. The King, upon hearing this, was shocked. He then instructed the Kailua people to appease the goddess Hi'iaka and her companion Wahine-oma'o visited the area and the pond. Kawainui's fame was accompanied by several canoes of her retinue and retainers, while all Kailua slept. The chiefess immediately ordered all canoes and their belongings buried in the sand. Thus, derived the name Kahunanawaa (the buried canoes). The object of this event was to appease the gods and it ensured the peace and prosperity of the island.

Kawainui Marsh is a much celebrated, noted, and legendary pond, it is most commonly referred to as Kawainui or Kawai Nui (according to cultural historian Kuainaokalani. According to the tradition: "Ka Loko o Kawainui was known to the old kama'ainas by the name of wahi pana, "place of refuge," the place of refuge of Kamehameha I, place of refuge of the ancient people were district divisions, as Kailua and Pu'uhonua o Honaunau."

According to cultural historian Summers 1978:243). In 1975, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner.

The places of refuge of the ancient people were district divisions, as Kailua and Pu'uhonua o Honaunau. The former freshwater pond of Ka'elepulu was of much importance (Figure 11). The pond located almost in center of the island. There are no walls remaining. Much coral lying around. It was nearly obliterated by tidal wave of 1946. Small overhang under which offerings were prepared to see the strangers who were in his domain. On his arrival he noticed that the women were behind a screen and that the stranger who addressed him was the most beautiful one of the group. He informed her that he had come to see the women he had heard were very beautiful. She then gathered the others together and they talked for a while.

This behavior seemed very peculiar to Chief Kalauawa, so much so, that it was discussed between Kalauawa’s wife and the King at the yearly council of Kou. The King, soon after, asked his wife if she was in fact the high ranking chiefess. She confirmed she was his wife. The King, upon hearing this, was shocked. He then instructed the Kailua people to appease the goddess Hi'iaka and her companion Wahine-oma'o visited the area and the pond. Kawainui's fame was accompanied by several canoes of her retinue and retainers, while all Kailua slept. The chiefess immediately ordered all canoes and their belongings buried in the sand. Thus, derived the name Kahunanawaa (the buried canoes). The object of this event was to appease the gods and it ensured the peace and prosperity of the island.

Kawainui Marsh is a much celebrated, noted, and legendary pond, it is most commonly referred to as Kawainui or Kawai Nui (according to cultural historian Kuainaokalani. According to the tradition: "Ka Loko o Kawainui was known to the old kama'ainas by the name of wahi pana, "place of refuge," the place of refuge of Kamehameha I, place of refuge of the ancient people were district divisions, as Kailua and Pu'uhonua o Honaunau."

According to cultural historian Summers 1978:243). In 1975, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner, Ulanui, was able to carry the body of the celebrated foot runner.
she never left for Lā'ie and only stayed at Kawainui. Hawaini'ī’s residency at Kawainui and the distribution of Kalua shared in the pond’s wealth and would punish the owners of the pond if they chose to assist the poor (Beckwith 1970:29). According to Louis McAllister, one of the leading Kailua (family or personal) gods or auk (god) was the leader of Kawainui, not just an animal.

Both oli and mele about Kalua frequently mention the two fishponds of Kawainui and Ka'elepulu, which were famous for their 'ama'ama (mullet, Mugil cephalus) and awa (milkfish, Chanos chanos). They also praise the taro gardens of the area (Beckwith 1970; Drigot 1982). A variety of fish was found in the ponds, including 'amo, or a goby, and 'ama'ama, or mullet. The pond was a source of food and a place for religious practice. The pond was also believed to be a sacred site where Hauhahine, a woman who lived in the area, kept the pond and ensured there was an abundance of fish. She would also ward off sickness and ensure all people of the ahupua'a of Kailua shared in the pond's wealth and would punish the owners of the pond if they chose to assist the poor (Beckwith 1970:29). According to Louis McAllister, one of the leading Kailua (family or personal) gods or auk (god) was the leader of Kawainui, not just an animal.

These heiau were of various classifications. As Kamakau makes clear, heiau were not alike; they were of different kinds according to the purpose for which they were made. If it were for peace in the chieftaindom, then a house for peace, a hale o ka maluhia, was erected; if for war, then a house for the war god in the war heiau, ka heiau kaua; if for rebellion, then a house for the rebel's war god in his own heiau. If it were for blessings to all the land, the well-being of all the people, for 'food' or 'fish,' then the chiefs built heiaus all over the land. The people, maka'ainana, erected fishing shrines, ko'a ku'ula, all around the islands so that the land would be provided with fish. If there were distress because of trouble with the staple plant food, 'ai, heiaus called ipu-o-Lono were raised up all over the land to revive them. The luakini po'okanaka were large heiaus and were called 'ohi'a ko and 'haku 'ohi'a. They were built along the coast and in the interior of the land, and on the mountain sides. They were only for the paramount chief, the ali'i nui, of an island or district (moku). Other chiefs and maka'ainana could not build them; if they did, they were rebels. (Kamakau 1976:129)

Figure 11. Photo of Ka'elepulu Fishpond, commonly known as Enchanted Lake, with Kailua and the Mokulua Islands in the background (CSH 2010)
In 1916, the Kailua Hawaiian Homesteads Department and Standard Guide was filed by Dr. J. Gilbert McAllister. The site was deemed a good site for a temple or temple for water, as the land was used for agricultural purposes.

One of McAllister's informants added that a small gulch on the side of Olomana in back of the Maunawili Training School is known as Kukuipilau and the School grounds evidence of the ridge facing the school. Evidence of the ridge facing the school is also seen in the area.

In Kailua's Kaka'pio and Alele communities, the earliest documented research in Kailua Ahupua'a was completed by J. Gilbert McAllister (1933:182–183). Heiau Site 361, Kaka'pio Heiau, was located on the vicinity of Kawainui Pond. Site 363 is Pahukini Heiau; Site 369 is the approximate location of the Pana moa house. Site 360 is the approximate location of pahukini. Site 366 is Kukuihewaii, Halaualolo, Kawailoa, Kukapoki, and Pu'uwani at a site.

Site 363-A, an ahu (sacrificial) platform, is adjacent to the area of Nokaua-aahua at the Kaneho valley. Site 364 is Halaualolo. Site 365-A, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-B, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-C, an ahu (sacrificial) class platform, is adjacent to the Kailua area.

Site 365-D, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-E, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-F, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-G, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-H, an ahu (sacrificial) class platform, is adjacent to the Kailua area.

Site 365-I, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-J, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-K, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-L, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-M, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-N, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-O, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-P, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-Q, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-R, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-S, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-T, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-U, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-V, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-W, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-X, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-Y, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-Z, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AA, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AB, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AC, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AD, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AE, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AF, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AG, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-AH, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-API, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-APII, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-APIII, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-APIV, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-APV, an ahu (sacrificial) class platform, is adjacent to the Kailua area. Site 365-APVI, an ahu (sacrificial) class platform, is adjacent to the Kailua area.
Information at the time revealed the area Maunawili Training School was built on what is known as Kawailoa. McAllister was certain Kukuipilau and Heinau were the same heiau.

Site 373, Halaualolo Heiau is located on the Maunawili Dairy property owned by C.M. Cooke, Jr. (McAllister 1933:188). The two-terrace heiau is near the edge of a ridge. The upper terrace is approximately 40 ft wide by 75 ft wide. The rock paved heiau is also 3 ft higher than the lower terrace, which is 32 ft long by 66 ft wide made of stone and dirt paving. The heiau faces east. The lower terrace is 2 ft deep. The depression could possibly be an imu. On the northeast corner of the upper terrace is a depression measuring 10 ft long, 6 ft wide, and 2 ft deep.

Located on the edge of a ridge with a very steep slope on the west and a partial slope on the north is Site 374, a heiau, on the lands of Kukapoki, Maunawili (McAllister 1933:188). To the east the ground is level and within a few hundred feet were house sites. A two-terrace structure with at least two smaller adjacent terraces with a low enclosed stone wall were present during McAllister's survey. On the southern end of the site was a grave, possibly modern. A depression on the north wall resembling a canoe shape is present.

Site 375 are the house sites located to the east of Kukapoki Heiau (McAllister 1933:190). The low platforms are rectangular in size measuring 10 ft by 20 ft and are edged with stones a foot or more in size. The interior is dirt paved. The house sites cover an area of 1 acre and are on slightly rolling ground approximately 300 ft from the heiau. Graves are present at the site.

Site 376, the Pohaku Puoo, is located on the Maunawili side of the Ko'olau Range (McAllister 1933:190). A stone with a hole is said to have existed when the king (which king is unknown) was in Maunawili and wished to inform people of his presence. The king had men gather ti leaves, which were then bundled together. The hole in the stone was struck creating a loud sound that resonated to MƗQRD9DOO\\HLDX was a heiau once located at the similarly named point or promontory at it as described previously by Thomas Thrum, who noted the heiau as having the distinction of being the temple where the ceremonies attending the royal birth of about 1640, were performed, but of which no traces of any kind now remain . . . the site to which we were now directed, while convenient and appropriate for a ko'a, or fisher-folks' heiau, gave no evidence by stones in the vicinity, contour of the hill at the point shown, or other feature of ever having been the location of a temple of the importance alleged . . . In their Sites of O'ahu, Sterling and Summers (1978) cite the following description of the natural shrine of Allahu, their description was derived from testimony given by Mrs. Charles Añoa in 1939.
Hawaiian knowledge was shared by way of oral histories. Indeed, one’s **mo’olelo** (literally “story-telling”) was a means of transmitting culture, values, and traditions from one generation to the next. The oral tradition was so central to Hawaiian culture that it is often referred to as the “living culture.”

The **mo’olelo** was a form of storytelling that included **proverbs**—saying short, wise statements that encapsulated a truth or moral lesson. These sayings may be categorized, in Western terms, as proverbs, aphorisms, didactic adages, jokes, riddles, or epithets. They reveal with each new reading ever deeper layers of meaning, giving understanding not only of Hawai‘i and its people but of all humanity. Since the oral tradition is not written, it is essential for its preservation and transmission through the **mo’olelo**.

Kamahānua, a prominent Hawai‘i leader, once said, “Aloha ʻāina is the meaning of our culture.” This means that the land, or aina, is central to understanding Hawaiian culture. The **mo’olelo** serves as a repository of Hawaiian knowledge, passed down through generations, and is especially important in preserving the **mo’olelo** and tradition (in this case, Hawaiian sayings or expressions) and its ability to impart traditional Hawaiian “aesthetic, historic, and educational values” (Pukui 1983:vii). Thus, in many ways Hawaiian expressions or proverbs are references to places. This section draws from the collection of author and historian Mary Kawena Pukui and her knowledge of Hawaiian proverbs (Pukui 1995:xii). Oftentimes within these expressions may be understood as inspiring growth within the reader or between speaker and listener.

They recall with each new reading ever deeper layers of meaning, giving understanding not only of Hawai‘i and its people but of all humanity. Since the oral tradition is not written, it is essential for its preservation and transmission through the **mo’olelo**.
3.3.1 ʻOlelo No’eau #503

The following proverb is related to a story regarding Kamehameha and his entourage who visited the people of Kailua:

Hawaiʻi palu ʻaʻa
Ti-leaf lickers of Hawaiʻi.

This saying originated after Kamehameha conquered the island of Oʻahu. The people of Kailua, Oʻahu, gave a great feast for him, not expecting him to bring such a crowd of people. The first to arrive ate up the meat, so the second group had to be content with licking and nibbling at the bits of meat that adhered to the ti leaves. In derision, the people of Oʻahu called them ‘ti-leaf lickers.’ [Pukui 1983:60]

3.3.2 ʻOlelo No’eau #791

The following ʻolelo no’eau makes reference to the Malanai breeze, a known tradewind of Kailua. The Malanai is also referenced within the Hiʻiakaikapoliopele tale (Holululumāhie 2008) (see Section 1.4.2.1).

He Malanai wale no kēkā.
It is only the gentle Malanai breeze.
It is only a superficial thing. [Pukui 1983:87]

3.3.3 ʻOlelo No’eau #866

The ʻolelo no’eau below describes a bashful person:
He ʻoʻopu kuʻia, ka iʻa hilahila o Kawainui.
A bashful ʻoʻopu, the shy fish of Kawainui.
Said of a bashful person. Kawainui at Kailua was one of the largest ponds on Oʻahu. [Pukui 1983:94]

3.3.4 ʻOlelo No’eau #1801

The proverb below describes a great number:
Kini Kailua, mano Kāneʻohe.
Forty thousand in Kailua, four thousand in Kāneʻohe.

A great number. Said by a woman named Kawaihoʻolana whose grandson was ruthlessly murdered by someone from either Kailua or Kāneʻohe. She declared that this man would perish by sorcery to avenge him. Another version credit Keohokauouli, a kahuna in the time of Kamehameha, for this saying. He suggested sorcery as a means of destroying the conqueror’s Oʻahu enemies. [Pukui 1983:193]

3.3.5 ʻOlelo No’eau #2092

The following proverb refers to the mythical Mākāleʻi tree. According to legend, the tree was once located within the greater Kawainui area. According to Pukui and Elbert (1986:382), the location of the tree is near the present day Hānākua Bridge. In this instance, the Mākāleʻi is compared to a handsome person; an individual as equally magnetic as the famed Mākāleʻi:

Mākāleʻi, kāʻea pī ona ‘a e ka ʻa.
Mākāleʻi, the stick that attracts and draws the fish.
Said of a handsome person who attracts the interest of others. Mākāleʻi was a supernatural tree who attracted fish. [Pukui 1983:227]

3.3.6 ʻOlelo No’eau #2848

The proverb below makes reference to the place name of Maunawili. Kawainui Marsh is fed by many streams that originate from Maunawili.

Ua piʻi paha i ka ʻulu o Maunawili.
Gone up, perhaps, to fetch the breadfruit of Maunawili.

A play on sili (twist, turn about). Said of one who is confused. [Pukui 1983:312]

3.4 Oli (Chant)

Oli, according to Mary Kawena Pukui (Pukui 1995:xvi–xvii), are often grouped according to content. Chants often were imbued with mana (spiritual power); such mana was made manifest through the use of themes and kaona. According to Pukui, chants for the gods (prayers) came first, and chants for the aliʻi, “the descendants of the gods,” came second in significance. Chants “concerning the activities of the earth peopled by common humans,” were last in this hierarchy (Pukui 1995:xvi–xvii). Emerson conversely states,

In its most familiar form the Hawaiians—many of whom [were lyrical masters]—used the oli not only for the songful expression of joy and affection, but as the vehicle of humorous or sarcastic narrative in the entertainment of their comrades. The dividing line, then, between the oli and those other weightier forms of the mele, the inoa, the kanikau (threnody), the pule, and that unnamed variety of mele in which the poet dealt with historic or mythologic subjects, is to be found almost wholly in the mood of the singer. [Emerson 1965:254]

While oli may vary thematically, subject to the perspective of the hoʻopaʻa ( chanter), it was undoubtedly a valued art form used to preserve oral histories, genealogies, and traditions, to recall special places and events, and to offer prayers to ʻakua (gods) and ʻaumākua (family gods) alike. Perhaps most importantly, as Alameida (1993:26) writes, “chants . . . created a mystic beauty . . . confirming the special feeling for the environment among Hawaiians: their one hānau (birthplace), their kūka ʻīwi (land of their ancestors).”
The following chant was performed by Hi'iaka, Pele's younger sister, when she and her companion encountered two beautiful women, who were actually mo'o, bathing in the stream that connected Kawainui and Ka'elepulu. The chant describes Hauwahine:

Kailua is like hair tousled by the Malanae wind
The leaves of the 'uki are flattened down
You are startled as though by the voice of a bird
You think they are human
But they are not.
That is Hauwahine and her companion
The supernatural women of peaceful Kailua.

Hauwahine is within the west portion of the study area, on the right hand side of Kapa'a Quarry Road at the Y-intersection before entering the Kapa'a Landfill Transfer Station.

Oral history relates that the stones overlooking Kawainui on Pu'u o 'Ehu are sacred to Hauwahine and her companion (Paki 1976). This interpretation is connected to the ancient Hawaiian belief that the channel/canal beneath Pu'u o 'Ehu connects Kawainui and Ka'elepulu and was considered to be the sexual connection between the two fishponds, giving the area great mana (spiritual or divine power). Kawainui Marsh was considered male, and Ka'elepulu Pond, female. They mated at Kawailoa, according to a Hawaiian tradition (Paki 1976).

3.4.2 Oli Komo no Kawainui

The chant contains kaona or hidden meanings; 'Ahahui provided the following explanations, copied (verbatim) from their website:

CALL:
Full is the voice of the 'alae
A voice of invitation in the calm
That true inspiration reaches Ulumawao
The neke ferns await at the border
At the entrance of the woman-water
We proceed with due care now!

RESPONSE:
The neki (bullrushes) part at the water
Revealing the shimmering waters
Revealed along with your righteous intent
Approach, enter, here we are
Approach, enter, here we are
Approach, enter, here we are
The chant contains kaona or hidden meanings; 'Ahahui provided the following explanations:

'alae: The 'alae (Hawaiian gallinule) is an endangered endemic waterbird of Kawainui, and in ancient times, the 'alae symbolized the voice of the chief whose opinion swayed the chiefly council. Some consider the voice of the 'alae an ill omen, but as a kinolau of Hauwahine (see wahinewai, below) the voice of the 'alae is an auspicious thing at Kawainui!

mapuna leo: literally: wafted voice of few words; an apt description of the voice of the 'alae! But 'mapuna' also alludes to the life-giving freshwater springs that arise in Kawainui.

polo 'ai: literally: to summon, to invite. Also a veiled allusion to the famous lepo 'ai (edible mud) of Kawainui, one of the ai kamaha'o (astonishing foods) of the land. Pohaku, and the play on ulu (growth, inspiration) is intended here.

neke: an ambiguous reference to two plants of Kawainui: a fern, and also a bullrush of the same name. A variant of the name is 'neki.'

ni'o: doorway or sacred threshold, but also highest point, pinnacle, as the stone of overlooking the wetlands.

wahinewai: a veiled reference to Hauwahine, the mo'o-wahine (woman lizard-goddess) of Kawainui.

nihi ka hele: to proceed with careful observance of kapu. Proceeding with care is part of the protocol of respect.

3.5 Mele (Song)

Several mele concern, mention, Kalua, Kawainui, and/or Ko'olaupoko Moku. These particular mele may also be classified as mele wahi pana (songs for legendary or historic places).

CALL:
Full is the voice of the 'alae
A voice of invitation in the calm
A chant of invitation to Hupu
That true inspiration reaches Ulumawao
At the entrance of the woman-water
We proceed with due care now!

(Pohaku, and the play on ulu (growth, inspiration) is intended here.)

RESPONSE:
The neki (bullrushes) part at the water
Revealing the shimmering waters
Revealed along with your righteous intent
Approach, enter, here we are
Approach, enter, here we are
Approach, enter, here we are
The chant contains kaona or hidden meanings; 'Ahahui provided the following explanations:

'alae: The 'alae (Hawaiian gallinule) is an endangered endemic waterbird of Kawainui, and in ancient times, the 'alae symbolized the voice of the chief whose opinion swayed the chiefly council. Some consider the voice of the 'alae an ill omen, but as a kinolau of Hauwahine (see wahinewai, below) the voice of the 'alae is an auspicious thing at Kawainui!

mapuna leo: literally: wafted voice of few words; an apt description of the voice of the 'alae! But 'mapuna' also alludes to the life-giving freshwater springs that arise in Kawainui.

polo 'ai: literally: to summon, to invite. Also a veiled allusion to the famous lepo 'ai (edible mud) of Kawainui, one of the ai kamaha'o (astonishing foods) of the land. Pohaku, and the play on ulu (growth, inspiration) is intended here.

neke: an ambiguous reference to two plants of Kawainui: a fern, and also a bullrush of the same name. A variant of the name is 'neki.'

ni'o: doorway or sacred threshold, but also highest point, pinnacle, as the stone of overlooking the wetlands.

wahinewai: a veiled reference to Hauwahine, the mo'o-wahine (woman lizard-goddess) of Kawainui.

nihi ka hele: to proceed with careful observance of kapu. Proceeding with care is part of the protocol of respect.
The Mele Wahi Pana such as those presented here may or may not be accompanied by hula (dance) or hula wahi pana (dance for legendary or historic places). As the Hula Preservation Society notes, Hula Wahi Pana comprise a large class of dances that honor places of such emotional, spiritual, historical, or cultural significance that chants were composed for them. Only the composers of the chants could know the deepest meanings, as they would be reflections of their feelings and experiences... Since the subjects of Wahi Pana compositions are extremely varied, their implementation through hula are as well. Coupled with the differences from one hula style and tradition to the next, Hula Wahi Pana can be exceptionally diverse. They can be done sitting or standing, with limited body movement or wide free movement; with or without the use of implements or instruments; with the dancers themselves chanting and/or playing an implement or being accompanied by the ho'opa'a (drummer and hula chanter (memorizer)). Beyond the particular hula tradition, what ultimately determines the manner in which a Hula Wahi Pana is performed are the specific place involved, why it is significant, the story being shared about it, and its importance in the composer's view...

As noted in Section 1.4.2.2, the rains of Kailua are mentioned in some mele. Another song began as a mele written by Kilihi de Silva in 2013 is inspired by Kamaakamahiai, a story of a Maui-born child who journeys to Hawaii, joins forces with Olopana and helps him regain control of Oahu. As this tale unfolds, Kamaakamahiai marries Olopana's daughter Keoholupalupa, and returns to Maui to quell the rebellion of his own brother Mana'o, helps the general of their islands and gives the need of approval to his control of their islands, and now an old man, gives the nod of approval to his great-grandson Olopana II whose turn has come to take up the legacy of bringing order to the land. As de Silva (2014) explains, the mo'olelo of Kamaakamahiai was published in “21 not-consecutive issues of Nupepa Kuokoa beginning in June 18, 1870, and ending on January 21, 1814,” then reprinted in “Ka Moolelo no Kamaakamahiai,” a story of a Maui-born child who journeys to Hawaii, joins forces with Olopana and helps him regain control of Oahu (de Silva 2014). As this tale unfolds, Kamaakamahiai marries Olopana's daughter Keoholupalupa, and...
1871.” Contained within these 21 publications were 43 chants that included “detailed descriptions of Ko‘olauupo, O‘ahu (in particular: Kā‘ohao, ‘Alele, Mahini, Mōkapu, the inland plain of Pānoio, and the pali of Hiliwai),” in addition to epic retellings of various battles and love affairs (de Silva 2014). Binding together all these tales was a common theme, “love for justice, land, and family . . . ke aloha ‘āina” (de Silva 2014). Building upon this theme of loyalty to homeland and family, Mr. Kihei de Silva composed the following mele, “‘Auhea Wale ‘Oe e Kahalakea.”

‘Auhea wale ‘oe e Kahalakea
Ka nihina mai a ka noe a loa’a
He aloha mai au iā Wai‘auia
I ke a la’a e kū a maalihini
‘Ahea la’oe ho’iho’i mai?

Where are you, Kahalakea?
I am caught up in the creeping mist
Oh how I love Wai‘auia
On the road now trampled by newcomers
When will you reclaim it?

‘Auhea Wale ‘Oe e Kahalakea is meant to express the same ku’upau loyalty for our still beleaguered home. It is a call to the mamo of today’s Kailua to defy the latest wave change that would erase our legacy of stewardship at Kawainui and make us guests in our own land. The first verse of our mele invokes Kahalakea, the lesser-known of the two mo‘o guardians of Kawainui, describes the trampled-on state of the once-sacred land of Wai‘auia (now the empty ‘ITT lot’ at the entrance to Kailua Town), and asks ‘When will you reclaim it?’

Kahalakea, of course, will not reclaim anything unless we first prepare the way. She lived in the ha‘a grove along Kawainui Stream (now Hāmākua) and adjacent to Wai‘auia. With her companion Hauwahine (who lived at the other end of the pond below what is now Le Jardin Academy), she was responsible for bringing a wealth of fish and food to Kailua when Kailua was in balance—and for taking it away with her when Kailua was not. No pono, no Kahalakea. We see it as our duty to reclaim and restore this balance so that she can then return.

The ensuing verses of ‘‘Auhea Wale ‘Oe e Kahalakea,’ describe the imbalance of today’s Kailua—the encroaching ‘Āpuakea, the overcrowded plain, the jealously guarded beach front—and turn with great hope and affection to our children, the next generation of ke aloha ‘āina with whom we intend to establish a foothold of cultural excellence at Wai‘auia. We rally them to the cause in language reminiscent of that used by Keakaokū in encouraging his son, the second Olopana, to the defense of their Kailua home; may the spears of your enemy fall from you like bath water, may they become a lei aloha in honor of your courage:

E lilo ana ka ihe i waiauau
I puu pale hoi no kuu kamalei
I lei aloha ka the me ko pololu
The spears will be like bathwater
Like a shield for my beloved child
The short and long spears will be a lei aloha
A dear companion on this day of valor

Wai‘auia is the land adjoining the now non-existent mākahā of Kawainui Pond. In one tradition, Wai‘auia is identified as home to the fish-attracting Mākālei tree. In another, it is the site from which Kahimihini‘ula, the mo‘opuna of Haumua, uses...
Historical Background

Kailua-

Kailua is one of the older settlements in the Islands. Coring in Kawainui Marsh shows the sand bar comprising present-day Kailua Town was formed around the first century AD before the arrival of settlers. Over time this bay slowly closed off to the open sea, becoming a lagoon by the end of the 19th century. The area is situated in the center of an alluvial fan made up mainly of fine-grained sediment. The fan extends from the northwestern foot of the Koolau Mountains to the east and south. The southern sector has been subject to periodic flooding and erosion, while the northern sector remains relatively stable. The landscape is characterized by low-lying, flat areas with gently sloping hills and ridges. The climate is tropical, with high temperatures year-round and heavy rainfall. The area is rich in natural resources, including fish and other marine life, making it an ideal location for fishing and other related activities. The area was inhabited by the Kula people, who practiced an exchange economy and traded valuable items such as shell money and other goods. The site was also used as a place for meeting and feasting, with large numbers of people gathering to trade and celebrate. The area was later used by the Hawaiian people, who built large structures and practiced agriculture. Today, the site is a popular tourist destination, with many visitors coming to enjoy the natural beauty and cultural heritage of the area.
4.1 Early Historic Period

Historic accounts of Kailua before the 1850s are rare. Maui high chief Kahekili, who became paramount or ruling chief of O'ahu after the death of Kaukahi-a-Kahoowahia in 1729, was said to have been born in Kailua. He was a powerful and effective leader who conquered O'ahu in 1795 and established Kaukahi-a-Kahu as the chief of the entire island.

Kaluakahi was another important figure in the history of Kailua. He was a high chief who lived during the late 18th century and was known for his military prowess and his role in the development of the land. Kaluakahi was a close ally of Kamehameha I, and he played a key role in the unification of the Hawaiian Islands.

Kama'uma'u, who served as the chief of Kailua in the late 18th century, was also a figure of note. He was known for his political acumen and his ability to navigate complex political landscapes. Kama'uma'u's reign was marked by peace and prosperity, and he was highly respected by his people.

Chamberlain describes his visit to Kailua in 1828, where he spent five days observing the people and their way of life. He was struck by the beauty of the landscape and the richness of the culture. Chamberlain's account provides a valuable glimpse into the daily life of the people of Kailua during this important period in Hawaiian history.

4.1.1 Fresh Water Resources

The Kawainui Marsh, a partially brackish water body, was an important source of fresh water for the people of Kailua. The marsh was protected by the nearby Ka'ala mountain range, which provided a natural barrier to the ocean. The marsh was also a重要源 of fish and other aquatic resources, which were vital to the local economy.

Kahana, who was present during the construction of the Kawainui Heiau, describes the process of building the heiau. He states that the heiau was constructed using the mud and water from the marsh, which were mixed together to create a strong and durable structure.

The heiau was a place of worship and was associated with a number of deities. The construction of the heiau was a significant event in Kailua, and it is believed that the people of the area celebrated by holding a fire to mark the occasion. The fire was considered to be a symbol of the new heiau, and it was believed that the flames would burn for three days.
Cultural Surveys Hawai'i Job Code: KAILUA 48

4.1.3 Earth Resources

For spiritual and dietary reasons, kalo was a sacred staple in the Hawaiian diet. According to Hawaiian mythology, man was made from the Kalo plant. According to the Kanaloa tradition, the first man was born of Kalo. The Kalo plant was also used as a currency medium in the trade of goods. The Kalo plant was the focus of many religious rituals and dances.

For spiritual and dietary reasons, kalo was a sacred staple in the Hawaiian diet. According to Hawaiian mythology, man was made from the Kalo plant. According to the Kanaloa tradition, the first man was born of Kalo. The Kalo plant was also used as a currency medium in the trade of goods. The Kalo plant was the focus of many religious rituals and dances.
4.2 M.1800s

The drastic depopulation of the Hawaiian Islands following the introduction of western disease has been well-documented (Ingalls 1847; Brander 1953). Samuel Augustus Mitchell (1933:46), a 19th-century commentator, described in detail the impact of these diseases on the Hawaiian population. Mitchell noted that the population of a number of sources, including the Hawaiian Journal of Science and Literature (1978:23–24) was estimated at approximately 200,000 in 1783 by 1859. The data is given in Table 1. The overall decrease in population was due to the introduction of smallpox, which became rampant throughout the islands. In 1845, the Board of Commissioners to Quiet Land Titles, also known as the Land Commission, was established to resolve disputes among the Hawaiian people. This led to the reclamation of lands by the crown for the benefit of the Hawaiian people. This reclamation was known as the Ka Na'i Aupuni, or the Land Commission Act. The land was divided into two categories: Crown Land and private land. Crown lands were held by the crown for the benefit of the Hawaiian people, while private land was held by individuals who had purchased it from the crown.

4.3 M.1840s

In 1845, the Board of Commissioners to Quiet Land Titles, also known as the Land Commission, was established to resolve disputes among the Hawaiian people. This led to the reclamation of lands by the crown for the benefit of the Hawaiian people. This reclamation was known as the Ka Na'i Aupuni, or the Land Commission Act. The land was divided into two categories: Crown Land and private land. Crown lands were held by the crown for the benefit of the Hawaiian people, while private land was held by individuals who had purchased it from the crown.
### Historical Background

**Figure 13.** 2013 Google Earth Aerial Imagery with project areas outlined in red and LCA overlay

Table 1. LCA parcels within and in the vicinity of the project area

<table>
<thead>
<tr>
<th>Land Claim #</th>
<th>Claimant</th>
<th>'Ili (Land Division)</th>
<th>Land Use</th>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2536:1</td>
<td>Ukikolo</td>
<td>Ohana</td>
<td>Two 'loʻi</td>
<td>4.19 acres</td>
</tr>
<tr>
<td>2536:2</td>
<td>Ukikolo</td>
<td>Manu</td>
<td>Four 'loʻi house lot</td>
<td></td>
</tr>
<tr>
<td>2536:3</td>
<td>Ukikolo</td>
<td>Ulupō, Kukanono</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2544</td>
<td>Lapalapa</td>
<td>Manu</td>
<td>Four 'loʻi and a house site, claims for a small orange and lime grove appear to be elsewhere</td>
<td>Two ʻāpana; 6.46 acres and 1.38 acres</td>
</tr>
<tr>
<td>2575</td>
<td>Hekona</td>
<td>Manuleke</td>
<td>Five 'loʻi in each of two parcels</td>
<td>Two ʻāpana; 2.29 acres</td>
</tr>
<tr>
<td>2585:1 and 2</td>
<td>Hekona</td>
<td>Manuleke, Pohakupu, Ohana</td>
<td>ʻIlī, kula, ipu garden, ten 'loʻi and a house lot</td>
<td>Two ʻāpana; 2.29 acres</td>
</tr>
<tr>
<td>4452</td>
<td>Kalama, Hakaleleponi</td>
<td>Entire ahupuaʻa; Kawaihui Fish pond, Pohakupu</td>
<td>None reported</td>
<td>11,885 acres</td>
</tr>
<tr>
<td>4896</td>
<td>Kekoahelele</td>
<td>Pohakupu</td>
<td>Seven 'loʻi</td>
<td>One ʻāpana; 844 acres</td>
</tr>
<tr>
<td>5825</td>
<td>Kaamaana</td>
<td>Kaaihee</td>
<td>ʻIlī and house lot</td>
<td>One ʻāpana; 2.297 acres</td>
</tr>
<tr>
<td>5835</td>
<td>Kaleokane</td>
<td>Kekai Kapia</td>
<td>Five 'loʻi kula, house lot</td>
<td>0.37 acre; 0.52 acre</td>
</tr>
<tr>
<td>6099:2</td>
<td>Moomio</td>
<td>Kukanono</td>
<td>ʻIlī, house lot ten 'loʻi</td>
<td>Two ʻāpana; 1.088 acres</td>
</tr>
<tr>
<td>6153</td>
<td>Nanawahine</td>
<td>Manulele</td>
<td>Two 'loʻi</td>
<td>One ʻāpana; 0.22 acre</td>
</tr>
<tr>
<td>6162</td>
<td>Punipeki</td>
<td>Ohana, Pohakupu</td>
<td>Two (possibly 12) 'loʻi, kula</td>
<td>One ʻāpana; 0.47 acre</td>
</tr>
<tr>
<td>6807</td>
<td>K. Kapano</td>
<td>Kamakapelo and Kaaimoku</td>
<td>Claims four parcels including three of 'loʻi (four, eight, and four patches) and a house lot</td>
<td>Kamakapelo two ʻāpana; 11.59 acres; Pehialii; one ʻāpana; 1.76 acres</td>
</tr>
<tr>
<td>6808</td>
<td>Puniuhua</td>
<td>Kamakapelo</td>
<td>Fifteen 'loʻi</td>
<td>Two ʻāpana; 5.254 acres</td>
</tr>
<tr>
<td>6811:1</td>
<td>Kuula</td>
<td>Kamakapelo</td>
<td>Four 'loʻi</td>
<td>One ʻāpana; 2.56 acres</td>
</tr>
<tr>
<td>6813</td>
<td>Keliikanakaole</td>
<td>Kamakapelo, Kapalawai</td>
<td>Nineteen 'loʻi and a house lot, one 'loʻi</td>
<td>Three ʻāpana; 7.126 acres</td>
</tr>
<tr>
<td>6969:2</td>
<td>Kuahine</td>
<td>Kawihoa, Mamu</td>
<td>Five 'loʻi, 30 'loʻi, kula and a house</td>
<td>One ʻāpana; 1.3 acre, One ʻāpana; 1.52 acre</td>
</tr>
</tbody>
</table>
### Land Claim #  
<table>
<thead>
<tr>
<th>Claimant</th>
<th>'Ili (Land Division)</th>
<th>Land Use</th>
<th>Acreage</th>
</tr>
</thead>
</table>
| Keaka     | ½ Manu ‘ili          | Taro lands | One ʻapana; 1.52 acres  
| Tute, T.  | ‘Ili of Oneawa       | None reported, although surrounded by lo‘i cultivation | Six ʻapana; 674.9 acres  
| Kahele    | Kukanono, Kawainui   | One house lot | Three ʻapana; 7.814 acres  
| Kamoohu   | Palapule             | None reported | One ʻapana; 7.88 acres  
| V. Kamāmalu | Kaʻelepulu     | None reported | Two ʻili of Kaʻelepulu  
| Kao       | Kapalua              | One kula, one house lot, and one kala tree | Two ʻapana; 2.61 acres  
| Kekuakamali | Kapalua     | Nine lo‘i, and a kula parcel | Two ʻapana; 2.66 acres  
| Kaikīhoio | Palawai             | Mo‘o (lo‘i) | Two ʻapana; 4.36 acres  
| Kapolo I  | Ulupō                | House lot? | One of four ʻapana; 1.4 acres  
| Make I    | Kumu                 | Fourteen lo‘i | One ʻapana; 1.442 acres  
| Honauna   | ½ of Makulele       | None given; likely lo‘i possibly with kula | Two ʻapana; 12.88 acres  
| Kalaainane | ½ of Pohakuupu | None reported | One ʻapana; 38.27 acres  
| Hale      | Kaakepa              | None reported | Four ʻapana; 60.56 acres  
| Kalawataaku | ʻIli of Kapia | None reported; likely lo‘i possibly with kula | Two ʻapana; 14.12 acres  
| Kaeliwai  | ½ of Kaaihee        | None reported; likely lo‘i possibly with kula | Two ʻapana; 9.12 acres  

Figure 14. 1899 Wall map of Kailua showing the locations of ‘ili within and in the vicinity of the project area.

---

CIA for the Kawainui-Kālia Master Plan, Kailua, Koʻolina, O‘ahu  
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
4.4.2 Cash Crops in Kailua

For the nearly 100 years following the Mähele, Kailua grew into an important area of commercial agriculture. Kawaihui Pond was primarily used as a fishpond, however, the majority of its area was converted into rice cultivation (Kelly 1979:9). In addition to rice, the western portions of Kawaihui were used for taro cultivation. Eventually taro was taken over by rice. New areas were opened up for rice cultivation and horses, oxen, and water buffalo were brought in to help compress soils and increase the water-holding capacity (Kelly 1979:9). In 1880, George Bowers (1880) noted current land use, detailing that rice fields occupy “one-fourth” of the “valley of Kawaihui” and that plans were in place for additional rice fields to be established in the remainder:

In this neighborhood, from a knoll or plateau about a quarter of a mile square on which Mr. Kahuhu has a farm, I got another magnificent view quite equal to anything I had yet seen. All around were towering peaks and lofty mountains. To my left, as I looked eastward, was the valley of the Kawaihui, about one-fourth of which is already laid out in rice plantations. The remainder will be brought under cultivation during the coming season for the same purposes. Before me, still looking east, there is an uninterrupted view of the sea. In the bosom of the valley there is a large pond or lake celebrated for its mullet and awa. The latter fish grows here to four feet in length. Wild duck and the famous Hawaiian goose are also to be found here in abundance. Between this fish-pond of Kawaihui and the sea there is level land about one mile and a quarter long by three-quarters of a mile in width, covered with the most beautiful green grass I ever saw. To the right is a wide extent of plain, well grassed, where large herds of cattle and droves of horses roam at will. At the south end of the plain is a large grove of cocoa nut palms. To the north is the open sea. On this delightful morning, riding amidst such scenery and surrounded by such evidences of the increasing civilization and prosperity of the country, I feel twenty years younger than when I landed in Oahu.

[Bowers 1880:408]

Despite the conversion of taro lands around Kawaihui Marsh to rice, areas maakua of the marsh continued to be cultivated in taro as shown in an 1885 photograph (Figure 15). McAllister (1913:377) also reports the presence of “taro patches” along Hāmākua Stream in the past that almost certainly would have been converted to rice fields.

4.5 1900s

In the early 1900s Kaneohe Ranch came to dominate land holdings in the Kailua and Kāne‘ohe area. Included within this acreage is much ranch land that was bought, sold, let, and used as ranch land by numerous parties since the mid-1850s. Kelly and Nakamura’s (1981:34–35) history mentions that Government land sales amounting to 3,000 acres were sold to 21 buyers in Kailua between the years 1849 and 1863. The largest parcel went to William Jarrett of the ‘ili of Maunawili in 1849. The second largest was 399.5 acres to T. Cummins in Mokulua. Both parcels were used for ranching. Other land holdings that were turned into ranch land in the mid-1850s included the ‘ili of Puanea and ‘Oha‘u‘ili (by the son of Paula Marin, Paul F. Manini). These large land holdings were used for years as ranch lands before becoming part of the Castle’s Kaneohe Ranch. Cattle, sheep, and horses were thus allowed to roam at will through

Figure 15. Stream and lo‘i kalo system maaka of Kawaihui, 1885 (Hawaiian Historical Society)
many parts of Kailua as reported by Bowser (1880:408), and would have destroyed many gardens and abandoned habitation areas.

A Kaneohe Ranch report of a roundup relates that 300 cattle were driven from Maunawili to their main corral in Oneawa. Their route was Kap'a Road, today’s Kap’a Quarry Road. “Cattle that strayed into Kawainui marsh were driven out of the marsh and back to the road by Japanese helpers following on foot” (Brennan and Drigot 2009:183). It has also been reported that a portion of Ulupō Heiau was used as a cattle pen in the 1900s (McAllister 1933:187). Kaneohe Ranch eventually acquired much of the land in Kailua. In addition to ranching, Kaneohe Ranch grew pineapple and sugarcane. With the decline of rice farming around the margins of Kawainui, cattle stock moved onto the abandoned agricultural lands (Kaneohe Ranch 2013). A 1906 Hawaiian Government Survey map (Figure 16) shows all of Kailua, extending into Kāne‘ohe, as grazing lands (yellow highlighted boundary) with the southeasternmost portion of Kawainui Marsh as rice and taro lands (blue striped area). Ranching in Kailua has ceased in the last few years.

During the first part of the twentieth century, rice growing in California utilized modern production methods to reduce their costs, and thus their prices. This led to the rapid decline in rice farming in Hawai‘i (Kelly and Nakamura 1981:51–63). Coulter and Chun (1937:53) also mention that the prohibition of Chinese immigration to Hawai‘i beginning in 1876 was another reason for the decline in rice cultivation.

By the 1920s, rice cultivation stopped and the formerly cultivated areas became pasture land. Some of the wet lands were drained and converted for the dryland cultivation of fruit and vegetable crops. Truck farming of taro, avocado, papaya, and western crops soon followed. The Kūkanono slopes along Kailua Road and extending toward Kawainui Marsh were utilized for cultivation, raising chickens, and pig farming. The Kailua Fruit Stand, owned and operated by the Nishikawa family, was the most successful of the Kūkanono truck farms (Figure 17 and Figure 18). The stand was in the location of today’s First Presbyterian Church on Kailua Road. The family worked and leased the lands for 25 years until the development of the Kūkanono neighborhood (Hollier 2011).

In the 1930s, Kenzo Matsuda leased land adjacent to the old Pali Road where he and his family constructed a building that was well known in Kailua. Matsuda Store was also the family home for many years. The store was adjacent to Kawainui Marsh (Figure 19), just west of the current location of Castle Hospital on today’s Ulukahiki Street. Matsuda’s Store was a general store that provided local farmers with all their needs including gasoline and livestock feed (Hollier 2011).

Sugar never became an important crop in Kailua itself, but the need for water for the adjacent sugar lands of Waimanalo was an important factor in the transformation of the Kailua watershed. An ancient ‘ānawai (irrigation ditch) built by the Hawaiians and located on the edge of the Kawainui Marsh was used in the early 1900s to bring water to the Waimanalo Sugar Mill, which was established ca. 1875. William G. Irwin, entrepreneur and partner of Claus Spreckles, the sugar baron, was a supervisor for the sugar mill.
Figure 17. Kailua Fruit Stand in Kākanono ca. 1930s (Edna Nishikawa Kimura and Some Nishikawa) (Wu 2013)

Figure 18. Nishikawa family with their truck farming equipment in Kākanono (Wu 2013)

Figure 19. Matsuda family store and residence ca. 1930s (Hawai'i State Archives)
A system of flumes, ditches, and tunnels was built in the mauka portion of adjacent Maunawili to collect water from the abundant springs and streams. By 1881, close to 1,000 acres of sugar had been planted, and milling operations were well underway in Waimānalo (Kelly and Nakamura 1981:76). Expansion in acreage continued, increasing the need for water. By 1895, Irwin became involved in a landmark case regarding water rights, Irwin vs. Wong Leong (the owner of the largest rice mill). A pumping station removed water from the marsh in a wooden pipe and diverted it to the sugar mill, which was the biggest employer on the windward side. The Tashiro family maintained watch over the pump as millions of gallons surged toward Waimānalo (Brennan 2007b).

By the 1920s, improvements to the Waimānalo Irrigation System (State Inventory of Historic Places [SIHP] # 50-80-15-4042) included catchment tunnels excavated into the base of the Koʻolau in Maunawili to increase flow. Beginning in 1923, water from Kawaihui Marsh was pumped through a portion of the Waimānalo Irrigation System to a reservoir in Waimānalo. A pump house and canal were adjacent to Kailua Road. The pumping caused the last portions of the fishpond to dry out and become the wetland it is today. Pumping continued until the early 1950s (Hall 1997:94; Kelly and Nakamura 1981:78–79).

In Maunawili, a poi factory built by Akana Wong operated from 1900 to 1957. The poi (the Hawaiian staff of life, made from cooked taro corms) factory was called “Kailua Poi” and was famous for its quality and its mass production of poi. Although small poi factories were also present in the area, they produced poi on a smaller scale for their ‘ohana (family) to eat during parties, for festive events, and for everyday use (Brennan 2007b).

In 1909, the Hawaiian Copra Company was established by Albert and Fred Waterhouse on the sandy area that is today bounded by Kālihi and Oneawa streets. Over 130,000 coconut trees were planted on 200 acres leased from J.B. Castle in an operation that involved leveling “the sand dunes and smooth[ing] out the sand hilllocks” (Hall 1997:77–78). The land was called Coconut Grove in reference to most of the sand barrier area of Kailua. Clearly, this leveling and smoothing of former dune areas had a great impact on the archaeological record of this area.

In 1916, the Waterhouse’s copra endeavor failed, and they sold Coconut Grove to A.H. Rice, who planned a residential subdivision and in 1924, “Earl H. Williams, of Liberty Investment Co., acquired 200 acres from Rice and began the lot subdivision process” (Drigot 1982:36). Figure 20 through Figure 25 are a series of topographic maps that depict the transformation of the project area and the areas surrounding the swamp.

By the mid-twentieth century, Kawaihui and its surroundings were much transformed. No longer a fishpond, the area had become a marshland.

4.6 Modern Land Use and History

While Harold Castle grazed cattle and horses throughout Kailua including Kawaihui and Hāmākua marshes for many years, the Campos Dairy was established in 1925. Cattle grazed throughout Kailua for many years, and in the Hāmākua Marsh area until recently. The first “modern” development within the project area occurred in 1928 when the Mackay Radio Tower began operating just mauka of the Hāmākua Bridge (see Figure 22). The station was for “the new high frequency radio system for transpacific communication” and was “intended to take the overflow of traffic” (Thrum 1929:68–69). In 1950, the Mackay Radio and Telegraph Company
Figure 21. Portion of 1928 Mokapu USGS topographic quadrangle with project area in red; it appears Kawainui Swamp has increased in size; Kalaniana'ole Highway has been constructed and can be found traveling southeast of the project area; streets and a neighborhood lie northeast of the project area.

Figure 22. Portion of 1936 U.S. Army War Department fire control map, Mokapu Quadrangle with project area outlined in red; note the swamp has increased in size traveling south; the marsh area connecting Kawainui to Ka'elepulu has increased in size from previous years.
Figure 23. Portion of 1943 U.S. Army War Department terrain map, Kailua and Kaneohe Quadrangles, with project area outlined in red.

Figure 24. Portion of 1952 Mokapu and 1954 Kaneohe USGS topographic quadrangles with project areas outlined in red; note the inclusion of Kailua Road that runs south to northeast of the project area and the construction of dwellings southeast of the project area.
Cultural Surveys Hawai'i Job Code: KAILUA 48

Historical Background

CIA for the Kawainui Marsh Margin

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

Figure 25. Portion of 1968 Mokapu and Kaneohe USGS topographic quadrangles with the project areas outlined in red; note the addition of Castle Hospital, Kailua High School, businesses, and an increase in roadways south of the project area and around Ka'elepulu Pond

(Figure 26 and Figure 27) “installed four new multichannel transmitters” and antenna, and enlarged the radio transmission building to provide communications for airlines flying over the Pacific (Aviation Daily 1950:253). Mackay Radio Company, which later became ITT World Communications, operated the radio station, a tall radio tower, until it was removed in the 1980s (Chun 1993:1).

In the 1940s, the military conducted training exercises within the Kawainui Marsh margin according to Martin Knott, a rancher who resided in the area (Kelly and Clark 1980:24). Troop maneuvers and small arms usage were permitted and conducted in the vicinity of Nā Pōhaku o Hauwahine south to the current location of Castle Medical Center. Mortars were also exploded although areas designated for mortar firing were unknown (Clark 1980:15). Evidence of “live-fire training,” consisting of used and unused 50-caliber shells from large machine guns was found on the Kukanono slope during an archaeological investigation (Erkelens 1993:10). This military training may have been associated with the Pali Training Area in Maunawili and Makalii Valleys (O’Hare et al. 2014), although no mention of such training outside the valleys is reported. Kelly and Clark’s (1980:24) research indicated Army activities “were limited in geographic extent.”

Rancher Martin Knott also reported that during World War II, Italian prisoners of war “were used for construction work in the valley and that they had done some stone work from time to time” (Kelly and Nakamura 1981:127). The location of their camp was described as “in one of the small valleys, probably Pohakea, on the southwestern edge of the Marsh. The entrance to the valley was from a road that preceded the present Kapa’a Quarry Access Road” (Kelly and Nakamura 1981:127).

During 1949-1950, the northwest end of the marsh was filled in with soil that had been removed from the “water tank site” on the hill above Mokapu Saddle Road. Roy Weber leased the in-filled area from Kaneohe Ranch for an auto wrecking business. During construction of Mokapu Saddle Road, soil removed during construction was added to the same northwest end of the marsh, expanding the auto wrecking business. By 1967, approximately 15,000 “auto wrecks were stacked five high in the area” (Kelly and Nakamura 1981:102).

In 1949, the Honolulu Construction & Draying Company Ltd., now known as Ameron Hawaii, began operating the quarry on the opposite side of Kapa’a Quarry Road from the marsh. Excess crushed rock was stored for many years in a 76-acre area at the edge of the marsh in the current location of the Model Airplane Park. From the 1950s to 1962, the site was leased and used by the City and County “as an open-burn refuse disposal site” (Kelly and Nakamura 1981:103, 106).

The Pu‘u o ‘Ehu Quarry, named after its location on the north slope of Pu‘u o ‘Ehu, is also referred to as the Radio Station Basalt Quarry, based on its proximity to the Mackay Radio Tower on the opposite side of Kailua Road and adjacent to Kawainui Marsh. Lincoln McComb apparently opened the quarry prior to the construction of the Pali Road, although, “recent widening of the highway has obliterated the quarry” (Stearns 1974:22). The geological description of the basalt is “typical basalt of the Kailua Volcanic Series that filled the ancient Koolau Caldera” (Stearns 1974:22). A second quarry consisting of “lithified dunes” was removed to fill in Kaelepulu Pond during the development of Enchanted Lakes (Manning and Uyehara 1976:37, White 1984:95).
Figure 26. 1949 aerial photograph showing the Mackay Radio Tower (circled) (source: Hoʻokuleana LLC)

Figure 27. 1950s Mackay Tower in background; view is from the corner of Maluniu and Kuʻulei Road; Kailua Elementary is not visible but is to the left (source: M. Kwiatkowski in Young 2013)
By the late 1950s, the truck farms that had existed since the turn of the century within the bounds of present-day Kailua were slowly replaced by housing, municipal, and retail developments. Kailua was promoted as the bedroom community for Honolulu businessmen, only 10 miles from downtown Honolulu. Residential developments were put in place for these professional men who could travel to and from work each day. The completion of the Pali Highway in 1957 was the impetus for increased residential development in Kailua since the highway provided easy access between Honolulu and Kailua. By the early 1960s, a dike was installed on the seaward edge of Kawainui Swamp to protect the edge of Kawainui Swamp from flooding. However, the dike did little to prevent flooding during the 1950s. Thus, during the 1950s and 1960s, the dike was not designed to handle the increased population that required the development of landfill sites. The Kapa'a Sanitary Landfill, located across Kapa'a Quarry Road from the marsh, opened in 1964. The landfill occupied the location of a former quarry. The site contained ash fill from its incinerator use. The landfill was developed until the mid-1970s (Berman and Dingar 2009:91). Increased population also required the development of landfill sites. The Kapa'a Sanitary Landfill, located across Kapa'a Quarry Road from the marsh, opened in 1964. The landfill occupied the location of a former quarry. The site contained ash fill from its incinerator use. The landfill was developed until the mid-1970s (Berman and Dingar 2009:91).

Kawainui Marsh is a Ramsar site, which has been designated as a Ramsar Convention site since 1981. Kawainui Marsh is a Ramsar site, which has been designated as a Ramsar Convention site since 1981. The Ramsar Convention on Wetlands of International Importance (Ramsar Convention of Wetlands 2013) lists Kawainui Marsh as an important wetland because it is a "global center of biodiversity and a key component of the larger Kawainui Marsh complex" (Ramsar Convention of Wetlands 2013). The complex was designated as Ramsar site no. 1460. The complex was designated as Ramsar site no. 1460. The complex was designated as Ramsar site no. 1460. The complex was designated as Ramsar site no. 1460.


In 1994, a Master Plan (1994:1–11, 5–18) was initiated for the ITT site (TMK: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034). The Master Plan was the result of a comprehensive study of the site that included a site assessment, an environmental impact assessment, and a socioeconomic feasibility study. The Master Plan was the result of a comprehensive study of the site that included a site assessment, an environmental impact assessment, and a socioeconomic feasibility study. The Master Plan was the result of a comprehensive study of the site that included a site assessment, an environmental impact assessment, and a socioeconomic feasibility study. The Master Plan was the result of a comprehensive study of the site that included a site assessment, an environmental impact assessment, and a socioeconomic feasibility study.

Two horse and cattle ranches have been operating on land within the proposed project area since the 1960s. VO Ranch, operated by the Cash family, has occupied approximately 10 acres just south of Ni'ihau. Cash Ranch, operated by the Cash family, has occupied approximately 8 acres extending from Kawainui Marsh to the Oneawa Channel. VO Ranch, operated by the Cash family, has occupied approximately 10 acres just south of Ni'ihau. Cash Ranch, operated by the Cash family, has occupied approximately 8 acres extending from Kawainui Marsh to the Oneawa Channel. VO Ranch, operated by the Cash family, has occupied approximately 10 acres just south of Ni'ihau. Cash Ranch, operated by the Cash family, has occupied approximately 8 acres extending from Kawainui Marsh to the Oneawa Channel. VO Ranch, operated by the Cash family, has occupied approximately 10 acres just south of Ni'ihau. Cash Ranch, operated by the Cash family, has occupied approximately 8 acres extending from Kawainui Marsh to the Oneawa Channel.
Section 5 Previous Archaeological Research

Twentieth century archaeological findings from inventory surveys, data recovery projects, and inadvertent finds during development are the main source of our knowledge about the archeological record in Kailua. Archaeological work in the last 25 years in Kailua has been fairly extensive. This work has been concentrated along the margins of Kawainui Marsh and within Maunawili Valley for the most part. This is largely due to the fact that most of the makai portions of the ahupua’a had been developed prior to the implementation of State and Federal Historic Preservation Rules (Dye 1992). Previous archaeological studies located within or in the vicinity of the project area are depicted in Figure 29 and presented in Table 2. Previously identified historic properties located within or in the vicinity of the project area are depicted in Figure 30 and presented in Table 3.

Remains of upland terraces show that taro has been grown extensively and intensively in Kailua since the thirteenth or fourteenth century, and possibly earlier (Allen-Wheeler 1981; Williams et al. 1995). The work of Cordy (1977a and b, 1978), Allen-Wheeler (1981), Athens (1983a), and Allen (1986, 1988) all document the mix of irrigated and dryland agriculture that was carried out in Kailua during prehistory and continuing into the historic period. Dryland agriculture, including yams, gourds, and sweet potato, would have been carried out on slopes and in drier flatlands. Modification to the landscape would have been variable, ranging from none to the construction of terraces and mounds for planting. According to Handy (1940:155), the beach barrier at Kailua (current day Coconut Grove) was famous for its production of sweet potatoes, grown in small mounds. Irrigated agriculture would have been carried out along streams and below springs. Landscape modifications would have included construction of terraces and/or pondfields, ‘auwai, and earthen and stacked-stone berms. Dryland and irrigated agricultural features have been found in Maunawili and along the margins of Kawainui Marsh.

Previous archaeological investigations in Kailua have located dispersed pre-Contact habitation remnants. This is in keeping with the observations of early westerners in Hawai‘i that the settlement pattern for the most part consisted of habitations scattered across the landscape amid agricultural fields. It should be remembered that settlement data is conspicuously absent from the lowland, beach berm areas of Kailua, due to early development of these areas.

McAllister (1933) reported eight heiau within the ahupua’a of Kailua, and it is not unreasonable to conclude that these were several more of which McAllister’s informants had no knowledge. This is well in keeping with Kailua’s status as a productive ahupua’a and the residence of ali‘i. The three known heiau closest to the current study area are McAllister’s sites 359, Pahukini Heiau; 360, Holomakani Heiau; and 371, Ulupō Heiau. The Holomakani Heiau location, “just beneath Pahukini,” was reported to have been used for agriculture and was destroyed by the early 1930s and McAllister’s (1933:182) survey. However, more recent research (i.e., Pantaleo and Cleghorn 1989) suggests remnants of the heiau are extant. McAllister (1933) also reported on Kawainui pond (Site 370):

Site 370. Kawainui pond, once a large inland fishpond, Kailua.

The pond belonged to the alii. Any person coming from this section, particularly Wai‘awa‘a, which is near the small bridge near the sea side of the Mackay radio and...
### Previous Archaeological Research

<table>
<thead>
<tr>
<th>Reference</th>
<th>Location</th>
<th>Description and Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrum 1906, 1908, 1915</td>
<td>Kailua Ahupua'a</td>
<td>In his articles for Hawaiian Almanac and Annual (1906, 1908, 1915), Thrum is first to document many heiau in Kailua Ahupua'a.</td>
</tr>
<tr>
<td>McAllister 1933</td>
<td>Kailua Ahupua'a</td>
<td>Described 16 areas within Kailua Ahupua'a, including Kawainui Pond (Site 577), all of which were reported for Kailua.</td>
</tr>
<tr>
<td>Handy 1940</td>
<td>Kailua Ahupua'a</td>
<td>Described a rich, productive, well-irrigated area growing area (p. 90), the &quot;candy plains&quot; of Kailua planted in sweet potato using a planting system of small soil mounds (p. 155, plate 3).</td>
</tr>
<tr>
<td>Goodenough 1959</td>
<td>Kawainui Marsh, Site 16</td>
<td>Archaeological reconnaissance; no significant findings.</td>
</tr>
<tr>
<td>Moore 1961</td>
<td>Kawainui Marsh, Site 16</td>
<td>Archaeological reconnaissance; no significant findings.</td>
</tr>
<tr>
<td>Goodenough 1965</td>
<td>Kawainui Marsh, Site 16</td>
<td>Archaeological reconnaissance; no significant findings.</td>
</tr>
</tbody>
</table>

**Figure 29. Portion of the 1998 Mokapu USGS 7.5-minute topographic quadrangle, showing previous archaeological study areas within and adjacent to the project area.**

**Table 2. Previous archaeological studies in the vicinity of the project area (SIHP # 50-80-11 prefix used unless otherwise noted).**
Cultural Surveys Hawai’i Job Code: KAILUA 48

Previous Archaeological Research

<table>
<thead>
<tr>
<th>Reference</th>
<th>Location</th>
<th>Description and Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly and Nakamura</td>
<td>Kawaihau Marsh Area</td>
<td>Detailed historical study of marsh area; findings included a fishpond and agricultural features within marsh (not included in Fig. 22)</td>
</tr>
<tr>
<td>Morgenstein</td>
<td>Kāpaa Dradgacent to Ka‘elepule Stream</td>
<td>Geological and archaeological investigations documented historic fill in upper layers and presence of one potential agricultural “band” (embankment used to control flood water) below; bund thought to be associated with rice farming; Morgenstein (1982:14) also determined sites (SIHP #s -4699, -4700) identified by Clark (1977) were modern features</td>
</tr>
<tr>
<td>Neller 1982</td>
<td>Kawaihau, Kūkanono area, TMK: [1] 4-2-013:038</td>
<td>Limited subsurface investigations carried out in same area reported by Clark (1980a) and Neller (1980a); Neller dismissed early date reported by Clark (1980a); basalt adz blanks, adze pieces, flakes, broken hammerstones, stone abraders, and polishing stones found in disturbed stratigraphy; Neller’s (1982b:8) interpretation assemblage as “accumulated remains of continued foraging activities in the area”; bone fishhook blank identified as possible human tibia, and bone fragment used as a possible scraper were only other traditional Hawaiian artifacts identified; artifacts dating to 1800s included broken glass and bottle sherds; artifacts dating to 1940s and 1950s included bottles, glass sherds, ceramic sherds, and metal pieces; large grinding stone also found on Kūkanono slopes</td>
</tr>
<tr>
<td>Athens 1983a</td>
<td>Pōhakupu Kūkanono slope SIHP # -2022</td>
<td>Archaeological investigation; concluded numerous surface features (primarily agricultural mounds and terraces) primarily constructed after AD 1900; calls into question early dates (AD fifth to eighth century) obtained by Clark (1980) on same slope</td>
</tr>
<tr>
<td>Athens 1983b</td>
<td>HARC Site # 50-OA-G6-40; SIHP # -2030</td>
<td>Archaeological excavations at a beach reported marine midden, hearths, and pit features</td>
</tr>
<tr>
<td>Barrera 1984a</td>
<td>Kailua Rd Maunawili and Kūkanono</td>
<td>Archaeological survey for Interceptor Sewer, Wastewater Pumping Station and Force Main; reported general observations on archaeology in vicinity</td>
</tr>
<tr>
<td>Barrera 1984b</td>
<td>Kailua Mill</td>
<td>Archaeological reconnaissance survey consisting of visual inspection of surface and observation of subsurface cross-sections exposed in construction ditches; no significant cultural materials or historic properties observed</td>
</tr>
</tbody>
</table>

CIA for the Kawaihau–Hāmākua Master Plan, Kailua, Ke‘ahupako, O‘ahu
TMKs: [1] 4-2-001; 4-2-013, 4-2-016; 4-2-017; 4-2-033, 4-4-004 various parcels

83

Reference | Location | Description and Results |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kawachi 1988</td>
<td>Kāpaa Ridge</td>
<td>Field check of Ulumawao area; field check with no recommendations; identified a terrace (SIHP # - 3739) which may be Holomakani Heiau (Site 360)</td>
</tr>
<tr>
<td>Watanabe 1988</td>
<td>Kawaihau Marsh Levee</td>
<td>Archaeological monitoring of dredging and vegetation removal in marsh operations; noted modest features</td>
</tr>
<tr>
<td>Pantaleo and Cleghorn 1989</td>
<td>Proposed Windward Park</td>
<td>Reconnaissance survey; five archaeological sites recorded; recommendation of further work</td>
</tr>
<tr>
<td>Athens 1990; Athens and Ward 1991</td>
<td>Kawaihau Marsh</td>
<td>Paleoenvironmental and archaeological investigations, flood control project; survey revealed no cultural resources within marsh but suggested archaeological monitoring in future</td>
</tr>
<tr>
<td>Hammatt et al. 1990</td>
<td>Kawaihau Marsh</td>
<td>Geoscientific archaeological study; sediment cores from ten locations in marsh analyzed; at approx. AD 1400 dramatic changes in pollen record; changes may well be result of increases in Hawaiian subsistence activities</td>
</tr>
<tr>
<td>Quebral et al. 1992</td>
<td>Kailua Gateway Development, TMKs: [1] 4-2-001:001, 055, 4-2-003:017, 029, 4-2-038:024</td>
<td>Archaeological survey; identified four sites: SIHP # - 4428 (possible habitation site), SIHP # - 4429 (lithic scatter), SIHP # - 4430 (wedge shaped lithic scatter), SIHP # - 4431 (two stone structures)</td>
</tr>
<tr>
<td>Athens and Ward 1993</td>
<td>Kūkanono Marsh, TMKs: [1] 4-2-001, 003</td>
<td>Paleoenvironmental investigation (report unavailable)</td>
</tr>
<tr>
<td>Erkels 1993</td>
<td>Kūkanono Slope, Kawaihau Marsh</td>
<td>Archaeological investigation; M.A. thesis documented surface survey and excavation of 29 test pits; results gave clearer picture of activity in area</td>
</tr>
<tr>
<td>Hammatt et al. 1993</td>
<td>Pu‘u o‘Ehu Ridge, TMKs: [1] 4-2-03:009, 016, and 017 por.</td>
<td>Archaeological inventory survey for proposed location of Kailua 272 Reservoir; no historic properties found; area utilized for cattle and horse grazing; oral history research revealed traditional Hawaiian significance of Pu‘u o‘Ehu peak</td>
</tr>
<tr>
<td>Kikiloi et al. 2000</td>
<td>Kawaihau Marsh, TMK: [1] 4-2-017:004 por.</td>
<td>Archaeological inventory survey for Kawaihau Marsh Park improvements area; no significant finds</td>
</tr>
<tr>
<td>McDermott et al. 2000</td>
<td>Kawaihau Marsh</td>
<td>Archaeological assessment and background literature search for proposed circle Kawaihau Trail project; highlighted possibilities for interpretive trail through marsh area</td>
</tr>
<tr>
<td>Hammatt and Shideler 2001</td>
<td>Kawaihau Marsh</td>
<td>Cultural impact evaluation in support of Kawaihau Marsh Pathway Plan</td>
</tr>
<tr>
<td>Reference</td>
<td>Location</td>
<td>Description and Results</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mann et al. 2001</td>
<td>Kawainui Gateway Park</td>
<td>Archaeological assessment; no surface findings; possibility of subsurface findings including burials; archaeological inventory survey recommended</td>
</tr>
<tr>
<td>Ah Sam and Cleghorn 2003</td>
<td>St. John’s Church</td>
<td>Archaeological assessment concluded no historic properties had been recorded in project area previously, and no evidence suggesting possibility of such properties found; no further work recommended</td>
</tr>
<tr>
<td>Mann and Hammatt 2003</td>
<td>Kawainui Marsh</td>
<td>Field inspection; project area lies within SIHP # -2029, Kawainui Marsh archaeological cultural-historical complex; no observable surface deposits</td>
</tr>
<tr>
<td>Collins and Nees 2007</td>
<td>Pu’u o ‘Ehu, TMK: [1] 4-2-003:014 and 017</td>
<td>Archaeological inventory survey; no findings; no further work recommended</td>
</tr>
<tr>
<td>Fong et al. 2007</td>
<td>Kaineele St, Hāmākua Dr and Keolu Dr; TMKs: [1] 4-2-001, 077, 081, 082, 087, 089, 090, 093, 094 and 095</td>
<td>Archaeological monitoring; no significant subsurface cultural deposits or human remains documented; stratigraphy along Hāmākua Dr from Kailua Rd to Aoloa St consisted of varying fill layers, terrestrial loamy sand, followed by natural marine sand at approximately 120 cmbs</td>
</tr>
<tr>
<td>Barnes and Hammatt 2008</td>
<td>Kailua Ahupua’a, TMKs: [1] 4-02-013:038 por. and 039 por.</td>
<td>Archaeological monitoring; no historic properties identified as project area’s subsurface deposits appeared to have been previously disturbed by utility installation</td>
</tr>
<tr>
<td>Hammatt 2013</td>
<td>Kawainui Marsh Wetland Restoration and Habitat Enhancement, TMKs: [1] 4-2-013:005 por., 022 por., and 043 por.</td>
<td>Archaeological reconnaissance survey with limited subsurface testing; identified additional components of SIHP # -2029, Kawainui Marsh archaeological cultural-historical complex, including a grinding stone and early historic habitation remnants (preservation recommended); and SIHP # -7199, historic road remnant (no further work); sediment core analysis documented native plants in marshy deposits dating to AD 420-580, overlain by modern marshy deposits dominated by Saccarum pollen from sugarcane fields in area</td>
</tr>
<tr>
<td>Zapor and Shideler 2016</td>
<td>Kawainui Marsh, TMK: [1] 4-2-016:015</td>
<td>Letter report on archaeological field inspection for DLNR/DOFAW kau brush clearing project; one previously identified historic property (SIHP # -4042, Waimānalo Irrigation System) and nine potential new historic properties designated as CSH 1–9</td>
</tr>
</tbody>
</table>
Table 3. Kawaihau and Hänākua Marsh archaeological sites—correlation of site numbers and descriptions

<table>
<thead>
<tr>
<th>SHIP # (50-80-11-) or Temp #</th>
<th>Bishop Museum 50-06-G6-</th>
<th>Clark 1980</th>
<th>Cordy 1977/1978</th>
<th>Ewart and Tuggle 1977</th>
<th>Site Description</th>
<th>Site Name / TMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Site 14. Sterling and Summers (1978:229) identified Site 14 as an “adz quarry” on slopes north of Pahukini Heiau, investigated by Kenneth Emory and students in 1951; site now destroyed</td>
<td>Adz Quarry</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Site 15. Sterling and Summers (1978:231) identified Site 15 as a tree reported to have power to attract fish, adjacent to Mackay Radio Tower</td>
<td>Makalei Tree, TMK: [1] 4-2-016:002</td>
</tr>
<tr>
<td>359</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>McAllister identified Pahukini Heiau as Site 359; heiau located in Kapa'a Quarry, and not within current project area, listed in National Register and State Inventory of Historic Properties as SIHP # 50-80-11-359; this heiau also called Mo’okini, literally “many mo’o or many lineages”; Pahukini means “many drums” (Pukui et al. 1974:158, 174); Thrum also lists an alternate name of Makini; structure said to have been built by high chief ‘Olopana in the twelfth century and is a luakini or state-class of heiau; 1987 restoration project refurbished the site</td>
<td>Pahukini Heiau; TMK: [1] 4-2-015:001</td>
</tr>
</tbody>
</table>

CIA for the Kawaihau-Hänākua Master Plan, Kahuku, Kooloapokō, O’ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>371</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>Heiau documented by McAllister as Site 371; large 43 m (140 ft) x 9.1 m (30 ft) high terrace dominates Kawainui Marsh; Ulupō means “night inspiration”; said to have been built in a night by Menehune; spring beneath structure used for washing pigs prepared in temple oven (Akmni Ahau in Sterling and Summers 1978:234); Ulupō said to have been built by high chief ‘Olopana in twelfth century and is a luakini or state-class of heiau, important enough to accommodate preparations of war and other highly important state matters; McAllister (1933:14, 134) also notes modern graves are within heiau</td>
</tr>
<tr>
<td>2022</td>
<td>32</td>
<td>Cluster 1</td>
<td>Site 1</td>
<td>Site 1</td>
<td>Series of terraces from marsh edge upslope, a long retaining wall upslope, ruins of a historic house, a spring, excavation yielded charcoal dates in range of AD 353-655 and AD 529-965; artifact found on surface; Erkelenx (1993:26) conducted extensive vegetation clearing, subsurface testing and remapped site</td>
</tr>
<tr>
<td>2023</td>
<td>33</td>
<td>Clusters 10, 11</td>
<td>--</td>
<td>--</td>
<td>Cluster 10: 12 features including retaining walls, L-shaped alignments of rocks, terraces, a roadbed, a level terrace or platform, surface scatter; Cluster 11: two retaining walls; site includes Nā Pōhaku o Hauwahine</td>
</tr>
<tr>
<td>2024</td>
<td>34</td>
<td>Cluster 7</td>
<td>Site 4</td>
<td>Site 4</td>
<td>Mounds, wall remnants, a terrace</td>
</tr>
</tbody>
</table>

CIA for the Kawainui-He‘eia Master Plan, Kailua, Koolau, O‘ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>360</td>
<td>5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>McAllister (1933) designated Holomakaniki Heiau as Site 369; heiau is on Ulumawao Ridge, northeast of quarry and not within current project area; name means “wind running or racing”; believed to have been built by high chief ‘Olopana in twelfth century; Holomakaniki thought to have been destroyed during early 1900s agriculture clearing (Sterling and Summers 1978:229), however, in 1987, heiau found on slopes below Pahukini, same location where McAllister found Holomakaniki</td>
</tr>
<tr>
<td>370</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>McAllister (1933:186) designated “Kawainui pond” as Site 370; “once a large inland fishpond”; site known for Makalei tree that attracted fish, sediments that “resembled starch” and were edible, and associated with goddess Hauwahine; anyone from Kawainui Marsh, in particular area known as Wai‘auia, “had royal blood in his veins and . . . had precedence over ali‘i from other sections” (McAllister 1933:186)</td>
</tr>
</tbody>
</table>

CIA for the Kawainui-He‘eia Master Plan, Kailua, Koolau, O‘ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
<table>
<thead>
<tr>
<th>SHP # (50-80-11-) or Temp #</th>
<th>Bishop Museum 50-Oa-G6-Clark 1980</th>
<th>Cordy 1977/1978</th>
<th>Ewart and Tuggle 1977</th>
<th>Site Description</th>
<th>Site Name / TMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>2031</td>
<td>41</td>
<td></td>
<td></td>
<td>Athens (1983a) conducted archaeological excavations on Pōhākāpu/Kūkānono slope prior to residential development; no pre-Contact agricultural features identified; features dated to post-1900s or post-1950s; traditional Hawaiian occupation and tool manufacturing evident as dense distribution of basalt flakes and very large grinding stone found.</td>
<td>Kawaiinui Slope site; TMK: [1] 4-2-013:038</td>
</tr>
<tr>
<td>2034</td>
<td>86</td>
<td></td>
<td></td>
<td>Historic walls</td>
<td>TMK: [1] 4-2-014:002</td>
</tr>
<tr>
<td>2035</td>
<td>87</td>
<td></td>
<td></td>
<td>Historic wall</td>
<td>TMK: [1] 4-2-014:002</td>
</tr>
<tr>
<td>2036</td>
<td>88</td>
<td></td>
<td></td>
<td>Historic linear rock mound / wall remnant</td>
<td>TMK: [1] 4-2-014:002</td>
</tr>
<tr>
<td>2037</td>
<td>89</td>
<td></td>
<td></td>
<td>Pre-Contact agricultural terrace complex</td>
<td>TMK: [1] 4-2-014:002</td>
</tr>
<tr>
<td>3739</td>
<td>85</td>
<td></td>
<td></td>
<td>Pre-Contact terraces (may be Holomakani Heiau Site 360)</td>
<td>TMK: [1] 4-2-014:002</td>
</tr>
<tr>
<td>3957</td>
<td>32 Cluster 2 Site 2 Site 2</td>
<td></td>
<td></td>
<td>Nine dryland agricultural terraces, 20 mounds, small C-shaped structures, walls, a walled depression, remains of a historic structure; surface artifact recovered; also referred to as &quot;Ko'ohi Site&quot; since it is within LCA 7147 and awarded to Kahele, ko'ohi for Kawaiinui</td>
<td>Kawaiinui Agricultural Complex; TMK: [1] 4-2-013:038</td>
</tr>
</tbody>
</table>

CIA for the Kawaiinui-Hikina'akai Master Plan, Kailua, Ko'olau, O'ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

<table>
<thead>
<tr>
<th>SHP # (50-80-11-) or Temp #</th>
<th>Bishop Museum 50-Oa-G6-Clark 1980</th>
<th>Cordy 1977/1978</th>
<th>Ewart and Tuggle 1977</th>
<th>Site Description</th>
<th>Site Name / TMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>2026</td>
<td>36 Cluster 12 Site 12</td>
<td></td>
<td></td>
<td>Agricultural terrace extends along marsh edge: 67 m long NE/SW; 14 m wide SE/NW; single-course high walls; rusting crane</td>
<td>Kapalaoa agricultural terrace; TMK: [1] 4-2-013:010</td>
</tr>
<tr>
<td>2027</td>
<td>37 Cluster 15 Site 15</td>
<td></td>
<td></td>
<td>Stone wall rectangular enclosure, linear pile of rocks, terrace, surface artifacts</td>
<td>Kūkānono habitation site; TMK: [1] 4-2-013:038</td>
</tr>
<tr>
<td>2028</td>
<td>38 Cluster 14 Site 14</td>
<td></td>
<td></td>
<td>Two walls that meet at a right angle</td>
<td>'Ulukahiki Walls; TMK: [1] 4-2-006:004 or 007</td>
</tr>
<tr>
<td>2029</td>
<td>39 Cluster 13 Site 7</td>
<td></td>
<td></td>
<td>Complex of agricultural fields consisting of basalt boulder alignments documented (Cordy 1978, Allen-Wheeler 1981); additional subsurface testing identified lithic debitage, volcanic glass flakes, and a basalt adze at 70-97 cm below surface just above water table; mound of river cobbles may represent a local adaptation to water control utilizing immediately available resources (mounding river cobbles) (Mann and Hammatt 2003); grading stone and habitation remnants identified (Hammatt 2013)</td>
<td>Kawaiinui Marsh Archaeological-Cultural-Historical Complex; TMKs: [1] 4-2-013:014, 016:006</td>
</tr>
<tr>
<td>2030</td>
<td>40</td>
<td></td>
<td></td>
<td>Subsurface cultural layer consisting primarily of marine midden with pit features and hearths; majority of site contained modern disturbance</td>
<td>HARC site; TMK: [1] 4-3-057:065</td>
</tr>
<tr>
<td>SHP # (50-80-11-) or Temp #</td>
<td>Bishop Museum 50-Oa-G6-Clark 1980</td>
<td>Cordy 1977/1978</td>
<td>Ewart and Tuggle 1977</td>
<td>Site Description</td>
<td>Site Name / TMK</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------</td>
<td>-----------------</td>
<td>-----------------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>3964</td>
<td>36</td>
<td>–</td>
<td>–</td>
<td>Site 8, 9</td>
<td>Recently abandoned houses Kaeleuli House site; TMK: [1] 4-2-015:006</td>
</tr>
<tr>
<td>3965</td>
<td>36</td>
<td>–</td>
<td>–</td>
<td>Site 7</td>
<td>Low stone terrace perpendicular to a second stone wall; abut at SE corner Pohakea Terrace; TMK: [1] 4-2-013:010</td>
</tr>
<tr>
<td>4428</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Two habitation platforms TMK: [1] 4-2-003:030</td>
<td></td>
</tr>
<tr>
<td>4429</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Lithic scatter TMK: [1] 4-2-003:017</td>
<td></td>
</tr>
<tr>
<td>4430</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Lithic scatter TMK: [1] 4-2-003:017</td>
<td></td>
</tr>
<tr>
<td>4431</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Two enclosures—unknown function TMK: [1] 4-2-003:017</td>
<td></td>
</tr>
<tr>
<td>4042</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1923 pump house foundation (constructed with mortared basalt boulders) and associated canal that extends into Kawaiinui Marsh; nominated to National Register Waimānalo Irrigation System; TMK: [1] 4-2-013</td>
<td></td>
</tr>
<tr>
<td>7199</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>A historic (prior to 1928), unpaved, in-use section of roadway that extends roughly parallel to western edge of Kawaiinui Marsh (Hammatt 2013) Road remnant; TMK: [1] 4-2-013:005</td>
<td></td>
</tr>
<tr>
<td>CSH 1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Remnant portion of a basalt stone walkway, likely associated with early twentieth century Japanese habitation TMK: [1] 4-2-016:015</td>
<td></td>
</tr>
<tr>
<td>CSH 2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Bathroom remnant, likely associated with early twentieth century Japanese habitation TMK: [1] 4-2-016:015</td>
<td></td>
</tr>
</tbody>
</table>

CIA for the Kawainui-Hāmākua Master Plan, Kailua, Ko‘olau, O‘ahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

<table>
<thead>
<tr>
<th>SHP # (50-80-11-) or Temp #</th>
<th>Bishop Museum 50-Oa-G6-Clark 1980</th>
<th>Cordy 1977/1978</th>
<th>Ewart and Tuggle 1977</th>
<th>Site Description</th>
<th>Site Name / TMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>3958</td>
<td>32</td>
<td>Cluster 3</td>
<td>Site 3</td>
<td>Terrace, wall more than 38 m long along marsh, extending inland into hau approximately 20 m Kukanono Terrace and Habitation Complex; TMK: [1] 4-2-013:031 or 038</td>
<td></td>
</tr>
<tr>
<td>3959</td>
<td>32</td>
<td>Cluster 4</td>
<td>Site 4</td>
<td>Twenty-six mounds, 19 dryland agricultural terraces, linear walls, one 53 m long, a historic house foundation, a prehistoric basalt mirror found on surface and other pre-Contact basalt artifacts, large boulder grindstone; historic artifacts, date ranges from AD 529-965 and AD 353-655 (Clark 1980:72) Mionio Agricultural and Habitation Complex; TMK: [1] 4-2-013:038</td>
<td></td>
</tr>
<tr>
<td>3960</td>
<td>32</td>
<td>Cluster 5</td>
<td>Site 5</td>
<td>A large lo‘i, approx. 40 x 30 m.; a stone and earthen platform, a stone-lined channel 10 m long, stone mounds Pohakapu Agricultural Cluster; TMK: [1] 4-2-013:038</td>
<td></td>
</tr>
<tr>
<td>3961</td>
<td>32</td>
<td>Cluster 6</td>
<td>Site 6</td>
<td>Stone mounds, a stone-edged canal, terraces, retaining walls Kukanono Cluster; TMK: [1] 4-2-013:038</td>
<td></td>
</tr>
<tr>
<td>3962</td>
<td>34</td>
<td>Cluster 8</td>
<td>Site 5</td>
<td>Three historic buildings Makalii Historic Site; TMK: [1] 4-2-013:010</td>
<td></td>
</tr>
<tr>
<td>3963</td>
<td>34</td>
<td>Cluster 9</td>
<td>Site 6</td>
<td>Earthen mounds Makalii Mounds; TMK: [1] 4-2-013:010</td>
<td></td>
</tr>
</tbody>
</table>

CIA for the Kawainui-Hāmākua Master Plan, Kailua, Ko‘olau, O‘ahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
### 5.1 Archaeological Studies Conducted in the Vicinity of Kawainui Marsh

**5.1.1 Bordner (1977)**
Archaeological Research Center Hawaii, Inc. conducted an archaeological reconnaissance survey in association with the planned expansion of the existing landfill site in Kapa‘a. Bordner (1977) observed that the area had seen little recent modification or alteration, but no historic properties were identified within the study area; therefore, it was concluded that the area was not extensively utilized during the pre-Contact period.

**5.1.2 Ewart and Tuggle (1977)**
An archaeological reconnaissance survey and historic literature review of Kawainui Marsh was undertaken in 1977 by Ewart and Tuggle (1977). Their somewhat U-shaped study area examined the archaeological and historical remains in the area. Ewart and Tuggle (1977) observed the area had seen little recent modification or alteration, but no historic properties were identified within the study area; therefore, it was concluded that the area was not extensively utilized during the pre-Contact period.

### Site Table

<table>
<thead>
<tr>
<th>SHP # (50-80-11-)</th>
<th>Bishop Museum 50-0a-G6-</th>
<th>Cordy 1977/1978</th>
<th>Ewart and Tuggle 1977</th>
<th>Site Description</th>
<th>Site Name / TMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSH 3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Concrete slab of unknown function, likely associated with early twentieth century Japanese habitation</td>
<td>TMK: [1] 4-2-016:015</td>
</tr>
<tr>
<td>CSH 4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Holding tank of unknown function</td>
<td>TMK: [1] 4-2-016:015</td>
</tr>
<tr>
<td>CSH 5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Concrete structure of unknown function; possibly a foundation</td>
<td>TMK: [1] 4-2-016:015</td>
</tr>
<tr>
<td>CSH 6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Broken basalt fragment with a petroglyph on one face, observed in a modern stone alignment</td>
<td>TMK: [1] 4-2-016:015</td>
</tr>
<tr>
<td>CSH 7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Large basalt grinding stone</td>
<td>TMK: [1] 4-2-016:015</td>
</tr>
<tr>
<td>CSH 8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Large basalt grinding stone</td>
<td>TMK: [1] 4-2-016:015</td>
</tr>
<tr>
<td>CSH 9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Stairway composed of placed asphalt pieces with two basalt stone alignments; likely associated with nineteenth century terraced gardens</td>
<td>TMK: [1] 4-2-016:015</td>
</tr>
</tbody>
</table>
Table 4. Brief summary of nine sites reported by Ewart and Tuggle (1977:18–25)

<table>
<thead>
<tr>
<th>Site #</th>
<th>General Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SE marsh, NW end of Uluoa St</td>
<td>Terraces and mounds (one associated with a part of old well)</td>
</tr>
<tr>
<td>2</td>
<td>NE marsh, NW end of Uluoa St</td>
<td>Terraces and mounds (one associated with a part of old well)</td>
</tr>
<tr>
<td>3</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
<tr>
<td>4</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
<tr>
<td>5</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
<tr>
<td>6</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
<tr>
<td>7</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
<tr>
<td>8</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
<tr>
<td>9</td>
<td>NW corner of marsh near Interstate H-3</td>
<td>Recently abandoned house site</td>
</tr>
</tbody>
</table>
Table 5: Brief summary of sites reported by Cordy (1977a:34–42)

<table>
<thead>
<tr>
<th>Site #</th>
<th>General Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kailua Rd and marsh</td>
<td>Cluster of terraces, U-shaped enclosures, and a historic house; also includes a cement foundation (Historic House #4)</td>
</tr>
<tr>
<td>2</td>
<td>Off the marsh in the Kipahulu area</td>
<td>Faint rectangular markings on aerial photographs suggestive of former agricultural fields in the marsh</td>
</tr>
<tr>
<td>3</td>
<td>Kailua Rd and marsh</td>
<td>Terrace (7 m long, 0.6 m high) and canal (12 m long, 0.6 m deep)</td>
</tr>
<tr>
<td>4</td>
<td>Local Stream and marsh</td>
<td>A single terrace and stone wall (Site 7; SIHP # -3965) was on the west side of the marsh, and two abandoned modern house sites (Sites 8 and 9; SIHP # -3964) were near the H-3. Although only two of these sites are visible to ground surveyors, they were all included in the report.</td>
</tr>
<tr>
<td>5</td>
<td>Mele St and marsh</td>
<td>Cluster of ten mounds, nine terraces, one wall, and a concrete foundation of a historic house (Historic House #4)</td>
</tr>
<tr>
<td>6</td>
<td>On the marsh in the Kipahulu area</td>
<td>Two walls (6 m long, 1 m wide, 1.0–1.5 m high; 5 m long, 0.5 m wide, 0.5 m high)</td>
</tr>
<tr>
<td>7</td>
<td>On the marsh in the Kipahulu area</td>
<td>Two walls (6 m long, 1 m wide, 1.0–1.5 m high; 5 m long, 0.5 m wide, 0.5 m high)</td>
</tr>
</tbody>
</table>

Cordy (1977a) completed a cultural resources survey involving historic background research and a reconnaissance survey for the proposed City and County sewer line in Kawainui Marsh. The Cordy (1977a) archaeological study area extended along virtually the entire southeast side of the marsh. A brief summary of the sites reported by Cordy (1977a:34–42) is included in this report. The author's reconnaissance survey consisted of six site visits, each approximately 6 km apart. Additional research was recommended for the sites identified, and for the most part, historic sites. Their status is recommended to be considered as MARGINAL (Ewart and Tuggle 1977:24).
Figure 32. Cordy’s (1977a:35) site locations

Figure 33. Cordy’s (1977a:36) Site 1 (SIHP # -2022)
Figure 34. Cordy’s (1977a:38) Site 2 (SIHP # -3957)

Figure 35. Cordy’s (1977a:38) Site 4 (SIHP # -3959)
A second phase of archaeological investigation in relation to the proposed City and County sewer line was undertaken less than a year later by Cordy (1978). The second phase was initiated after the first study concluded that intensive cultural survey and testing should be conducted to characterize and describe the sites, and to make an accurate determination of probable significance. In the initial 1977 study, many aerial photographs were reviewed. Several of the aerial photographs showed faint parallel lines extending into the marsh. Review of a series of aerial photographs (ca. 1940) suggested Kawainui Marsh in the immediate vicinity of Maunawili Stream was an area of intensive agricultural activity. As a result of the preliminary aerial photograph review, Cordy excavated three test units (Trenches 1, 2, 4) within his designated Site 7 and one test unit (Trench 3) within his designated Site 5. All four test trenches were excavated across two stone walls that were 45 and 25 cm below surface. Cordy concluded the stone walls were associated with taro cultivation. A basaltic glass fragment was found in Trench 4. Test Trench 1 and 2 were excavated across two stone walls that were 45 and 25 cm below surface. Cordy concluded the stone walls were associated with taro cultivation. Test Trench 3 was located on the south slope. No stone walls were identified, although the presence of buried cultural deposits are still present and may be below the existing ground surface of the marsh.

Cordy (1978:5) defined "Site 7" (SIHP # 2029) as "part of a large walled agricultural complex in the marsh at the mouth of Maunawili Valley" and provided a map showing his understanding at the time of the extent of "Site 7" (see Figure 36 through Figure 38). In casual discourse amongst those concerned with the cultural resources of Kawainui, "Site 7" came to refer to much larger ill-defined areas of the marsh in which agricultural field walls and agricultural or cultural deposits were thought to possibly be present.

Morgenstein (1978) described the geological features present within the four trenches that he excavated with Cordy (1978). Morgenstein collected soil samples from each trench to conduct pollen and spore studies. His laboratory analysis indicated Trenches 1 and 2 contained taro pollen. Morgenstein also determined the walls within the two trenches were constructed at the same time. Trench 3 was not analyzed, and Trench 4 was not excavated.

5.1.5 Watanabe 1988

In 1988, Farley Watanabe, U.S. Army Engineer Division, monitored dredging and vegetation removal during excavations of the Kawainui Marsh levee (Watanabe 1988). Two features were identified during monitoring of the southern portion of the levee. T-1 was a possible agricultural field wall or fishpond wall on the mauka side of the levee. The feature extended approximately 1 m by 0.5 m at the base of the levee, extending beneath it. T-2 consisted of waterworn basalt...
Figure 37. 1949 Kawainui Marsh aerial photograph showing the boundary of Cordy (1978).

Figure 38. Portion of the 1998 Mokapu Point USGS topographic quadrangle, showing the boundary of Cordy (1978). Site 7 (SIHP # 2029).
Jeffrey T. Clark, working with the Bishop Museum for the Trustees of Castle Estate, prepared a Phase I archaeological inventory survey of Castle Estate Lands around the Kawainui Marsh. His work presents a general historical background, a summary of previous research, and the results of an archaeological survey that focused on the southern portion of the marsh.

Clark reported his survey results in terms of four geographic segments, designated Segments I through IV. He presented his findings by "archaeological loci" or "cluster" and by Bernice Pauahi Bishop Museum (BPBM) site number, which he correlated with the finds reported in prior studies (see Table 3) (Figure 39 through Figure 45).

Of Clark’s 15 identified archaeological loci, nine (60%) are in his Segment I (the Kākanona Slope), three (20%) are along his Segment II (the Kapa’a Quarry Road slope), and three (20%) are in the south-central portion of the marsh. No archaeological sites were identified in Segment III, the southernmost portion of the study area.

Eleven of Clark’s clusters were previously identified during archaeological investigations. He noted the three clusters within Segment IV (Clusters 8, 9, 13) were outside his study area and not addressed in the report. However, Clark (1980a:27) reported that Cluster 9, Ewart and Tuggle’s (1977) Site 6, were “natural features” based on the lack of “cultural activity” in the vicinity.

Three archaeological loci were identified on the Kapa’a Quarry Road slope (Clusters 10, 11, and 12). Clusters 10 and 11 conform to BPBM Site 50-Oa-G6-33; Cluster 12 conforms to BPBM Site 50-Oa-G6-36.

The Clark (1980) description of BPBM Site 50-Oa-G6-36, also known to him as Cluster 12, reads as follows:

Site 50-Oa-G6-36

This site is located in Segment II along the marsh edge at a point some 500 meters north of the intersection of Kalaniana‘ole Highway and Quarry Road. It consists of a single cluster, [Clark Cluster designation #] 12, which has a single feature, a large terrace. The terrace walls extend for 65 meters along the marsh edge in a northeast-southwest direction and for 14 meters southeast-northwest. The walls appear to be a single course high and are marked by a somewhat sporadic occurrence of rocks. The terrace itself constitutes a relatively flat region ranging from .5 to 1.5 meters above the surrounding marsh. An old, rusting, dillapidated crane, some 80 m north of the southerly wall, is the most prominent feature of the area. [Clark includes a photo of the vicinity.]

No test excavation was conducted at this site and the only artifact recovered from the surface was the base from a ceramic bowl [Clark includes a photo of the artifact]. The site appears to be an agricultural terrace. [Clark 1980:49–51]
Figure 40. Clark's (1980:44) Site 50-Oa-G6-33; SIHP # -2023, Nā Pōhaku o Hauwahine

CIA for the Kawainui-Himikau Master Plan, Kailua, Koʻolaupoko, Oʻahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

Figure 41. Clark's (1980: Sheet 1) SIHP # -2022, historic residence and piggery, labeled as Site 50-Oa-G6-32, Feature Cluster 1; and SIHP # -3957, labeled as Site 50-Oa-G6-32, Feature Cluster 3
Figure 42. Clark's (1980: Sheet 2) SIHP # -3957, labeled as Site 50-Oa-G6-32, Feature Cluster 2; and SIHP # -3961, labeled as Site 50-Oa-G6-32, Feature Cluster 6

Figure 43. Clark's (1980: Sheet 3) SIHP # -3959, Miomio Agricultural and Habitation Complex, labeled as Site 50-Oa-G6-32, Feature Cluster 4
**Previous Archaeological Research**

CIA for the Kawainui-Makakai Master Plan, Kailua, Ke'ahamoku, O'ahu

Figure 44. Clark's (1980: Sheet 4) SIHP # -2024, labeled as Sites 50-Oa-G6-32 and 34, Feature Clusters 5 and 7

Figure 45. Clark's (1980:52) SIHP # -2027, Kīkanamono habitation site, labeled as Site 50-Oa-G6-37, Cluster 15
In the early twentieth century, a large number of roads and houses were built on the site, immediately adjacent to the marsh.

Based on his previous findings, Clark (1980b) recommended archaeological monitoring for all subsurface activities within the marsh. However, in the early twentieth century, the area was subject to archaeological investigation. Allen-Wheeler's (1981) site correlation table shows that BPBM Site # 50-Oa-G6-36, which she had located approximately 550 m from the marsh, is associated with the same site as Site 7.

Earl Neller (1982) conducted archaeological investigations on the Kawainui Slope, recovering an abundance of traditional Hawaiian stone artifacts (mostly basalt waste flakes and post-Contact artifacts). He found that the pre-Contact agricultural system of Kailua was characterized by a distinctive artifact type associated with the margins of Kawainui. Ewart and Tuggle's (1977) "Site 7" and Clark's "Cluster 12" are one and the same—but Clark did not locate their sites correctly. It seems probable that these two sites relate to road and house construction in the early twentieth century.

Kraft (1980c) conducted a geoarchaeological study of the Kawainui Marsh area. Kelly and Nakamura (1981) note the lowland area adjacent to Kawainui Pond contained large agricultural features within the margins of the marsh. One of these features, a small stone alignment, was identified as a possible remnant of a prehistoric irrigation system.

Kraft (1980a, b, c) conducted a geoarchaeological study of the Kawainui Marsh area. Kelly and Nakamura (1981) note the lowland area adjacent to Kawainui Pond contained large agricultural features within the margins of the marsh. One of these features, a small stone alignment, was identified as a possible remnant of a prehistoric irrigation system.
5.1.11 Athens (1983a)

Athens (1983a) documented archaeological excavations on the Pohukaima-Kālama Marsh of Kawainui Marsh within Site 50-Oa-G6-32 (SIHP # -2022) and 50-Oa-G6-41 (SIHP # -2030) located on the southeast end of Kawainui Marsh. Excavation revealed that all the surface features were built in the early twentieth century by Chinese during the course of intensive gardening after the decline of rice farming in the marsh—wetland features were identified (Figure 46 through Figure 48). Excavation revealed that all the surface features were built in the early twentieth century by Chinese during the course of intensive gardening after the decline of rice farming in the marsh—wetland features were identified (Figure 46 through Figure 48). Excavation revealed that all the surface features were built in the early twentieth century by Chinese during the course of intensive gardening after the decline of rice farming in the marsh—wetland features were identified (Figure 46 through Figure 48). Excavation revealed that all the surface features were built in the early twentieth century by Chinese during the course of intensive gardening after the decline of rice farming in the marsh—wetland features were identified (Figure 46 through Figure 48). Excavation revealed that all the surface features were built in the early twentieth century by Chinese during the course of intensive gardening after the decline of rice farming in the marsh—wetland features were identified (Figure 46 through Figure 48). Excavation revealed that all the surface features were built in the early twentieth century by Chinese during the course of intensive gardening after the decline of rice farming in the marsh—wetland features were identified (Figure 46 through Figure 48).

In 1983, J. Stephen Athens (1983b) documented excavation units in Site 50-Oa-G6-40, the HARC site originally located and excavated by Allen-Wheeler (1981); it was later designated as SIHP # -2030. Site 50-Oa-G6-40 consisted of marine midden, artifacts, and subsurface features including hearths and pits. Radiocarbon dates indicated occupation of the site sometime in the mid-thirteenth to early fifteenth century. Midden analyses indicated a change through time in the exploitation pattern. Athens suggested the use of the Kailua accretion barrier for habitation may have begun about the same time as the occupation of the site. This study demonstrated the potential for significant archaeological deposits within the sandy deposits of the previously disturbed residential neighborhoods along the seaward margin of Kawainui Marsh.

5.1.12 Barrera (1984a)

Chinlingo, Inc. performed archaeological surveys for the Kahua Road interceptor sewer, Manawale waste water pumping station and force main, and Kālama waste water interceptor sewer. The literature review indicated the Manawale pumping station was located on an old Hawaiian site; the site was composed of middens, artifacts, and surface features extending over a wide area and indicated a change through time in the exploitation pattern. Athens suggested the use of the Kailua accretion barrier for habitation may have begun about the same time as the occupation of the site. This study demonstrated the potential for significant archaeological deposits along the seaward margin of Kawainui Marsh.
Figure 47. SIHP # -2022, labelled Site 50-Oa-G6-32, Features 113, 114, 150, 152, and 153 (Athens 1983a:14)

Figure 48. SIHP # -2022, labelled Site 50-Oa-G6-32, Features 123 and 140 (Athens 1983a:30)
5.1.14 Kawachi (1988)

Carol Kawachi of the SHPD performed a field check at Kapa'a Ridge based on a phone call from a party concerned that the planned Kapa'a Quarry would destroy an alleged heiau site. She observed a high rock wall, tumbled and covered with grass. The main feature was a large, level terrace measuring approximately 30 m by 15 m. The high rock wall/terracing had two corners, roughly obtuse. Closer inspection revealed three levels of wall terracing. Above the large, level area was another narrow, level area behind a large boulder terrace facing. Kawachi (1988) suggested this might be the Holomakani Heiau described by McAllister (1933, Site 360).

5.1.15 Pantaleo and Cleghorn (1989)

The Bishop Museum conducted a reconnaissance survey of the proposed Windward Park. Five historic properties, spanning both the pre- and post-Contact periods, were recorded. These included a traditional Hawaiian agricultural complex, a possible heiau or large habitation site, historic rock walls, and a linear rock mound (SIHP #s -2034 through -2037 and -3739). All five were deemed to be significant, and an intensive survey was recommended.

SIHP # -2034 consisted of two rock walls (Features 1 and 2). Feature 1 was 50 m long, 50-80 cm high, and constructed of stacked angular and sub-angular basalt boulders. It may have functioned as a boundary marker. Feature 2 was a core-filled rock wall, approximately 15 m long, 50 cm high, and constructed of angular and sub-angular basalt boulders.

SIHP # -2035 consisted of a rock wall (Feature 1) and a mound (Feature 2). Feature 1 was approximately 75 m long and 50-60 cm high, with a collapsed downslope end. Upslope, the wall measured 50 cm to 1 m high and was constructed of large angular and sub-angular basalt boulders with cobble fill. A barbed wire fence strung on wooden posts ran parallel to the wall. Feature 2 was north of Feature 1 and was an irregularly shaped rock mound constructed of piled angular and sub-angular basalt cobbles.

SIHP # -2036 was a linear mound of angular and sub-angular basalt cobbles, upslope of Kapa'a Quarry Road. This may be the remnants of a collapsed wall.

SIHP # -2037 was a complex consisting of five features. It was bounded by a dry streambed to the north, Kapa'a Quarry Road to the east, Kailua Drive-in to the south, and a steep ridge to the west. Feature 1 was a rock-faced terrace constructed of two courses of angular and sub-angular basalt boulders. It was perpendicular to the dry streambed and was probably a small, irrigated agricultural terrace at one time. Feature 2 was an alignment of angular and sub-angular basalt boulders. It is associated with Feature 1 and possibly functioned as a stream retention wall. Feature 3 was an oval-shaped rock mound, upslope from Feature 1 atop a raised soil mound. Feature 4 was a C-shaped rock alignment constructed of angular and sub-angular basalt boulders with cobble fill. This feature may have functioned as a temporary habitation site; however, a single shovel test yielded no cultural deposit. Feature 5 was an alignment constructed of angular and sub-angular basalt boulders with cobble fill. It was located in a noni (Indian Mulberry; Morinda citrifolia) patch perpendicular to the dry stream bed, but was not connected to it.

SIHP # -3739 consisted of two features: a large, rock-faced terrace (Feature 1) and an L-shaped terrace (Feature 2) (Figure 49). Feature 1 was situated on a moderate slope, on the edge of a deep-cut, dry streambed. The surface of the terrace was relatively level and filled with soil, although possible sections of pavement were observed as exposures of angular and sub-angular boulders.
basalt cobbles scattered on the surface. Feature 2 was located upslope, along a dirt road, and was constructed of angular and sub-angular cobbles. It may have functioned as a horticultural or habitation area.

5.1.16 Athens (1990) and Athens and Ward (1991)

International Archaeological Research Institute, Inc. (IARI) (Athens 1990) carried out an archaeological investigation for a flood control project at the north end of Kawainui Marsh. Thirty-seven core/auger units were excavated along the eastern margin of the marsh, in the vicinity of the drainage control levee. The purpose of the investigation was to evaluate the presence or absence of significant archaeological remains in the vicinity. The investigation revealed no archaeological deposits or architectural features. Some possible archaeological sites proved to consist only of levee fill and previously dredged sediment. The paleoenvironmental investigations of Athens and Ward (1991) were highly successful. These results, coupled with those of Hammatt et al. (1990), did much to broaden our understanding of pre-Contact, anthropogenic environmental change in the Hawaiian lowlands.

5.1.17 Hammatt et al. (1990)

Hammatt et al. (1990), like Athens and Ward (1991), conducted sediment coring in Kawainui Marsh with the goal of paleoenvironmental reconstruction. The Hammatt et al. (1990) sediment coring was conducted over a wide area at the north end of the marsh and was not associated with any particular site nomenclature. The U.S. Army Corps of Engineers proposed construction of open water channels in the marsh for flood control. There was concern for impacts to archaeological resources within or surrounding the marsh. The objective of the study was to 1) characterize depth, age, and nature of sediments to be impacted in relation to present marsh sediments and 2) reconstruct environmental history of the marsh to determine the nature and location of Native Hawaiian use including shoreline habitation, fishponds, and agricultural sites. Ten sediment cores were taken from Kawainui Marsh and analyzed for pollen, organic clay mineralogy, stratigraphy, and heavy metals.

The pollen results from this study were notable, particularly the finding that *loulu* (*Pritchardia* sp.) palm pollen was by far the most abundant pollen until ca. AD 1410-1650, when the Pritchardia presence collapsed and the abundance of grasses (*Poaceae*) and sedges (*Cyperaceae*) exploded. The implications for our understanding of Polynesian settlement and the mechanisms of environmental change were explored, including the possibility that a *loulu* (*Pritchardia* sp.) palm forest that once surrounded Kawainui Loko was eradicated by Polynesian settlers and introduced fauna (Hammatt et al. 1990:54–56).

A preliminary identification of certain macro-botanical finds as possibly *Lagenaria* sp. gourd (as was reported by Allen-Wheeler 1981:77) led to a recommendation for further consideration of fruits from marsh muck (Hammatt et al. 1990:56–57).

5.1.18 Erkelens (1993)

Conrad Erkelens completed a master’s thesis in Anthropology at the University of Hawai‘i at Mānoa on archaeological investigations of the Kūkanono slope, based on the work of a University of Hawai‘i 1991 archaeology field school (Figure 50 and Figure 51).
Erkelens' extensive vegetation clearing resulted in documenting 12 additional features that had not been previously identified. He reported, "There are densely vegetated portions of the site that still remain unexplored by our survey" and that "more features are present" (Erkelens 1993:29). Erkelens reported on the results from 29 test pits that included the recovery of midden remains, charcoal from intact hearths, and lithic artifacts from the lower slope areas (Erkelens 1993:78). Analysis of the stratigraphy and related archaeological features indicated the following:

... at Kukanono there is no evidence of colluvial or alluvial flows occurring that could have moved large volumes of sediment recently or in the past. ... While it is certain that Kawainui Marsh has been in-filled by deposition, evidence from Kukanono suggests Hawaiian agricultural practices had little impact on this long term natural process. The majority of the sediment deposited in Kawainui is more likely the result of runoff from Kahanai and Maunawili Streams over the millennia rather than the result of rapid deposition from Hawaiian induced erosion of the landscape. [Erkelens 1993:42–43]

Seven C14 dates (Figure 52) were also newly reported and compared with previously reported dates. Erkelens (1993:79) concluded that settlement at Kawainui "occurred by at least 1000 BP."

5.1.19 Kikiloi et al. (2000)

In 2000, CSH conducted an archaeological inventory survey for the Kawainui Marsh Park (Kikiloi et al. 2000), which is also called Kaha Park. The park is adjacent to the north-northwest margin of Kawainui Marsh at the mauka (west) end of Kaha Street. Proposed improvements included the construction of an 18,000 sq ft, 49-stall parking lot, restroom facilities, landscaping, walkways, and picnic facilities. No surface cultural materials were identified. Backhoe testing revealed modern fill sediments associated with the construction of the Kawainui drainage system and the Oneawa Drainage Canal. Sandy marsh type sediments were found at a depth of 1.25 to 1.5 m below the current land surface. Prior to fill events that overlie the marsh sediments, this portion of Kailua was a low-lying area prone to flooding that may have had limited use historically and was unlikely to have been utilized during the pre-Contact period. Based on the lack of cultural materials and historic properties, no further work was recommended.

5.1.20 McDermott et al. (2000)

In 2000, CSH conducted an archaeological assessment and background literature search to aid in planning for the Circle-Kawai Nui Trail as proposed in the 1994 Kawai Nui Marsh Master Plan (McDermott et al. 2000). The study overlaps with the Kawainui Marsh portion of the current study. Based on the study's findings, CSH recommended consultation with SHPD regarding the proposed trail construction and requirements to fulfill the historic preservation review process, including site significance evaluations and mitigation recommendations. The designation of specific locations for trail alignments was also recommended to facilitate decisions regarding effects to specific sites by trail construction and increased pedestrian traffic (McDermott et al. 2000:84).

A summary of each of the six segments and McDermott et al.'s (2000) findings within each is presented below. Segment 1 contained the most sites, while Segments 3, 4, and 6 lacked historic properties.

<table>
<thead>
<tr>
<th>Beta #</th>
<th>'14 date recovered</th>
<th>Investigator</th>
<th>C-14 Years calibrated</th>
<th>Calibrated Age* **</th>
</tr>
</thead>
<tbody>
<tr>
<td>1138</td>
<td>Kukarono (1960)B</td>
<td>Clark</td>
<td>1500 ± 145</td>
<td>1720-1163 B.P.</td>
</tr>
<tr>
<td>1139</td>
<td>Palahine (1960)B</td>
<td>Clark</td>
<td>1220 ± 90</td>
<td>1296-968 B.P.</td>
</tr>
<tr>
<td>1137</td>
<td>Kukarono (1960)</td>
<td>Clark</td>
<td>1210 ± 213</td>
<td>1540-690 B.P.</td>
</tr>
<tr>
<td>3298</td>
<td>Pohakupu (1983)</td>
<td>Athens</td>
<td>&lt;160</td>
<td></td>
</tr>
</tbody>
</table>

* Allow-Wheeler's dates from within the marsh wetlands are not considered here since they are not artifactual.

** Calibration from Stuiver and Reimer (1986) using the 10 year atmospheric record data not provided by Stuiver and Becker (1986). The time period cited reflects a statistical range having a 95.4% confidence interval at two sigma (20).

Figure 52. Radiocarbon dates from the slopes around Kawainui (Erkelens 1993:54)
Segment 1 extended from the southern end of the Kawai'inau Dike (or Levee Road) to the vicinity of Ulupō Heiau. Findings included the following:

The Waimālano Irrigation System, SIHP # 50-80-15-4042, consisting of a pump house, pipes, and a canal. The pump house structure was roughly rectangular and constructed predominantly of mortared basalt boulders. The remains of some large-diameter iron pipes were within the structure. The associated canal extended from the pump house out into the Kawai'inau Marsh; its base was in standing water and mud. The canal sidewalls were lined with dry masonry basalt boulders in the vicinity of the pump housing structure. Farther from the pump structure these sidewalls were earthen. Both the canal and the pump structure were overgrown with hau trunks.

Stone alignments, ceramic fragments, bottles, and what appeared to be a portion of a historic roadway or trail were observed west of the Waimālano Irrigation System. The remains were described as “indistinct” and most likely dated to the historic period (McDermott et al. 2000:58).

SIHP # 50-80-11-2027, Kīkanono Habitation Site, Feature 3, a single basalt boulder rectangular enclosure, was the only feature that had not been affected by bulldozing in the vicinity associated with construction of the Kawai Nui Vista Subdivision. The Pōhakupu Sewage Treatment Plant was also dismantled in the 1990s and replaced by the Kawai Nui Vista Subdivision.

Near Ulupō Heiau, SIHP # -2022, Kawai'inau Terraces, consisted of stacked basalt boulder retaining walls constructed prehistorically and utilized historically. The rectangular terraces were actively under cultivation for lo'i, or wetland taro pond fields. Foundations of a historic piggery, another SIHP # -2022 feature, were also observed.

The only SIHP # -3958 feature observed was a drainage channel that extended from a spring, both of which were dry at the time (McDermott et al. 2000:66).

McDermott et al. (2000:66) findings at SIHP # -3957 consisted of numerous stacked stone features including clearing mounds, enclosures, wall alignments, a historic house site, and irrigation features such as an ‘awa‘ai that dated to the pre-Contact and historic periods.

Segment 2 continued from Ulupō Heiau to the vicinity of Castle Medical Center. This segment passed along the Kīkanono slope through areas in use by the Knott ranching operation. Historic properties within Segment 2 included SIHP #s -2031, -3959, and -3960, consisting of traditional Hawaiian grinding stones for adze manufacture and historic and modest pre-Contact stacked stone features; SIHP # -3961, consisting of six most likely historic agricultural features; and SIHP # -2029, buried pre-Contact and historic agricultural field walls in the level surface of the marsh itself that were not visible (McDermott et al. 2000:70). SIHP # -2024, consisting of five small features, a terrace, and a mound, was not confirmed (McDermott et al. 2000:73). However, several large, irregular, linear alignments containing boulders over 1 m in diameter, the result of bulldozer clearing, were noted.

Segment 3 extended from Castle Medical Center to just before the intersection of Kalaniana'ole Highway and Kapa'a Quarry Road. This segment continued the Knott cattle ranch operation. No historic properties were identified during the field inspection.

Segment 4 was the intersection of Kalaniana'ole Highway and Kapa'a Quarry Road where one of the proposed sites of the Kawai'inau Marsh Visitor Center was located. No historic properties were identified during the field inspection.

Segment 5 extended approximately 1.5 miles along Kapa'a Quarry Road from Pali Highway to the vicinity of the Honolulu City and County’s Model Airplane Park. The area included several prominent rock outcrops including the Nā Pāhaku o Waiauholo Overlook. VO Ranch operations occupied approximately 10 acres just south of Na Pāhaku. An adze grinding stone was observed, but previously identified stone terraces, SIHP #s -2026 (Clark 1980) and -3965 (Ewart and Tuggle 1977), were not encountered during the field inspection. Car parts from a former auto-wrecking business were found.

Segment 6 continued from the vicinity of the Model Airplane Park to the north end of the existing Kawai'inau Dike (Levee) Road. No historic properties were identified during the field inspection.

5.1.21 Hammatt and Shideler (2001)

CSH conducted a cultural impact evaluation in association with the Kawai'inau Marsh pathway plan. The study provides a brief overview of archaeological, avian, fish, plant, and earth resources in the region. The reader is referred to McDermott et al. (2000, see above) for a detailed description of historic properties in the area. Hammatt and Shideler (2001) note the purpose of the pathway is, in part, to improve access to the marsh, and that access for traditional cultural practices should not be adversely impacted. In order to mitigate any potential adverse impact to cultural resources, they recommend that final plans for trail construction, as well as the construction itself, be closely coordinated with the Kawai'inau Heritage Fundation.

5.1.22 Mann et al. 2001

In 2001, CSH conducted an archaeological inventory survey (recorded as an archaeological assessment) for the Kawai'inau Gateway Park, a 20-acre area within two separate parcels (Mann et al. 2001). The Mōkāpu parcel was adjacent to Mōkāpu Boulevard to the north, the Kapa'a Quarry Road to the west, a residential house lot to the east, and the Kawai'inau Canal to the south. The Coconut Grove parcel was south of the Kawai'inau Neighborhood Park, east of the Oneawa keve, and west of the residential house lots in Coconut Grove.

The pedestrian inspection of the Mōkāpu parcel located no surface historic properties. A drainage ditch feature that extends into the Kawai'inau Canal was in the southwest portion of the Mōkāpu parcel. This drainage feature, which was associated with the adjacent Kapa'a Quarry Road, was cut down through the overlying fill sediments, to the water level in the Kawai'inau Canal, and exposed the original marsh sediments that predated the construction-related deposition. Based on the depth of these sediments below the current land surface, Mann et al. (2001:35) reported fill sediments, at least in that portion of the Mōkāpu parcel, were likely more than 2 m thick. Based on the topography of the land surface, the fill sediments in other areas of the parcel were possibly as much as twice as thick. The exposed marshy sediments consisted of low energy alluvial deposits, fine sands, and silty clays. Large fragments of coral heads were exposed, presumed to date to the Holocene period when Kawai'inau was a marine embayment.

The coral heads had undoubtedly been disturbed by the excavation of the drainage feature itself.
Cultural Surveys Hawai'i Job Code: KAILUA 48

Previous Archaeological Research

The immediate vicinity of the project area. Therefore, the primary goal of the Mann and Hammatt (2003) archaeological investigations was to confirm the presence and nature of the project area. The project area was ultimately determined to lie within SHIP 4-2-000, based on the National Register of Historic Places in 1979.

CSI archaeologists conducted a walk-through survey, historical research, and aerial photography during the project. No indications of archeological activity were observed on the surface, and no surface material was observed within SHIP 4-2-000. However, based on the information in the National Register of Historic Places and the archaeological investigations conducted by the Mann and Hammatt (2003) project, the area was recommended for further archaeological investigations.

The project was to create a series of pond systems as a habitat for endangered bird species. A 1977 archaeological reconnaissance study (Cordy 1977a, b) of Kawainui Marsh conducted by Dr. Ross Cordy had indicated a conceptual layout of the Kawainui Marsh Wetland Restoration and Habitat Enhancement project (Mann and Hammatt 2003). The project area was to be the site of the Kawainui Marsh Wetland Restoration and Habitat Enhancement project (Mann and Hammatt 2003).

The stratigraphy was consistent in both test units, and cultural deposits were observed in the vicinity of Kawainui Marsh. Cultural deposits were observed at the site of a previous archaeological investigation conducted by the Mann and Hammatt (2003) project. The cultural deposits were observed at a depth of approximately 1.5 m below surface. The water table was observed approximately 1.5 m below surface.

A small, linear vegetation alignment was present. This alignment was consistent with cultivation and may correspond to the Kailua-128 area. The area became known. It is unclear exactly what effect this grading had on the project area, but the deposition of a substantial amount of sand was likely and very possible. The project area was disturbed, and it was unclear how they related stratigraphically to the apparently overlying fine-grained alluvial sediments.

During the excavation, the Coconut Grove parcel was observed. Natural sand deposits were observed in the vicinity of the project area. The cultural deposits were observed at a depth of approximately 1.5 m below surface. The water table was observed approximately 1.5 m below surface.

CSI archaeologists conducted a walk-through survey and historical research during the project. No indications of archeological activity were observed on the surface, and no surface material was observed within SHIP 4-2-000. However, based on the information in the National Register of Historic Places and the archaeological investigations conducted by the Mann and Hammatt (2003) project, the area was recommended for further archaeological investigations.

The stratigraphy was consistent in both test units, and cultural deposits were observed in the vicinity of Kawainui Marsh. Cultural deposits were observed at the site of a previous archaeological investigation conducted by the Mann and Hammatt (2003) project. The cultural deposits were observed at a depth of approximately 1.5 m below surface. The water table was observed approximately 1.5 m below surface.

A small, linear vegetation alignment was present. This alignment was consistent with cultivation and may correspond to the Kailua-128 area. The area became known. It is unclear exactly what effect this grading had on the project area, but the deposition of a substantial amount of sand was likely and very possible. The project area was disturbed, and it was unclear how they related stratigraphically to the apparently overlying fine-grained alluvial sediments.

During the excavation, the Coconut Grove parcel was observed. Natural sand deposits were observed in the vicinity of the project area. The cultural deposits were observed at a depth of approximately 1.5 m below surface. The water table was observed approximately 1.5 m below surface.
the trenches is unknown, although the mass appeared to have been pushed up into a mound-like feature.

5.1.25 Barnes and Hammatt (2008)

CSH performed archaeological monitoring for the replacement of approximately 180 linear ft of the Kīkākanoe Wastewater Pamp station force main piping. No historic properties were identified during monitoring. Barnes and Hammatt (2008) noted the project area’s subsurface deposits appeared to have been disturbed by prior utility installation.

5.1.26 Hammatt (2013)

CSH conducted an archaeological reconnaissance survey with limited subsurface testing in the southwest portion of the study area in support of the Kawainui Marsh Wetland Restoration and Habitat Enhancement project (Hammatt 2013). The 2010 reconnaissance-level pedestrian survey of the 79.5-acre project area was conducted to determine the impact of recreating certain areas of shallow (8 to 30 cm) open water on the west side of the south end of Kawainui Marsh for wetland restoration and habitat creation. Excavation of 12 backhoe test trenches and manual excavation of two core samples was conducted in 2011. Two historic properties, SIHP # -2029, the Kawainui Marsh archaeological cultural-historical complex, and SIHP # -7199, an in-use, early twentieth century road remnant were identified during the survey.

Limited subsurface testing within the project area identified a modest number of historic and traditional Hawaiian artifacts, some of which appeared to be linked with habitation based on a house lot footprint that appears on an 1899 map, considered to be components of SIHP # -2029. Limited subsurface testing did not expose subsurface cultural deposits or modification within the project area. The documentation of backhoe test trenches excavated along LCA boundaries and within possible twentieth century house lots failed to identify any associated rock or sediment walls (lo'i walls), foundations, or associated features.

Sediment coring at two locations within Kawainui Marsh provided additional palynological and radiocarbon data. Radiocarbon analysis suggested the uppermost strata within the project area consisted of deposits of decomposed plant matter overlying relatively modern alluvium. Radiocarbon analysis of Core Sample 1 indicated that, minimally, the upper 68 cm of the 80 cm core sample (upper 85%) was composed of modern-aged sediment. Radiocarbon analysis of Core Sample 2 indicated that, minimally, 36 cm of the 103 cm core sample (upper 35%) was composed of modern-aged sediment. The relative vertical thickness of modern-aged deposition within Kawainui Marsh indicated the proposed project’s subsurface impact posed little or no threat to subsurface historic properties within the project area.

Project recommendations included an archaeological monitoring program to address the impact of subsurface disturbance within the project area and preservation, in the form of protection through avoidance, for the two components of SIHP # -2029 (grinding stone and habitation area) identified during the project. In consultation with SHPD on 2 June 2011, Mike Vitousek and Deona (“Nona”) Naboa recommended monitoring, including post-review of historic properties, if any were encountered during construction activities. As an example, data recovery work would be conducted if historic walls were found, and this would be documented in a data recovery report prepared and submitted to the SHPD. The archaeological monitoring plan would codify that should additional historic properties be identified during construction...
activities, any such properties might be appropriately subject to additional data recovery documentation (to be determined in consultation with the SHPD). Furthermore, the SHPD suggested a synthesis evaluation of any historic properties encountered in relation to the Kawainui Marsh historic site should be included in the data recovery report. This would be an additional point to be codified in a draft archaeological monitoring plan for SHPD review.

In the discussion with the SHPD it was tentatively agreed that the grinding stone should be left in place and avoided, that the historic house area by the bamboo stand should be avoided, and that they could both be regarded as features of the Kawainui Marsh historic property. No further archaeological work was recommended for SIHP # -7199 (road remnant).

5.1.27 Zapor and Shideler 2016

In 2016, CSH conducted a modest study consisting of background research and a field inspection in support of the DLNR/DOFAW hau (Hibiscus tiliaceus) brush clearing project at Kawainui Marsh. During the field inspection, all historic properties and potential historic properties were flagged for avoidance; no archaeological monitoring was recommended for the proposed project. One previously identified historic property, SIHP # -4042, was identified during fieldwork. SIHP # -4042, the Waimānalo Irrigation System, was described by McDermott et al. (2000:60) as a “system of pumps, pipelines, tunnels, and ditches that conducted water from Kawai Nui Marsh to the Waimānalo sugar cane fields until the early 1950s.” During this 2016 study, Zapor and Shideler (2016) recorded a concrete pump house foundation with associated pipes and canal that are components of SIHP # -4042 (Figure 54).

In addition, nine potential new historic properties within the study area were designated as CSH 1–9. CSH 1–3 represent remnants of one or more early twentieth century habitation(s) that belonged to one or both of two Japanese families. Kailua historian Dr. Paul Brennan, who accompanied the archaeologists during their field inspection, related that a Mr. Masaki Tashiro had maintained the pump station facility and lived quite close by with his family, and that there was a second home in the immediate vicinity belonging to the Sumida family (Mr. Sumida is understood to have been a house building contractor). These features were located approximately 50 m south of the pump station foundation. CSH 1 is most likely a remnant portion of a basalt stone walkway that at one time led to the house site (Figure 55). CSH 2, located just south of CSH 1, is the remnant of a bathroom with portions of plumbing, concrete foundation, and porcelain fragments still remaining (Figure 56). CSH 3, directly west of CSH 2 across a small dry streambed, is a concrete slab of unknown function (Figure 57).

CSH 4, in the middle of the project area, appeared to have been a holding tank of unknown function, possibly a cistern, privy, or cesspool (Figure 58). The feature consisted of a concrete-lined holding tank with placed basalt boulders lining the downslope side; a copper pipe was observed protruding from the west corner of the structure. A small hole was observed in the top of the structure allowing the inside to be viewed; standing water and rubble remained inside the structure. The upslope side and top of the structure were mostly buried in alluvial soil.

Directly south of CSH 4, approximately 2 m away, was a concrete structure of unknown function documented as CSH 5 (Figure 59). The structure appeared to be a foundation but was thought not to have been part of a house due to the style of construction and materials used. The structure ran generally east to west and was covered thickly in hau.

Figure 54. Plan view of SIHP # -4042, historic Waimānalo Irrigation System pump house foundation
Figure 55. Plan view of CSH 1, walkway with a basalt boulder border

Figure 56. Plan view of CSH 2, bathroom remnant

Figure 57. Plan view of CSH 3, concrete slab of unknown function

Figure 58. Plan view of CSH 4, holding tank
CSH 6 was observed approximately 5 m west of CSH 5 and consisted of a broken basalt stone fragment with a single petroglyph on one face (see Figure 60). This fragment was observed in a modern stone alignment, most likely built by the homeless living in the area in the twenty-first century, and had been removed from its original context. The petroglyph comprised a triangle with a circle and two curved lines protruding from the top line. The basalt stone was clearly different than other surrounding stones, and the original location was not observed within the surrounding area; however, a small basalt stone alignment was observed 5 m west of CSH 6 that contained similar basalt stones, but no visible petroglyphs. CSH 7 and 8 were at the southwestern edge of the traversed project area and consisted of two large basalt stones that have been hand-flattened and smoothed on the top side (Figure 61 and Figure 62). The stones are interpreted as grindstones used by Native Hawaiians during pre-Contact habitation of the area.

CSH 9 was at the northwest edge of the traversed project area and consisted of a stairway constructed of placed asphalt pieces and two associated basalt stone alignments (Figure 63). There was no context remaining in the area to place the feature, but according to Dr. Brennan, the Japanese families that occupied the area in the nineteenth century had terraced gardens; therefore, CSH 9 may be associated with those gardens.

5.1.28 Martel and Hammatt 2017

CSH (Martel and Hammatt 2017) carried out an archaeological inventory survey for a Wastewater Pump Station project by Kailua Road at the east corner of the marsh (TMK: [1] 4-2-016:004 por.). No additional historic properties were identified (other than Kawainui Marsh/Fishpond [SIHP # -370]).
Cultural Surveys Hawai'i Job Code: KAILUA 48  Previous Archaeological Research

Figure 61. Photograph of CSH 7, basalt grinding stone, view to southwest

Figure 62. Photograph of CSH 8, basalt grinding stone, view to east

Figure 63. Photograph of CSH 9, asphalt walkway and basalt boulder alignments, view to east
5.2 Morgenstein (1982); Hommond (1982)

In 1982, Science Management, Inc. conducted an archaeological survey for Hähnle Drive from Hähnle Street to Akoka Street, adjacent to the southern portion of the current project area and extending south (Morgenstein 1982). Morgenstein (1982:3) also reports the subsurface testing within the surface identified by Clark (1977) contained recent fill materials. These same recent fill materials were excavated in the excavation of the stream and the stream bed, and the exterior alignment of basalt blocks. The fill was covered by a large basalt boulder with a central, roughly rectangular, 10 x 10 m platform (Morgenstein 1982:3). This platform was partially preserved, and the exterior alignment was covered by a large basalt boulder with a central, roughly rectangular, 10 x 10 m platform (Morgenstein 1982:3).

In 1982, Barrera conducted an archaeological reconnaissance survey of the proposed Kailua-Kona development project, including the Kawainui-Maheʻula Stream area. Barrera (1984; 1982:31) described the structures in this area in detail. Barrera (1984:31) reported the presence of a stone platform with a maximum height of 0.9 m. The platform appeared to have three distinct levels or terraces. The platform was located at the approximate center of a site complex previously recorded by Stephen Clark (1977:2).

5.2 Barrera (1984b)

In 1984, Barrera conducted an archaeological inventory survey for the proposed Kailua-Kona development project, including the Kawainui-Maheʻula Stream area. Barrera (1984b:31) described the structures in this area in detail. Barrera (1984b:31) reported the presence of a stone platform with a maximum height of 0.9 m. The platform appeared to have three distinct levels or terraces. The platform was located at the approximate center of a site complex previously recorded by Stephen Clark (1977:2).

5.2.2 Morgenstein (1982); Hommond (1982)

In 1982, Science Management, Inc. conducted an archaeological survey for Hähnle Drive from Hähnle Street to Akoka Street, adjacent to the southern portion of the current project area and extending south (Morgenstein 1982). Morgenstein (1982:3) also reports the subsurface testing within the surface identified by Clark (1977) contained recent fill materials. These same recent fill materials were excavated in the excavation of the stream and the stream bed, and the exterior alignment of basalt blocks. The fill was covered by a large basalt boulder with a central, roughly rectangular, 10 x 10 m platform (Morgenstein 1982:3). This platform was partially preserved, and the exterior alignment was covered by a large basalt boulder with a central, roughly rectangular, 10 x 10 m platform (Morgenstein 1982:3).

In 1982, Barrera conducted an archaeological reconnaissance survey of the proposed Kailua-Kona development project, including the Kawainui-Maheʻula Stream area. Barrera (1984; 1982:31) described the structures in this area in detail. Barrera (1984:31) reported the presence of a stone platform with a maximum height of 0.9 m. The platform appeared to have three distinct levels or terraces. The platform was located at the approximate center of a site complex previously recorded by Stephen Clark (1977:2).

5.2.3 Barrera (1984b)

In 1984, Barrera conducted an archaeological inventory survey for the proposed Kailua-Kona development project, including the Kawainui-Maheʻula Stream area. Barrera (1984b:31) described the structures in this area in detail. Barrera (1984b:31) reported the presence of a stone platform with a maximum height of 0.9 m. The platform appeared to have three distinct levels or terraces. The platform was located at the approximate center of a site complex previously recorded by Stephen Clark (1977:2).

5.2.4 Quebral et al. (1992)

In 1991, IHR conducted an archaeological inventory survey for the proposed Kailua-Kona development project, including the Kawainui-Maheʻula Stream area. Quebral et al. (1992:31) described the structures in this area in detail. Quebral et al. (1992:31) reported the presence of a stone platform with a maximum height of 0.9 m. The platform appeared to have three distinct levels or terraces. The platform was located at the approximate center of a site complex previously recorded by Stephen Clark (1977:2).

5.2.5 Morgenstein (1982)

In 1982, Science Management, Inc. conducted an archaeological survey for Hähnle Drive from Hähnle Street to Akoka Street, adjacent to the southern portion of the current project area and extending south (Morgenstein 1982). Morgenstein (1982:3) also reports the subsurface testing within the surface identified by Clark (1977) contained recent fill materials. These same recent fill materials were excavated in the excavation of the stream and the stream bed, and the exterior alignment of basalt blocks. The fill was covered by a large basalt boulder with a central, roughly rectangular, 10 x 10 m platform (Morgenstein 1982:3). This platform was partially preserved, and the exterior alignment was covered by a large basalt boulder with a central, roughly rectangular, 10 x 10 m platform (Morgenstein 1982:3).
having a distinctive basil-like plant at its northwest corner. The platform is constructed of small to medium basalt boulders that line the sides and small to large cobbles of coral and basalt that fill the interior. A basalt flake was observed and collected from the immediate exterior of its southwest corner, and another flake was collected from its approximate central interior.

Feature 2 is a rectangular-shaped platform located ca. 1 m south of Feature 1. This feature measures 10 m (N-S) by 6 m with a height range of 0.2-0.5 m. The platform sides are also aligned with small and medium sized boulders, the interior is filled mainly with basalt cobbles and a few small boulders. Only a few pieces of coral cobbles were found on this platform at its northwestern corner. The eastern side and northeastern corner are tumbled in that only segments of the east side are visible. A large, mostly subterranean boulder is visible at the northeast corner. [Quebral et al. 1992:32]

SIHP # -4429, lithic scatter, consists of two areas concentrated on “two ridge toes” separated by approximately 30 m. The two areas encompass a diameter of approximately 10-20 m. The south area contained seven basalt flakes, one of which was removed by the archaeologists. The north area was described as “a slightly larger area,” containing a possible adze fragment (Quebral et al. 1992:34).

SIHP # -4430, lithic scatter, north of SIHP # -4430, consisted of concentrations of volcanic glass flakes and shatter, and basalt flakes. A possible anvil stone or mortar that contained a “water-worn pebble pestle” was also found (Quebral et al. 1992:34).

SIHP # -4431, two enclosures, “consisted of adjacent stone structures that extend from the base of a dry channel” (Quebral et al. 1992:35-36). The site was “situated on the northern slopes of a ravine located at the approximate center of the landward development area at an elevation of 15 to 20 ft above sea level” (Quebral et al. 1992:36). The features lacked cultural material, and were thus possibly agricultural features. A description of only one of the features was included in the report; the feature closest to the channel was described as follows:

roughly square in shape measuring 2 x 2 m with a height range of 0.2 to 0.5 m. This feature could actually be three parallel short terraces except the corners are fairly evident although collapsing, and its interior appears to be filled with small basalt boulders and a few coral and limestone ones. At its northeast corner, a rectangular structure measuring 2 m (N-S) by 1.2 m extends upslope. The moderately sloping interior of this feature is filled with small boulders (one is a large piece of weathered coral) and a few pockets of reddish brown silt. It is only single boulder high but it may have been much higher and level. [Quebral et al. 1992:36]

Quebral et al. (1992) also reported on a former quarry within the center of the project area and an access road. The road

... extends from the quarry site toward the south following the base of the ridge then turns toward Hāmākua Drive as it parallels the residential area of Hāmākua Place. Asphalt remnants near the quarry site suggest the probability that the

CIA for the Kawainui-Hāmākua Master Plan, Kailua, Ko'olaupoko, O'ahu
TMKe (1) 4-2-003; 4-2-007; 4-2-010; 4-2-016; 4-2-017; 4-2-030; 4-4-034 various parcels
Section 6  Community Consultation

6.1 Introduction

Throughout the course of this assessment, an effort was made to conduct and complete this effort in consultation with all relevant cultural practitioners and organizations, including the Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) in partnership with the Division of State Parks (DSP). The updated master plan is intended for educational and stewardship partnerships; parking lots in designated areas; and a pedestrian path with some boardwalks crossing wetlands; DOFAW Management and Research Station improvements; program staging areas; educational pavilions; interpretive signage for resources and archaeological sites; an Education Center for visitors; and cultural resources associated with the complex. The proposed plans include wetland restoration and habitat expansion; upland reforestation; a perimeter fence; and cultural material and deposits within the project area, no further research was recommended.

Quebral et al. (1992:38) stated there was a possibility of additional research within the project area. Based on the absence of archaeological sites or habitation) along the ridge and the surrounding residential areas referred to as Kawainui Marsh (Kawainui). The State of Hawai‘i, through DLNR, DOFAW, and the Division of State Parks (DSP), identified for establishing cultural centers to support Hawaiian cultural practices, an archaeological assessment was recommended for future work in the project area.

5.2.6 Collins and Nees (2007)

In 1994, a master plan was created for Kawainui’s wetland and surrounding upland areas referred to as Kawainui Marsh (Kawainui). The State of Hawai‘i, through DLNR, DOFAW, and the Division of State Parks (DSP), identified for establishing cultural centers to support Hawaiian cultural practices, an archaeological assessment was recommended for future work in the project area.

5.2.7 Fong et al. (2007)

In 2006, Pacific Consulting Services, Inc. (PCS) conducted an archaeological inventory survey on the slope of Pu‘u o ‘Ehu, southeast of Kawainui Marsh and Kailua Road (Collins and Nees 2007). Findings during the pedestrian survey included homeless encampments, fence posts, and fallen logs. A final report was prepared identifying cultural material and deposits within the project area. No further research was recommended.

6.2 Community Contact Letter

At the request of HHF Planners, Cultural Surveys Hawai‘i Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Kawainui-Hamākea Master Plan Project, Kailua, Ko‘olaupoko, O‘ahu. In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

At the request of HHF Planners, Cultural Surveys Hawai‘i Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Kawainui-Hamākea Master Plan Project, Kailua, Ko‘olaupoko, O‘ahu. In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:

In the majority of cases, letters (Figure 65 and Figure 66) were mailed with the following text along with a map and an aerial photograph of the project area:
November 2016

Aloha,

At the request of HHP Planners, Cultural Surveys Hawai‘i Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Kawainui–Hīlimi Maui Master Plan Project, Kailua, Ko‘olina, O‘ahu Island; Tax Map Keys (TMKs) [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

In 1994, a master plan was created for Kawainui’s wetland and surrounding upland areas referred to as Kawainui Marsh (Kawainui). The State of Hawai‘i, Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) in partnership with the Division of State Parks (DSP) will be updating the previous master plan. The updated master plan is intended for implementing future improvements to Kawainui–Hīlimi Maui to support DOFAW and DSP plans to help sustain, enhance, and educate the public about the natural and cultural resources associated with the complex. The proposed plans include wetland restoration and habitat expansion, upland reforestation, a pedestrian pathway with some boardwalks crossing wetlands, DOFAW Management and Research Station improvements; program staging areas, educational pavilions, interpretive signage for resources and archaeological sites, an Education Center for visitors, continued restoration at Uplala Helau, three areas identified for establishing cultural centers to support Hawaiian cultural practices, education and stewardship partnerships, parking lots in designated areas, and a park site that also accommodates canoe storage and launch into Kawainui Canal. Additional information on the Kawainui–Hīlimi Maui Master Plan Project is available from the Environmental Impact Statement Preparation Notice at the following:


The purpose of the Cultural Impact Assessment is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area in order to assess potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned Project. We are seeking your feedback and guidance regarding the following aspects of our study:

- General history as well as present and past land use of the project area, including the entire Kualoa area of Kailua.

- Knowledge of cultural sites which may be impacted by future development of the project area—for example, historic and archaeological sites, as well as burials.

- Knowledge of traditional gathering practices in the project area, both past and ongoing.

- Cultural associations of the project area, such as mo‘olelo and traditional uses.

- Referrals of kūpuna or elders and kūpuna who might be willing to share their cultural knowledge of the project area and the surrounding ahupua‘a.

- Due to the sensitive nature regarding past encounters with iwi kūpuna or ancestral remains discovered in Kailua, mana‘o regarding iwi kūpuna will be greatly appreciated.

- Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.

In advance, we appreciate your assistance in our research effort. Please don’t hesitate to contact Brittany Bouchman at bbouchman@culturesurveys.com or by phone at (808) 262-9972.

Mahalo mau loa,

Brittany Bouchman
Cultural Researcher
The purpose of the Cultural Impact Assessment is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area in order to assess potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned Project. We are seeking your guidance regarding the following aspects of our study:

- General history as well as present and past land use of the project area, including the entire ahupua’a of Kailua.
- Knowledge of cultural sites which may be impacted by future development of the project area—for example, historic and archaeological sites, as well as burials.
- Knowledge of traditional gathering practices in the project area, both past and ongoing.
- Cultural associations of the project area, such as mo‘olelo and traditional uses.
- Referrals of NHOs or elders who might be willing to share their cultural knowledge of the Project area and the surrounding ahupua’a.
- Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.

In most cases, two to three attempts were made to contact individuals, organizations, and agencies. Community outreach letters were sent to 36 individuals and groups, 14 responded, and six of these individuals met with CSH for more in-depth interviews. The interview summaries are presented in Section 6.4.

### Table 6. Results of community consultation

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Ahahui Malama I Ka Lokahi</td>
<td>Conservation of Native Ecosystems, program at Kawai Nui Marsh</td>
<td>Letter and figures sent via email 28 November 2016; Dr. Chuck Burrows replied via email 6 December 2016. He informed CSH that he was forwarded the letter and figures through 'Ahahui Malama I Ka Lokahi. CSH scheduled an interview for 11 January 2017. Mr. C. Lehuakona Isaacs, current president of 'Ahahui Malama I Ka Lokahi, reached out to CSH regarding a possible interview on 11 January 2017. CSH conducted an interview with Mr. C. Lehuakona Isaacs on 14 December 2017.</td>
</tr>
<tr>
<td>Apio, Alani</td>
<td>Author of Kaimana, ‘Kaimana A’</td>
<td>Letter and figures sent via email 28 November 2016; Mr. Apio replied via email 28 November 2016: I will forward this request to the descendant group and have them send you directly anything that they would like to share.</td>
</tr>
<tr>
<td>Aipa, Hilary</td>
<td>Kumu hula; Regional Coordinator of Kailua NHO, conservation, educational, and community organization</td>
<td>Letter and figures sent via email 28 November 2016; Mr. Aipa replied via email 28 November 2016: I will forward this request to the descendant group and have them send you directly anything that they would like to share.</td>
</tr>
<tr>
<td>Audubon Society</td>
<td>Conservation, educational, and community organization</td>
<td>Letter and figures sent via USPS 6 December 2016;</td>
</tr>
<tr>
<td>Name</td>
<td>Affiliation</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Becket, Jan (cont.)   |                              | Mr. Becket replied via email 28 November 2016: *Just off the top of my head I can think of about eight places around the marsh. Pahukini would be nice, if can. Maybe two days?*  
  CSH replied via email 6 December 2016.  
  CSH reached out to Mr. Becket via telephone 8 December 2016 to confirm dates for huaka‘i (journey). Mr. Becket confirmed dates for 14 December 2016 and 15 December 2016. Mr. Becket asked if CSH could contact Dr. Burrows, and seek his guidance or presence during huaka‘i. CSH reached out to Dr. Burrows via telephone December 12 2016 and 13 December 2016, and left message.  
  CSH conducted an interview with Mr. Becket and joined him on a huaka‘i to cultural sites within Kailua Ahupua‘a on 14 December 2016 and 15 December 2016. |
| Brennan, Dr. Paul     | Kailua Historical Society    | Letter and figures sent via USPS 16 November 2016  
  Letter and figures sent via USPS 6 December 2016  
  Mr. Brennan replied via email 7 December 2016: *Please find attached some of my research into the cultural significance of Wai‘auia—the Kailua-town corner of Kawainui that is unfortunately better known today as the old ITT property or the MacKay Radio site. Much has been written about Wai‘auia, but the vast majority of it is still housed in untranslated Hawaiian language newspapers of the late 19th and early 20th centuries—which is exactly my field of interest. I’m hoping that you will be able to sift through my stuff and extract the info that you’re after; all I ask is that you credit my work and sources, if you indeed use any of it, in your final EIS report. One of the sad facts of indigenous knowledge is that it is either reduced to “informant” status or not credited at all. I should be clear that Hika‘alani, the non-profit of which I am part founder, is very interested in building and running the Wai‘auia Hawaiian Studies Center described in the Draft Kawainui-Hamakua Master Plan. We understand Wai‘auia’s significance (maybe better than anyone else) and want to be very forthcoming in sharing what we know and about advocating strongly for an AIS there should the Master Plan be accepted and the rfp be awarded to Hika‘alani. Please feel free to contact me should you have questions or need for clarification.*  
  Mrs. De Silva replied via email 9 December 2016: *Mahalo for your email and for the letters we have received regarding the Kawainui Master Plan. I also hope you have received the information Kihei sent you on Wednesday. . . I’m not sure of your timeframe for this CIA but if you can give me a window in which to find a common date I would appreciate that. I look forward to our meeting. Kihei also wanted me to make sure you have Charles ‘Doc’ Burrows and Paul Brennan on your list of people to interview.*  
  CSH replied via email 9 December 2016: |
| Burrows, Dr. Charles “Chuck” | Kailua Historical Society | Letter and figures sent via email 28 November 2016  
  Letter and figures sent via email Aahau Malama i ka Lokahi email address on 5 December 2016  
  Dr. Burrows replied via email 6 December 2016: *He informed CSH that he was forwarded the letter and figures through ‘Aahau Malama i ka Lokahi: I received your email from Aahau Malama I Ka Lokahi. I would gladly participate in your archaeological survey for the Master Plan. CSH replied via email 6 December 2016.  
  CSH reached out to Dr. Burrows via telephone on December 12 2016 and 13 December 2016, and left a message seeking his guidance or presence during the huaka‘i scheduled with Mr. Jan Becket.  
  Mr. Burrows replied via email 15 December 2016: *If your schedule allows we could meet on Dec. 27 or 28 at 10am or 3pm.*  
  CSH conducted an interview with Dr. Burrows on 27 December 2016. |
| Cypher, Mahealani      | Ko‘olaulapo Hawaiian Civic Club | Letter and figures sent via email 28 November 2016  
  Letter and figures sent via USPS 12 December 2016 |

CIA for the Kawainui-Hamakua Master Plan, Kailua, Ko‘olaulapo, O‘ahu

TMKe. (1) 4-2-003; 4-2-017; 4-2-018; 4-2-034 various parcels

TMKe. (1) 4-2-003; 4-2-017; 4-2-034 various parcels
### Community Consultation

**Name**
- De Silva, Māpuana and Kihei (cont.)
- Ehrhorn, Charles “Chuck” Ko‘olaupoko Representative, O‘ahu Island Burial Council (OIBC)
- Elison, Mina Kailua Hawaiian Civic Club
- Enos, Adah kumu hula, kama‘aina
- Hilo, Regina Kailua Historical Society

**Affiliation**
- Yes, I have received the information from Kihei. Mahalo nā for all that you have shared, especially regarding the cultural significance of Wai‘aia and the possible future Wai‘aia Hawaiian Studies Center. . . I am available between December 19th - December 21st and December 26th - December 31st. I’m also available in January as well. I understand the holidays are a very busy time, and I am flexible for whatever times and dates would work best for you and your ‘ohana. . . . I hope we may be able to schedule a meeting somewhere between these dates. I have been in contact with Dr. Burrows. I’m currently hoping to arrange a meeting with him if he has time available this month or the next. I have also sent a letter and figures via USPS to Dr. Brennan and the Kailua Historical Society: I have yet to hear back from him. I did send him the letter and figures through the PO Box managed by the Kailua Historical Society. I have also arranged a meeting with Jan Becket, he noted that he will also reach out to Dr. Burrows regarding a possible huaka‘i. Please feel free to contact me at any time with any comments, questions, or request. . .
- Letter and figures forwarded to Mr. Ehrhorn via Ms. Regina Hilo, SHPD Burial Sites Specialist
- Letter and figures sent via USPS 16 November 2016
- Letter and figures sent via email 28 November 2016
- Letter and figures sent via email 6 December 2016
- Letter and figures sent via email 28 November 2016
- Letter and figures sent via email 6 December 2016
- Letter and figures sent via email 6 December 2016
- Letter and figures sent via email 28 November 2016
- Letter and figures sent via email 6 December 2016

**Comments**
- Hilo, Regina (cont.)
- will forward the letter and figures.
- Hui Kaleleiki Ohana
- NHO
- Letter and figures sent via USPS 16 November 2016
- Letter and figures sent via email 28 November 2016
- Letter and figures sent via USPS 6 December 2016
- Hui Ku Maoli Ola
- Business; native Hawaiian plant nursery
- Letter and figures sent via USPS 6 December 2016
- Hui o Ko‘olaupoko
- Letter and figures sent via USPS 16 November 2016
- Letter and figures sent via email 28 November 2016
- Ms. Kristen Nalani Kāne replied via email 28 November 2016:
  - Thanks for reaching out. I don’t think that I will be much assistance for your research as some others on your list will be however don’t hesitate to reach out to me with any follow up questions. I’m sure you are already in contact with those that work at Ulupo, Na Pohaku, Halau Mohala Ilima, Pacific American Society, Kailua Historical Society, etc.
- CSH replied via email 30 November 2016.
- Hui Kailua Heritage Foundation
- Business; native Hawaiian plant nursery
- Letter and figures sent via USPS 23 November 2016
- Mrs. Vicki Creed communicated on 28 November 2016 that Ms. Seto would possibly be available for a telephone interview.
- Ke Kahua o Kaili‘i
- Letter and figures sent via email 28 November 2016
- Ms. Makanani Parker replied via email 2 December 2016:
  - Mahalo for your email. We are very interested in assisting your inquiry and in doing so, we would like to invite you to visit our site and experience the ongoing aho‘a ‘āina work at Pōhakea, Kawai‘nui. Our hui lives and breathes aho‘a ‘āina, and emphasizes the importance of the experiential aspect of ‘āina as our kanaka maoli culture. Most, if not all of the information requested below can be addressed upon visiting the 14 acres that’s part of a 5 year agreement recently approved in 2016 that our community steadily worked towards.
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee, Herb (cont.)</td>
<td></td>
<td>CSH was able to conduct interviews with the following individuals: Ke Kahua O Kuali’i; Pacific American Foundation; and Olds, Nalani. The letters and figures sent via email were received on 6 December 2016. CSH called Mr. Lee on 6 December 2016 to discuss the upcoming interviews. CSH replied via email on 6 December 2016. Mr. Lee replied via email on 6 December 2016. CSH replied via email on 6 December 2016.</td>
</tr>
</tbody>
</table>
Name: Solis, Kaʻahiki (cont.)
Affiliation: Kawainui-Hiʻiakai Marsh. Kawainui is also a recognized RAMSAR Wetland only one of 23 recognized International Wetlands RAMSAR site 1460. In the surrounding areas Kawainui is part of an informal hui that connects Luluka Corridor to various non-profit groups that are ata based from Maunakea to Makai. Starting with Hui Ka Maoli Oka to Māhāluʻaʻai in Heʻeia and also with Paepae O Heʻeia. I am not 100% sure but I do believe that the Malys (Kepla and Onaona) did a study on it too. FYI Hiiaaakapiolepale came through Kawainui and there is the moʻolelo of that oral tradition about her ventures into Kawainui. Moʻos are also another key component of fresh water and Kawainui is ripe with Moʻo Haawahine for instance. Look into the oral histories for more information on Kawainui too! 
CSH replied via email 30 November 2016.

Name: Souza, Mihana
Affiliation: Entertainer; kamaʻāina of Kailua
Comments: Letter and figures sent via USPS 16 November 2016
Letter and figures sent via USPS 6 November 2016

Name: Speicher, Meredith
Affiliation: Hoʻoalalma la Kawainui (NHO, conservation, educational, and community organization)
Comments: Letter and figures sent via email 6 December 2016
Ms. Speicher replied via email 13 December 2016: Thanks for reaching out. I worked with Hoʻoalalina la Kawainui as part of my work providing technical assistance through the National Park Service Rivers, Trails, and Conservation Assistance Program. Initially it was before the Master Plan was initiated, and the group did community meetings in different Kailua neighborhoods to learn about people’s concerns, visions, ideas, etc. for the marsh. It was somewhat focused on interpretation and stories from Kawainui, however, since it was right before the master plan outreach, we also explained that there was a master plan that the state would be working on and got a lot of feedback from that perspective. We put together a report and HHF have the plan (also attached). I’ve attached notes on comments related to the cultural components. What I heard throughout our meetings was that Hawaiian groups wanted to be able to practice and take care of the marsh. They want to be able to perpetuate their practices, and being in Kawainui—with many heiau, wahi pana, etc.—is where they should be able to do it, not the parking lot of a strip mall. There was the desire of some organizations to continue their work with restoration and with the establishment of cultural practices such as bringing back loi kalo and cultural practices. I believe that there was unfortunate miscategorization and people in the community heard things out of context, never bothered to review the plans and it pitted the community against one another. Leaving the marsh alone was seen as somehow more conservation minded and people were very fearful of more tourists flooding the marsh and their neighborhoods. They saw commercialization of the marsh and buildings and just wanted it to stay the way it is. At the time, Kailua was seeing a dramatic increase in tourism, so this fear was not unwarranted. However, that mindset ignored the fact that the marsh is not in a natural state, that it is overrun by invasive species, has been a dumping ground, and has safety issues. Having people practicing their culture, restoring native habitat, doing art and cultural practices, using as a natural classroom, getting volunteers to keep up the maintenance and removing invasive species, protecting the wildlife, allowing non-motorized transportation options, and outdoor passive recreation is not going to destroy the area. It has the potential to do the opposite. More eyes and ears at the site will help to address safety concerns, illegal dumping, could increase stewardship and understanding of the resources. It provides the space to learn about wetlands, about history, about culture, about restoration of native forests, wetlands, and streams. It provides the space to allow the perpetuation of cultural practices through education. It is in the backyard of so many, yet so many had no idea what is really within this special place. Being so close to development, it needs help to address threats that we as humans place on it. I heard many say that Hawaiian practices work with the natural environment, not against it. We are part of nature. Culture and nature cannot be separated.
One of the ways that Hoʻoalalma believed would assist with the misconceptions and real threats that people see is to develop a management plan that can address...
Cultural Surveys Hawai‘i Job Code: KAILUA 48

Community Consultation

CIA for the Kawainui-\+ƗPƗNXD Master Plan, Kailua, Ko‘olaupoko, O‘ahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speicher, Meredith (cont.)</td>
<td></td>
<td>the concerns of overuse. Capacity and overuse needs to be addressed. This was the real concern with those opposed to doing anything in the marsh, and they do have a point. This was something that we asked HHF to do, but they believed it was too much work and out of their scope. I do think some kind of carrying capacity/limits of acceptable change management structure would really help to address the potential for overuse and help to control the fear of commercialization. I’ve included the recommendations that we provided related to the carrying capacity. I believe that it could be done in a way that is pono, and it could be a new model that incorporates Hawaiian stewardship. Something to think about. There are a number of  ke‘ou who will share their valuable mana‘o. I have some people listed (highlighted) in the attached notes. Feel free to call me if you want, I believe your work has the potential to really help. CSH replied via email on 16 December 2016. Ms. Speicher replied via email on 19 December 2016. CSH replied via email on 21 December 2016. Interview scheduled for 10 January 2017. Interview conducted via telephone on 10 January 2017</td>
</tr>
<tr>
<td>Thielen, Cynthia</td>
<td>District Representative</td>
<td>CSH received a response from Rep. Cynthia Thielen via USPS on 19 December 2016 As Representative for Hawai‘i’s 50th State House District (Kailua-Kaneohe Bay), I am responding to your request for comments regarding cultural resources, cultural practices, and beliefs of the proposed Kawainui-Hāmākua Master Plan Project. The Kawainui-Hāmākua Marsh Complex has been designated as a Ramsar International Wetland of Distinction. According to the Ramsar Convention, sites named as an International Wetlands of Distinction are of significant value not only for the country or the countries in which they are located, but for humanity as a whole. Additionally, the inclusion of a wetland on the Ramsar List embodies the government’s commitment to take the steps necessary to ensure that its ecological character is maintained. Protecting the ecological health of this area also insures that cultural resources will be minimally impacted, and through best practices, unchanged. Traffic as well as nonresort development of the Complex area must be limited in order to prevent this precious resource from becoming overrun and mismanaged. I strongly support the educational value and cultural offerings provided by an education center, however, I don’t believe building additional pavilions, staging areas, signage and walking paths is prudent. Allowing for cultural practices, protecting iwi  ke‘ou or ancestral remains, as well as maintaining known and unknown archaeological sites should be of prime consideration when drafting a responsible cultural impact assessment. Educational and cultural opportunities are welcomed and greatly valued. However, do we really need so many structures, parking lots, walk ways and improvements in order to teach our people about the beauty and cultural importance of this unique and protected wetland? It is irresponsible and may be irreparable to over develop such a fragile resource. One cannot maintain the cultural history and traditions of this unique wetland without insuring that it is environmentally and ecologically protected now and forever. CSH replied via email on 21 December 2016. CSH replied via email on 21 December 2016. Interview scheduled for 10 January 2017. Interview conducted via telephone on 10 January 2017</td>
</tr>
<tr>
<td>Thielen, Laura</td>
<td>Senator</td>
<td>Letter and figures sent via USPS 6 December 2016</td>
</tr>
<tr>
<td>Wong, Donna</td>
<td>Executive Director of Hawaii’s Thousand Friends</td>
<td>Letter and figures sent via email 6 December 2016 Ms. Wong replied via email on 12 December 2016, inquiring for a timeline for response. CSH replied via email on 21 December 2016 requesting a response sometime within January. Ms. Wong replied via email on 8 January 2017. Ms. Wong attached a letter on behalf of Hawaii’s Thousand Friends outlining cultural, historical, and archaeological information of the Kawainui-Hāmākua Marsh area.</td>
</tr>
<tr>
<td>Yent, Martha</td>
<td>State Parks Archaeologist</td>
<td>Letter and figures sent via email 6 December 2016 Ms. Yent replied via email 6 December 2016: I’d be glad to assist with the CIA and help direct you to members of our curator groups who assist with the care of sites at Kawainui under the jurisdiction of State Parks. Some of these individuals would be more</td>
</tr>
</tbody>
</table>

CIA for the Kawainui-Hāmākua Master Plan, Kailua, Ko‘olaupoko, O‘ahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
The authors and researchers of this report extend our deep appreciation to everyone who took time to speak with us and share their ma'o and 'ala. In particular, we would like to recognize Mr. Jan Becket, a retired Kamehameha Schools teacher, who is a specialist with knowledge of cultural sites throughout the island of O'ahu. As a photographer and author, Mr. Becket is well-known for his black-and-white photographic documentation of sacred sites. He has conducted extensive archival research on sites of cultural significance, learned from interviews, and has written numerous books on Hawaii's cultural history. Mr. Becket is a member of the Committee for the Preservation of Historic Sites and Properties under the O'ahu Council of Hawaiian Civic Clubs. He is currently the chair of the Committee (Shad Kano) on issues concerning cultural sites in the Koolau region of O'ahu.

6.4.1 Jan Becket

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.

On 14 December 2016, Mr. Becket led CSH on a hana‘i to visit cultural sites within the Koolau range. During the hana‘i, Mr. Becket led CSH on a visit to a known cultural site, the "Konohiki Site." The site was later referred to as "Site 2," describing it as "poorly defined terraces and numerous stone mounds" (Ewart and Tuggle 1977). The site was identified by Ewart and Tuggle in 1977. Ewart and Tuggle (1977) identified this historic feature as being a "Konohiki Site," due to its association with the discovery of an ancient Hawaiian settlement.
Figure 67. Mounds of angular and sub-angular basalt cobbles possibly representing remnants of agricultural terraces and walls, view to northeast

Figure 68. Mound filled with ili'ili observed within southwestern portion of the project area, view to southeast

Figure 69. Kawainui grinding stone identified by Mr. Becket and observed within the southwest portion of the project area, view to north (photograph provided by Mr. Jan Becket)
In addition to the skilled craftsmen who did the woodwork, there were two sets of assistants who attended to the sharpening of tools. One group undid the lashings of the blunted adzes and sharpened the edges. The second group took the sharpened adzes and lashed them to handles. [Buck 1957: 255–256]

Traditionally, the grind-stone or *hoana* was sprinkled with sand and water. The *kako'i* (adze maker) with his pre-form or adze blank would proceed to grind down the upper and lower side before sharpening the edge (Malo 1951:51). A handle, typically made of *hau*, was then lashed to the adz. As Malo notes, “the ax now became an object of barter with this one and that one, and thus came into the hands of the canoe-makers” (Malo 1951:51). Following the identification of the grinding-stone, CSH and Mr. Becket proceeded to visit the recently cleared site just east of the Kawainui Trail (levee) (within the southeastern to eastern portion of the project area). This site was uncovered during recent clearing activities. Mr. Becket noted the difficulty in determining which portions of stone alignments were in situ or in fact moved by other to construct temporary shelters (Figure 71). Most of the features observed did not appear to follow any traditional Hawaiian building style, although this may be due to recent human disturbance. Mr. Becket did, however, point out to CSH that a few of the stones had undisturbed *limu* (moss), perhaps discrete or continuous remnants of either prehistoric or historic features.

Following inspection of this potential cultural site, CSH and Mr. Becket continued on to working to restore the area into a native dryland forest. Mr. Becket noted many of the native plants growing in the area and commented on the spectacular view of the marsh (Figure 72). He commented on the importance of designating spaces to the cultivation of native species; native species identified by CSH and Mr. Becket included *niu* (coconut; Cocos nucifera), *ipu* (bottle gourd; Lagenaria siceraria), *pili* (grass; Heteropogon contortus), *milo* (portia tree; Thespesia populnea), *NUN* (Ti; Cordyline fruticosa), *kukui* (candlenut; Aleurites moluccana), *hau*, *noni* (Indian mulberry; Morinda citrifolia), *kamani* (Alexandrian laurel; Calophyllum inophyllum), and *ma'o* (Hawaiian gardenia; Gardenia brighamii), and *ma'o* (Hawaiian cotton; Gossypium tomentosum). While walking the trails surrounding the cultural site, Mr. Becket shared a personal story about bringing his Kamuela School students to Na Pali to learn about the history and culture of the area. As part of their lesson plan, they were introduced to the history and significance of the site, including the legend of Hi'iaka and the two women sitting at the edge of Kawainui's estuary. Hi'iaka's traveling companion, the woman of the two women, was incorporated into the lesson plan as a way to connect students with the *wahi pana* and *mo'olelo* they were encountering in their studies. At that particular point in time, the students were familiarizing themselves with the story of Hi'iaka and her companion. However, as they encountered different perspectives on the story, they were challenged to consider how different interpretations could possibly be. Mr. Becket shared that the women are not *wahine kanaka* but are instead *mo'o* (Hawaiian sea turtles). To prove her point, Hi'iaka raised her voice in chant,
Figure 71. Possible complex of pre-historic and/or historic-era features within the southeastern to eastern portion of the project area, view to northwest (photograph provided by Mr. Jan Becket)

Figure 72. Panoramic view of Kawainui Marsh with the peaks of Olomana, Paku‘i, and Ahiki visible in the far right middle ground, view to south
Kiauia in the wisps of the Malanai wind
The blades of the 'uki grass lie still
Startled by the cry of the birds
You surmise they are women
But it is not so
That is Hauwahine and friend
The women of Kailua in the calm [Houlumahiehie 2008b:146]

Upon hearing Hi‘iaka’s chant, the two women disappeared into the water. Wahine‘ōma‘o conceded to Hi‘iaka; the goddess replied,

Just as I told you, those are mo‘o women. One of them, Hauwahine, is from this inland side of Kawainui. She is the guardian of this place, and the second mo‘o is from the seaward side of the hala grove that stands on the far edge of the flats near Ka‘elepulu Stream. If that woman returns seaward from the upland side of Kawainui, then the leaves of the hala there will turn yellow. And now they have come up inland of Kawainui, so you can see the yellowing of the leaves of the 'uki grass and the naku reeds in the water. This is the sign of the mo‘o.

Everything they get near to yellows. [Houlumahiehie 2008b:147]

Mr. Becket briefly discussed the mo‘o known as Hauwahine with CSH and pointed out her likeness, clearly visible along the northwestern face of the basalt outcropping (Figure 73).

Mr. Becket also led CSH to another large basalt outcrop. This stone, situated below the head of the mo‘o, and directly adjacent to the water’s edge, is said to resemble a kohe (vagina) (Figure 74).

This may be representative of the feminine aspect of Hauwahine, the kia‘i (steward) of Kawainui. Following the visit to Hauwahine, CSH and Mr. Becket attempted to visit Pahukini Heiau, but were unable to receive permission to access the site through the Kapa‘a Transfer Station. CSH and Mr. Becket returned to Ulupō Heiau to photograph the numerous lo‘i kalo, as well as the heiau and associated features (Figure 75 through Figure 77). Mr. Becket pointed out two springs near the base of the heiau, commenting that they may have been used for the ceremonial cleansing of pigs prior to sacrifice (Figure 78). CSH noted the presence of ho‘okupu (literally “to sprout;” offerings generally consisting of food wrapped in a ti-leaf container, but may also be oli, mele, or lei) surrounding the spring. Sterling and Summers (1978) have also discussed these springs; within their publication, they cited a 1951 conversation with Mr. Akuni Aha:

He (Aha) has always known this heiau by the name of Ulupo, never Upo. During his early years there people living some distance away from the heiau told him of hearing the drums of the heiau. The spring was used for washing the pigs before bringing them up to the temple oven. [Sterling and Summers 1978:233]

CSH and Mr. Becket resumed visiting cultural sites within Kailua Ahupua‘a on 15 December 2016. A particular focus was placed on locating cultural sites within the Maunawili and Makali‘i Valley areas; Mr. Becket emphasized the sites known as Pihaku Wahine and Kukapoki Heiau.
Figure 75. Portion of northeast corner of Ulupō Heiau with lauhala tree in foreground, view to southeast (photograph provided by Mr. Jan Becket)

Figure 76. General overview of Ulupō Heiau, view to southeast

Figure 77. General overview of loʻi kalo located immediately northwest of Ulupō Heiau, view to northwest
Mr. Becket also noted the importance of sites within the Manana area and possible spatial relationships to sites within Kauai. CSH and Mr. Becket attempted to visit Pohaku Waini Halalei Park, but were denied access by security of Royal Hawaiian Golf Club. Security stated they were unaware of any cultural sites located adjacent to the golf course road. Pohaku Waini Halalei Park is located adjacent to the major road connecting Kailua and Kualoa. Formerly called Pohaku Valley, the park consists of a large open area with a sandy beach. A few small lakes exist in the area, and there are several mounds in the vicinity. Mr. Becket noted some small rock formations located in the northern part of the park. These features are not clearly visible from the park entrance, but are visible from the road. Mr. Becket suggested that these features could be of cultural significance, but further investigation would be needed to determine their origins.

Figure 78. One of two pools utilized for the washing of pigs prior to placement in the “temple oven”; recent ho’okupu visible within the far right foreground, view to southeast.
Figure 79. Remnants of Kukapoki Heiau (photograph provided by Mr. Jan Becket)

Figure 80. Portions of Kukapoki Heiau still visible within a thicket of hau (photograph provided by Mr. Jan Becket)

Figure 81. General overview of wall remnants within lower Maunawili Valley; the walls are associated with historic taro and coffee cultivation
Inherently sacred. Such sanctity stems not just from the connections of an area to the gods and the checks, but also arises out of the connections of the people to their own kula (land, family, ancestors, and waters). This sanctity may include a variety of spiritual and cultural practices associated with the land, such as offerings, prayers, and rituals. The connection to the land and waters is often a lifelong relationship that is passed down through generations.

Ms. Makanani Parker, an educator, artist, and cultural practitioner, communicated her thoughts about the current cultural impact assessment with CSH. Included within these communications was an invitation for CSH to participate in aali 'auwai work within the 'ili of Kailua. Ms. Parker believes that by working together, the community can protect and preserve the cultural and natural resources of the area.

We are on site on Sunday morning. We would like you to visit our site and experience the ongoing work. Our site is located at the edge of Kawainui Marsh, just off the Pearlridge Parkway. We are on the connection of work schedules, and the shortest available time is 3:00 p.m. If you are interested in participating in the aali 'auwai work, please contact Ms. Parker at MakananiParker@gmail.com or 1-808-969-6060.

While placing her finger tips together and forming the symbol of a wahi pana (mountain). Ms. Parker revealed that to date, few studies have been done to confirm the water depth of Kawainui (it has been suggested that the water is 30 feet deep). This misconception is due largely in part to the need to “change culture.” She shared with CSH that many members of the Kailua community have come to perceive Kawainui as a dumping ground. This misconception is due largely in part to the need to “change culture.”

Each bulleted item [see community consultation letter] reflects the connection between ‘ahuwa'ina as our kanaka maoli (nation, race, tribe, people) to their hui (family, extended family), and Kuhui iwi (birth sands) and kula iwi (land of their ancestors). “The respectable person was bound to respect the house (deity) and the chief of the house by the same degree” (Meade 1982:21). This interconnectedness is a key aspect of Hawaiian culture and is deeply ingrained in the way people perceive and interact with the land.

Working alongside the aali 'auwai, the mission statement of Ke Kahi o Ka 'auwai is to protect and preserve the natural and cultural resources of the area. Our goal is to create a lasting legacy for future generations. We are committed to ensuring that the area remains a place of cultural significance and a haven for wildlife.

Mahalo for your email. We are very interested in assisting your inquiry and in helping to establish the foundation layer. [Chapin 1983:26-1984:26]
Mr. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”

Ms. Parker reiterated the need to create a comprehensive plan that truly supports Native Hawaiian ways of knowing. Ms. Parker highlighted the cultural practices that continue to occur at Pūnaua and Palapala. She added, “I think that we need to focus on a comprehensive plan that truly supports Native Hawaiian ways of knowing.”
One member present, Mr. Keahi Piiohia, has had experience on both ends of the spectrum. Although he understands the difficulties and contradictions that arise from efforts to restore cultural sites, he also recognizes the value of community consultation in the planning process. Mr. Piiohia has been involved in the cultural surveys conducted by the Hawaiian Cultural Surveys Hawai'i and has seen firsthand the importance of community input in the planning and restoration of historic sites.

Mr. Piiohia emphasizes the need for a comprehensive approach to restoration that respects the traditional ecological practices of the community. He notes that restoring Kawainui, a once-rich coastal ecosystem, requires a deep understanding of the area's cultural and biological significance. Mr. Piiohia's experience in the field has taught him the importance of considering the effects of restoration projects on the community's way of life and cultural heritage.

Mr. Piiohia is particularly concerned about the Master Plan for Kawainui, which focuses on restoring the area's natural resources. He believes that the plan should include measures to ensure that the restoration efforts are culturally appropriate and do not harm the community's traditional practices. Mr. Piiohia suggests that the plan should involve community members in the decision-making process, allowing them to participate in the restoration efforts.

Mr. Piiohia also notes that restoring Kawainui is a complex undertaking that requires the cooperation of various stakeholders, including the community, the government, and private organizations. He encourages the community to participate in the planning process and to express their concerns and ideas about the restoration of Kawainui. Mr. Piiohia believes that the success of the restoration efforts depends on the community's involvement in the process.

Mr. Piiohia's experience in the field has taught him the importance of considering the effects of restoration projects on the community's way of life and cultural heritage. He encourages the community to participate in the planning process and to express their concerns and ideas about the restoration of Kawainui. Mr. Piiohia believes that the success of the restoration efforts depends on the community's involvement in the process.

One member present, Mr. Keahi Piiohia, has had experience on both ends of the spectrum. Although he understands the difficulties and contradictions that arise from efforts to restore cultural sites, he also recognizes the value of community consultation in the planning process. Mr. Piiohia has been involved in the cultural surveys conducted by the Hawaiian Cultural Surveys Hawai'i and has seen firsthand the importance of community input in the planning and restoration of historic sites.

Mr. Piiohia emphasizes the need for a comprehensive approach to restoration that respects the traditional ecological practices of the community. He notes that restoring Kawainui, a once-rich coastal ecosystem, requires a deep understanding of the area's cultural and biological significance. Mr. Piiohia's experience in the field has taught him the importance of considering the effects of restoration projects on the community's way of life and cultural heritage.

Mr. Piiohia is particularly concerned about the Master Plan for Kawainui, which focuses on restoring the area's natural resources. He believes that the plan should include measures to ensure that the restoration efforts are culturally appropriate and do not harm the community's traditional practices. Mr. Piiohia suggests that the plan should involve community members in the decision-making process, allowing them to participate in the restoration efforts.

Mr. Piiohia also notes that restoring Kawainui is a complex undertaking that requires the cooperation of various stakeholders, including the community, the government, and private organizations. He encourages the community to participate in the planning process and to express their concerns and ideas about the restoration of Kawainui. Mr. Piiohia believes that the success of the restoration efforts depends on the community's involvement in the process.

Mr. Piiohia's experience in the field has taught him the importance of considering the effects of restoration projects on the community's way of life and cultural heritage. He encourages the community to participate in the planning process and to express their concerns and ideas about the restoration of Kawainui. Mr. Piiohia believes that the success of the restoration efforts depends on the community's involvement in the process.
Mr. Parker added,

because they understand the importance of cultural protocol.

Mr. Piiohia articulated these structures have been built by Hawaiians and thus are articulations of identity and signs of memory. They are "markers and makers of cultural identity" (Cippola 2003:12). As Mr. Parker noted, "We need to be sensitive to the cultural protocol of the kaiapa'a, the ahupua'a, the fishponds... we need to respect these cultural structures..."

Mr. Piiohia is a kuleana with his land and his community. He shared with CSH:

"I got choked about this place, and we're changing our culture too.

Mr. Piiohia argued,

"Mr. Lopes voiced his concerns well. It's like the Master Plan is a wrecking ball. The planners now are disenfranchising the culture of the people here. They're not here for the scenic walk. I don't really understand the Master Plan."

Mr. Lopes was a key member of the Ke Kahua group, and he added,

"I have well, I have my end with my own. He's five years old. He was born in Kawainui Hospital. His name is Kailua, which is the tranquility from Kawainui, and from Kailua."

Mr. Lopes is a kuleana with his name, and he is not only involved with the revitalization work of Kawainui Marsh, through his wife, Ms. Parker, but also with the community consultation for the Kawainui Master Plan. He is a kuleana with his land and his community, and he understands the importance of cultural protocol.

Ms. Parker added,

"I think that the Master Plan is a sellout. The planners are not listening to the people of Kailua. They're not here for the scenic walk. They're not here for the hui. They're here for the profit. They're here for the money..."

Ms. Parker is a kuleana with her land and her community, and she understands the importance of cultural protocol.

Mr. Piiohia argued,

"As Mr. Piiohia articulated, these structures have been built by Hawaiians and thus are articulations of identity and signs of memory. They are "markers and makers of cultural identity" (Cippola 2003:12). As Mr. Parker noted, "We need to be sensitive to the cultural protocol of the kaiapa'a, the ahupua'a, the fishponds... we need to respect these cultural structures..."

Mr. Piiohia is a kuleana with his land and his community. He shared with CSH:

"I got choked about this place, and we're changing our culture too.

Mr. Piiohia argued,

"Mr. Lopes voiced his concerns well. It's like the Master Plan is a wrecking ball. The planners now are disenfranchising the culture of the people here. They're not here for the scenic walk. I don't really understand the Master Plan."

Mr. Lopes was a key member of the Ke Kahua group, and he added,

"I have well, I have my end with my own. He's five years old. He was born in Kawainui Hospital. His name is Kailua, which is the tranquility from Kawainui, and from Kailua."

Mr. Lopes is a kuleana with his name, and he is not only involved with the revitalization work of Kawainui Marsh, through his wife, Ms. Parker, but also with the community consultation for the Kawainui Master Plan. He is a kuleana with his land and his community, and he understands the importance of cultural protocol.

Ms. Parker added,

"I think that the Master Plan is a sellout. The planners are not listening to the people of Kailua. They're not here for the scenic walk. They're not here for the hui. They're here for the profit. They're here for the money..."

Ms. Parker is a kuleana with her land and her community, and she understands the importance of cultural protocol.

Mr. Piiohia argued,

"As Mr. Piiohia articulated, these structures have been built by Hawaiians and thus are articulations of identity and signs of memory. They are "markers and makers of cultural identity" (Cippola 2003:12). As Mr. Parker noted, "We need to be sensitive to the cultural protocol of the kaiapa'a, the ahupua'a, the fishponds... we need to respect these cultural structures..."

Mr. Piiohia is a kuleana with his land and his community. He shared with CSH:

"I got choked about this place, and we're changing our culture too.

Mr. Piiohia argued,

"Mr. Lopes voiced his concerns well. It's like the Master Plan is a wrecking ball. The planners now are disenfranchising the culture of the people here. They're not here for the scenic walk. I don't really understand the Master Plan."

Mr. Lopes was a key member of the Ke Kahua group, and he added,

"I have well, I have my end with my own. He's five years old. He was born in Kawainui Hospital. His name is Kailua, which is the tranquility from Kawainui, and from Kailua."

Mr. Lopes is a kuleana with his name, and he is not only involved with the revitalization work of Kawainui Marsh, through his wife, Ms. Parker, but also with the community consultation for the Kawainui Master Plan. He is a kuleana with his land and his community, and he understands the importance of cultural protocol.

Ms. Parker added,

"I think that the Master Plan is a sellout. The planners are not listening to the people of Kailua. They're not here for the scenic walk. They're not here for the hui. They're here for the profit. They're here for the money..."

Ms. Parker is a kuleana with her land and her community, and she understands the importance of cultural protocol.

Mr. Piiohia argued,

"As Mr. Piiohia articulated, these structures have been built by Hawaiians and thus are articulations of identity and signs of memory. They are "markers and makers of cultural identity" (Cippola 2003:12). As Mr. Parker noted, "We need to be sensitive to the cultural protocol of the kaiapa'a, the ahupua'a, the fishponds... we need to respect these cultural structures..."

Mr. Piiohia is a kuleana with his land and his community. He shared with CSH:

"I got choked about this place, and we're changing our culture too.

Mr. Piiohia argued,

"Mr. Lopes voiced his concerns well. It's like the Master Plan is a wrecking ball. The planners now are disenfranchising the culture of the people here. They're not here for the scenic walk. I don't really understand the Master Plan."

Mr. Lopes was a key member of the Ke Kahua group, and he added,

"I have well, I have my end with my own. He's five years old. He was born in Kawainui Hospital. His name is Kailua, which is the tranquility from Kawainui, and from Kailua."

Mr. Lopes is a kuleana with his name, and he is not only involved with the revitalization work of Kawainui Marsh, through his wife, Ms. Parker, but also with the community consultation for the Kawainui Master Plan. He is a kuleana with his land and his community, and he understands the importance of cultural protocol.

Ms. Parker added,

"I think that the Master Plan is a sellout. The planners are not listening to the people of Kailua. They're not here for the scenic walk. They're not here for the hui. They're here for the profit. They're here for the money..."

Ms. Parker is a kuleana with her land and her community, and she understands the importance of cultural protocol.
Mr. Bermudez is a member of Ke Kaihuna o Kailua 1 during a follow-up meeting with Mr. Waho. CSL interviewed Richard Bermudez, Jr. on 29 March 2017 in Waimānalo for the Kawainui Marsh Master Plan project. Richard Bermudez, Jr. also known as Uncle Ricky, is a well-known local and a long-time resident of the area.

Mr. Bermudez has been involved in the Kawainui Marsh project for a number of years. He has been an advocate for the protection and restoration of the area. He has worked with various groups and organizations to ensure that the project is done in a culturally sensitive manner.

Mr. Bermudez believes that the Kawainui Marsh is a sacred place and that it should be protected. He feels that the area is a place where Native Hawaiians can come to learn about their culture and history. He has been a vocal advocate for the protection of the area and has been involved in various efforts to ensure that the project is done in a culturally sensitive manner.

As a local resident, Mr. Bermudez has seen the changes that have taken place in the area. He has witnessed the loss of the traditional way of life and the impact that development has had on the environment. He feels that the Kawainui Marsh project is an opportunity to bring back the traditional way of life and to respect the sacredness of the area.

Mr. Bermudez has been involved in various efforts to ensure that the project is done in a culturally sensitive manner. He has worked with various organizations and individuals to ensure that the project is done in a way that respects the culture and traditions of the area.

Mr. Bermudez believes that the Kawainui Marsh project is an opportunity to bring back the traditional way of life and to respect the sacredness of the area. He has been involved in various efforts to ensure that the project is done in a culturally sensitive manner. He has worked with various organizations and individuals to ensure that the project is done in a way that respects the culture and traditions of the area.
Cultural Surveys Hawai'i Job Code: KAILUA 48

Community Consultation

Mr. Bermudez, a cultural practitioner and surfboard shaper, has been deeply involved in the revitalization efforts of the Kawainui marsh. His passion for the land and water stems from his upbringing in Kailua and his ancestral knowledge of the land. Mr. Bermudez began working within the construction industry after entering adulthood, but he yearned for a deeper connection to the land and its cultural significance. This led him to pursue a career in cultural revitalization, focusing on his natural gifts in canoe building and surfing.

Mr. Bermudez's work in the Kawainui marsh began with a visit to the area, where he was struck by the beauty and potential of the marsh. He realized that the marsh could be a place for cultural revitalization and education, teaching the community about the importance of stewardship and the values of the land. His work involved planting trees, building canoes, and revitalizing the natural environment. Mr. Bermudez's approach was based on a deep understanding of the land and its cultural significance, and he sought to involve the community in this process.

Mr. Bermudez also noted the challenges posed by invasive species, such as the pūpū tree, which can spread quickly and disrupt the natural balance of the marsh. He emphasized the importance of education and proper stewardship to protect the land and its cultural heritage.

Mr. Bermudez's vision for the Kawainui marsh is one of harmony between nature and culture. He envisions a place where the community can come together to learn about the land, its history, and its cultural significance. Mr. Bermudez's work is not just about revitalizing the land but also about revitalizing the community and its cultural identity. He hopes to involve the community in the process and make sure that the work is sustainable and culturally appropriate.

Mr. Bermudez's work in the Kawainui marsh is an example of how cultural revitalization can be integrated into land management practices. His approach is based on a deep understanding of the land and its cultural significance, and he seeks to involve the community in this process. His work is a testament to the power of cultural revitalization in protecting and preserving our natural resources.
Mr. Bermudez emphasized the linkages among observation, learning, and stewardship. By "by observing one learns (Pukui et al. 1972:48 in Chun 2011:85). Observe," hand with traditional patterns of education; this symbiotic relationship is exemplified by the proverb, "Hand in hand with descendants of the area, individuals who understand the cultural significance of wai, and task them with the responsibility of stewardship. Stewardship would work hand in hand with government out of those sorts of things. I really believe in the process of the community and the people, and I need at least two to five, ten years to at least plant something. I cannot work on two year leases. I need at least ten . . . just do one row [of crops]. If this gets wiped out, I'm empty. . . That's why I plant twice a month, every month. . . watching the area for a long time. People who are cultural practitioners, people who are not State workers . . . that way we don't need to worry about the money. . . House building, canoe building, and weapon making. In order to reestablish these plants, full-time farmers are needed. He emphasized to CSH that Kawainui Marsh is a cultural resource because it provides the raw materials necessary for the continuation of traditional cultural practices. He stated that he would like to see the reestablishment of various plants and trees used in traditional medicine, clothing, house building canoes, and weapon making. In order to reestablish these plants, full-time farmers are needed. . . and get the water moving. . .

According to Mr. Bermudez, this knowledge, collected through observation, can be used to develop best practices for land conservation. Mr. Bermudez’s observations of water within the transformed landscape would include areas already planted. My goal is to see predominantly food plants grown there and not be covered in 18-24 inches of water, within a couple of months. . . I planted filamentous algae, so on.

Mr. Bermudez discussed his experiences as a farmer, planting along the banks of Kawainui Marsh. As a member of the Kauluaua Club, there’s a lot of benefit in having the area where we do so. . .

Mr. Bermudez stressed the importance of recognizing the cultural significance of wai, and the need for acknowledgement of the cultural knowledge that exists. The importance of recognizing what’s above, what’s down below, and where all the streams, where the water bodies, where the metal, nitrogen, phosphates? It’s important to understand water quality, we did some cleaning and I noticed that when we did that, we actually had a flood. So, I don’t know if it’s good or bad, but that’s what I did, I stopped the water flow. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .

I noticed that when we do touch the water, we change the hydrology. Last August, we did some cleaning and I noticed that when we did that, we actually had a flood. . . I’ve been there when the water started percolating out of the ground . . . So, the water it changes, different levels, different areas covered in 18-24 inches of water, within a couple of months. So, to me that was a challenge, I was totally ignorant to something like that, so I’ve seen it happen three times. . .
Dear HHF Planners,

Subject: Community Consultation

I would like to take this opportunity to provide comments regarding the proposed Kawainui-Hamakua Complex Draft Master Plan.

First, I would like to commend the State for recognizing the importance of cultural resources and their significance in the Proposed Master Plan. As a descendant of the Kailua Ahupua'a, I believe it is crucial to understand the historical and cultural significance of the area.

I am well aware that my claim to these rights has been further qualified in 89 H. 177, 970 P.2d 485: The State reaffirms and shall protect all rights, customarily and traditionally acknowledged and possessed by native Hawaiians to the use and enjoyment of natural and cultural resources. I am confident that this claim is just and fair, and I urge your support.

Please consider the following recommendations:

1. **Cultural Surveys Hawai'i** should be conducted to identify and assess the cultural resources on the proposed project site. Much has been written about Wai'auia, but the vast majority of it is still untranslated Hawaiian language newspapers of the late 19th and early 20th centuries—which is exactly my field of interest. I am hoping that you will be able to still through my staff and extract the info that you’ve after all, I ask that you credit my work and sources. If you intend to use any of it in your final EIS, I would appreciate your credit.

2. The Moorea Hawaiian Studies Center described in the Draft Kawainui-Hamakua Complex Draft Master Plan is a valuable resource that should be preserved. The site houses significant Hawaiian language newspapers, and I believe it is important to keep it intact.

3. As a descendant of Kailua, I would like to suggest an inventory of natural and cultural resources be made, arguing that an inventory must be an adequate foundation for the claims of right. I also support the need for cultural property assessments to be conducted before any development.

Please feel free to contact me should you have questions or need for clarification.

Sincerely,

Kahlo de Silva
Cultural Surveys Hawai'i Job Code: KAILUA 48

Community Consultation

6.4.4 Letter Correspondence with Representative Cynthia Thielen

The Kawainui-Makaha Complex has been designated as a Ramsar

Site (1976) and a National Natural Landmark (1980). It is managed

by the State of Hawai'i Department of Land and Natural Resources

through a partnership with the Koko'ula Center for Cultural

Preservation and Education. The Complex is located near the

community of Kailua in the east end of O'ahu, and includes the

Kawainui Fishpond, the Kawainui Marsh, and the Kawainui

Wetland. The Kawainui Marsh is a Ramsar Site and a National

Natural Landmark. The Kawainui Wetland is a Ramsar Site and a

National Natural Landmark. The Kawainui Fishpond is a Ramsar

Site and a National Natural Landmark. The Kawainui Marsh

Complex is a Ramsar Site and a National Natural Landmark. The

Kawainui Wetland is a Ramsar Site and a National Natural

Landmark. The Kawainui Fishpond is a Ramsar Site and a

National Natural Landmark.

When we propose—concert with the native Kauai residents and

their cultural heritage, the Kawainui Marsh is designated as a

Ramsar Site and a National Natural Landmark. The Kawainui

Wetland is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Fishpond is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Marsh

Complex is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Wetland is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Fishpond

is designated as a Ramsar Site and a National Natural

Landmark.

When we propose—concert with the native Kauai residents and

their cultural heritage, the Kawainui Marsh is designated as a

Ramsar Site and a National Natural Landmark. The Kawainui

Wetland is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Fishpond is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Marsh

Complex is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Wetland is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Fishpond

is designated as a Ramsar Site and a National Natural

Landmark.

When we propose—concert with the native Kauai residents and

their cultural heritage, the Kawainui Marsh is designated as a

Ramsar Site and a National Natural Landmark. The Kawainui

Wetland is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Fishpond is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Marsh

Complex is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Wetland is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Fishpond

is designated as a Ramsar Site and a National Natural

Landmark.

When we propose—concert with the native Kauai residents and

their cultural heritage, the Kawainui Marsh is designated as a

Ramsar Site and a National Natural Landmark. The Kawainui

Wetland is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Fishpond is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Marsh

Complex is designated as a Ramsar Site and a National Natural

Landmark. The Kawainui Wetland is designated as a Ramsar

Site and a National Natural Landmark. The Kawainui Fishpond

is designated as a Ramsar Site and a National Natural

Landmark.
Cultural Surveys Hawai'i Job Code: KAILUA 48

Community Consultation

Cultural Surveys Hawai'i

Figure 82. Letter from Representative Cynthia Thielen regarding the proposed Kawainui-Hāmākua Master Plan project.

6.4.5 Herb Lee

CSH interviewed Herb Lee at Kalapawai Market in Kailua on 22 December 2016 for the proposed Kawainui-Hāmākua Master Plan project. Mr. Lee grew up in Kāneʻohe on the island of Oʻahu. Mr. Lee, however, currently lives in the neighboring ahupuaʻa of Kailua. Although he moved from Kāneʻohe to Kailua in 1995, Mr. Lee continues to work in Kāneʻohe. He commented that he believes the entirety of Koʻolau Moku to be his “sphere of influence.”

He elaborated that he “grew up in Kāneʻohe . . . live[s] in Kailua now, and . . . go[es] to church in Waimānalo.”

Mr. Lee is currently the Executive Director of the Pacific American Foundation. The Pacific American Foundation was founded in 1993 “with the mission to promote systemic change in the educational system that preserves and perpetuates traditional ways of knowing through culture-based education which enhance the rigor, relevance, and relationships for students and life-long learners” (Pacific American Foundation 2016). Regarding his role as Executive Director of the Pacific American Foundation, Mr. Lee related his own personal experiences within Hawai‘i’s educational system. Mr. Lee graduated from Damien Memorial School in 1972 and pursued higher education at the University of Hawai‘i at Mānoa. At university, Mr. Lee double majored in psychology and political science, eventually obtaining his master’s degree in public administration. Mr. Lee made note of the momentous period in which he attended university; this period was known as the Hawaiian Renaissance. In a 1979 speech, George S. Kanahele, powerfully described the movement and period known as the Hawaiian Renaissance.

Let me say, first of all, we’re not really here to listen to me talk about the Hawaiian Renaissance—we’re here to celebrate it. For if anything is worth celebrating, it is that we are still alive, that our culture has survived the onslaughts of change during the past 200 years. Indeed, not only has it survived, it is now thriving.

Look at the thousands of young men dancing the hula; or the overflow Hawaiian language classes at the university; or the revived Hawaiian music industry; or the astounding productivity of Hawaiian craftsmen and artists. Consider such unprecedented events as the voyage of the Hokule‘a, the occupation of Kaho‘olawe, and passage of the Hawaiian package at the Constitutional Convention.

Like a dormant volcano coming to life again, the Hawaiians are erupting with all the pent-up energy and frustrations of people on the make. This great happening has been called a “psychological renewal,” a “reaffirmation,” a “revival” or “resurgence” and a “renaissance.” No matter what you call it, it is the most significant chapter in 20th century Hawaiian history. [Kanahele 1979]

Mr. Lee commented on how this particular cultural reawakening had a profound effect on his life and learning:

I got my master’s in public administration, all at UH. And I loved it, I learned everything, I spent eight years there. I learned . . . that time in Hawai‘i’s history was the Renaissance in Hawaiian culture and music and hula (dance), and it was beginning to become very popular. So we were a part of that whole Renaissance.
but nine months later we saw them go through this amazing transformation and as kids, they were not only the reluctant learners, they became the teachers of the point because they understood the value of what they were learning and that they knew it was coming next. The nine months of the cultural immersion was a way to show to the students what the teachers were trying to learn. The teachers learned the language, the culture, and the history. They also learned to teach the students to teach each other. The result was a transformation in the students. They became more engaged, more interested, and more committed to learning. Mr. Lee noted that it was a way to connect the students to their heritage and to show them that their culture was something to be proud of. He also said that it was a way to give the students a sense of belonging and to show them that they were part of something bigger than themselves. He added that it was a way to show the students that their culture was something to be shared and that it was something that would be passed on to future generations.

He continued by sharing a personal story regarding the genesis of a long-term plan to bridge the gap between cultural resources and the community. Due to the success of the educational program at Waikalua Loko I'a, questions were raised regarding the possibility of a similar education program being established at Kawainui Marsh. Kawainui Marsh was recognized as a natural and cultural resource, and as a unique and powerful teaching tool, especially for children of Hawaiian ancestry. Mr. Lee has learned to synthesize both his Hawaiian culture and Western education in order to create a curriculum that would engage students in learning about their cultural heritage. He believes cultural resources are better cared for and preserved over time.

Mr. Lee explained that the idea for the Kawainui project came about because he wanted to give the students a chance to learn about their culture and to show them that their culture was something to be proud of. He added that he wanted to show them that they could learn about their culture in a way that was fun and engaging. He also said that he wanted to show them that they could learn about their culture in a way that was relevant to their lives.

He continued by saying that he wanted to show the students that they could learn about their culture in a way that was connected to the land and the resources that they lived on. He added that he wanted to show them that they could learn about their culture in a way that was connected to the local community. He said that he wanted to show the students that they could learn about their culture in a way that was connected to the future.

Mr. Lee said that he wanted to show the students that they could learn about their culture in a way that was connected to the present and the past. He added that he wanted to show the students that they could learn about their culture in a way that was connected to the future. He said that he wanted to show the students that they could learn about their culture in a way that was connected to the present and the past. He added that he wanted to show the students that they could learn about their culture in a way that was connected to the future.
Figure 83. Overview of the *Aloha 'Āina Units* (worksheet provided by Mr. Herb Lee; Pacific American Foundation 2014)

CIA for the Kawainui-Hïlkiihi Master Plan, Kailua, Ko'olaupoko, O'ahu

Figure 84. The culture-based education model utilized for the *Aloha 'Āina Units* (worksheet provided by Mr. Herb Lee; Pacific American Foundation 2014)

CIA for the Kawainui-Hïlkiihi Master Plan, Kailua, Ko'olaupoko, O'ahu
Mr. Lee shared these learning outcomes (and their associated Tālaha no aloha [proverbs]) with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.

Mr. Lee shared these outcomes with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.

Mr. Lee shared these outcomes (and their associated Tālaha no aloha [proverbs]) with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.

Mr. Lee shared these outcomes (and their associated Tālaha no aloha [proverbs]) with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.

Mr. Lee shared these outcomes (and their associated Tālaha no aloha [proverbs]) with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.

Mr. Lee shared these outcomes (and their associated Tālaha no aloha [proverbs]) with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.

Mr. Lee shared these outcomes (and their associated Tālaha no aloha [proverbs]) with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.

Mr. Lee shared these outcomes (and their associated Tālaha no aloha [proverbs]) with his students, who then reflected on the meaning of the outcomes:

1. Strengthened sense of Belonging
2. Strengthened sense of Responsibility
3. Strengthened sense of Reflection
4. Strengthened sense of Belonging
5. Strengthened sense of Total well-being
6. Strengthened sense of Hawai'i

For Mr. Lee, Kawainui Marsh would become a place to ground students’ sense of belonging and responsibility; to teach them to strive for excellence. Most importantly, the hope is to establish students’ sense of belonging and responsibility to Hawai'i, to Hawai'i—a place unlike anywhere else—are the unique cultural consequences.
Dr. Charles Burrows

644K

Dr. Charles Burrows

Cultural Surveys Hawaii Job Code: KAILUA 48

Community Consultation

To develop promote and practice a native Hawaiian conservation ethic relevant to our times that is responsible to both Hawaiian culture and science. This ethic is expressed through research, education, and active stewardship.

Dr. Burrows connection to Mauna Kea and how his initial interest in Hawaiian culture developed. For many years, he has been involved in the protection of cultural heritage and the environment. He cultivated his knowledge and love for the land throughout his career.

Dr. Burrows has continued to fulfill his kuleana to the land. He has been an active participant in the conservation and restoration of sites in Kawainui Marsh.

Dr. Burrows emphasized the importance of studying both the natural and cultural history of the islands. In particular, he shared his experiences working with scholars and community groups to understand and protect the area.

In addition to this research, Dr. Burrows has focused on promoting public awareness and engagement. He has been involved in organizing educational programs for children and adults alike. One of his notable contributions was the development of the Kawainui Marsh Education Center.

Dr. Burrows has passed away too soon, but his legacy lives on through his work and dedication to the Kawainui Marsh. His contributions have helped to raise awareness and inspire action to protect this valuable resource for future generations.

The mat in the marsh, the main concern is the water, we don't have nearly enough. If you plan for ten years, you plant. If you plan for 100 years, you teach the children. This is a native Hawaiian culture protocol first.

I value this. In his retirement, he has been teaching at the University of Hawaii at Manoa, where he continues to mentor and inspire the next generation of conservationists.

Dr. Burrows has been a tireless advocate for the preservation of the Kawainui Marsh and its surrounding areas. His dedication to the land and its resources is a testament to his commitment to the Hawaii community.
Due to the soils of Waiau consisting mostly of sandy loam, it is very low. Dr. Burrows believes the probability of encountering historic properties of Waiau is very low. He briefly discussed cultural policies for Waiau under DLNR, DOFAW, and State Parks, and indicated that the area was used for various school and community groups.

In response to concerns of development on Waiau, the Kawainui Community Park with city funds. This was one of the first parks in Kailua under Mayor Harris' Vision Kailua Neighborhood Plan to develop the area. The plan involved the formation of this committee, the Kawainui Master Plan, and subsequently incorporated into the 1994 Kawainui Master Plan. The plan functioned as the basis for the legislature to be more things to be done. It was decided by the Kailua Descendants not to use that site to re-inter bones but to construct a facility for a Hawaiian Studies center. So the plans are a small area, not a big thing... the reason why they're there is to re-inter the bones. It is very important for the community to come together under a shelter when it rains or when the hot sun blazes...

Currently, those visiting the area need a permit from police and a bridge walkway from Kaha to Oneawa Canal. But the people who lived there were against it because it would attract more people to that area... So we worked with Dave Curry to make a small bridge walkway that could stand in part of Waiau. The Master Plan calls for establishing a trail around Kawainui. The area is known to consist of landfills from the construction of the Kailua Drive-In Theater. Dr. Burrows cited a study of the marshland and development of a small shopping center in Kawainui. The site would be dual-purpose; caretakers would safeguard such care could be provided through the establishment of a Hawaiian Studies center. So the plans are a small area, not a big thing... the reason why they're there is to re-inter the bones.
6.4.7 Meredith Speicher

CSH interviewed Meredith Speicher via telephone on 10 January 2017 for the proposed Master Plan, Kailua, Ko'olaupoko, O'ahu.

Meredith Speicher grew up in Bolton, Massachusetts but is a Hawaiian cultural practitioner. She explained that the Kawainui marsh was her first experience with Hawaiian culture and that it became a place for her to learn about and become connected to her heritage. She continued to live in Hawaii after college, where she worked for the National Park Service, eventually moving to the Natural Parks Service.

Dr. Burrows began conducting the interviews by asking what the Master Plan is truly about. Meredith Speicher responded that the Master Plan is about the Hawaiian values of caring for creation and all life forms, and that it is the hui, or community, that is responsible for protecting and preserving the marsh.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center at the former Cash Ranch, now called Palmer Ranch. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.

Meredith Speicher noted the importance of cultural knowledge in the development of the Master Plan. She explained that the Master Plan is a way to help people understand the cultural history of Kawainui, and that it is important to allow for community outreach and engagement.

Dr. Burrows pressed upon the importance of creating educational opportunities for island students, and explained that the proposed learning tools will be minimal and contained within areas historically known to contain fill sediments.

Dr. Burrows also shared that the Master Plan includes establishing the Kawainui Educational Center and Visitor's Center. According to Dr. Burrows, the Kawainui Educational Center will be connected by trails constructed by the Natural Parks Service.
Ms. Speicher commented on the most interesting aspects of her study of Kawainui Marsh. She specifically focused on its life history, how it has changed, and how it was originally used in the past. She commented that she believes much still remains unknown about the marsh, and significant research can still be conducted on this valuable natural resource. Ms. Speicher also commented specifically on the dedication and the vision of some of the leaders who wanted to see something happen, and their ability to get volunteers and to just do that was just one of the impressive things. At the time, Kailua was seeing a dramatic increase in tourism, so this fear was not unwarranted. However, it is important to note that Ms. Speicher was not trying to do away with the marsh, but rather to find a way to manage it in a way that would be beneficial to both the community and its natural resources.

The dedication and the vision of some of the leaders who wanted to see something happen, and their ability to get volunteers and to just do that was just one of the impressive things. At the time, Kailua was seeing a dramatic increase in tourism, so this fear was not unwarranted. However, it is important to note that Ms. Speicher was not trying to do away with the marsh, but rather to find a way to manage it in a way that would be beneficial to both the community and its natural resources.

One of the ways that Ho’olaulima believed it could assist with the misconceptions and real threats that people see is to develop an awareness plan that can address the concerns of overuse. Capacity and overuse needs to be something that is addressed. This is the concern that was opposed to developing anything in the marsh, and significant research can still be conducted on this valuable natural resource, but they believed it was too much work and out of their scope. Ms. Speicher also commented that she believes much still remains unknown about the marsh, and significant research can still be conducted on this valuable natural resource. Ms. Speicher also commented specifically on the dedication and the vision of some of the leaders who wanted to see something happen, and their ability to get volunteers and to just do that was just one of the impressive things. At the time, Kailua was seeing a dramatic increase in tourism, so this fear was not unwarranted. However, it is important to note that Ms. Speicher was not trying to do away with the marsh, but rather to find a way to manage it in a way that would be beneficial to both the community and its natural resources.
Ms. Speicher referred CSH back to her research on carrying capacity. Within this research, she stated the following:

Ms. Speicher outlined potential use-related concerns (Appendix E):

1. Increased public access and use could impact areas of deep spiritual or cultural significance to Native Hawaiians and their way of life.

2. Cultural landscapes, archeological sites, historic sites, and other places that have cultural significance to Native Hawaiians and their use of these areas must be taken into consideration.

3. Informal trail activity, where visitors leave the designated trail or area, could have a negative impact on natural resources, endangered waterbirds, and sensitive and rare plants and wildlife.

4. Natural resources, such as halawa and other cultural resources, must be protected.

5. Visitor crowding, disturbance of private property owners, increased presence of tour bus activity that is not regulated or pre-arranged may overcrowd sites and create visitor conflicts.

6. Increasing public use may degrade visitor experiences and create visitor conflicts.

Within her research, Ms. Speicher also provided recommendations to mitigate possible effects to natural and cultural resources (see Appendix E):

1. Incidences of effect should be avoided.

2. Management actions that may be considered to avoid or minimize these impacts include:

- Educate visitors/users to Native Hawaiian traditional practices.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers.
- Develop a reservation or permit system to redistribute or limit use.
- Educate visitors/users to the importance of protecting natural resources.
- Create visitor centers. 
2. Incidences of site disturbance, trampling, or damage to elements of the cultural landscape or exposure of cultural resources such as archaeological resources:

Management actions that may be considered to avoid or minimize these impacts include:
- Institute a policy to restrict off-trail travel or parking on above-ground cultural resources.
- Designate specific areas where public use is allowed.
- Provide signage and educational materials to inform visitors about cultural resources.
- Close areas when use levels exceed permitted thresholds.
- Implement monitoring and enforcement programs to ensure compliance.
- Develop strategies to mitigate the impacts of increased use levels.

3. Numbers of informal trails or areas of trampling disturbance, especially in areas with critical cultural resources:

Management actions that may be considered to avoid or minimize these impacts include:
- Institute a policy to restrict off-trail travel or parking on above-ground cultural resources.
- Designate specific areas where public use is allowed.
- Provide signage and educational materials to inform visitors about cultural resources.
- Close areas when use levels exceed permitted thresholds.
- Implement monitoring and enforcement programs to ensure compliance.
- Develop strategies to mitigate the impacts of increased use levels.

4. Incidences of vandalism or theft of cultural resources:

Management actions that may be considered to avoid or minimize these impacts include:
- Institute a policy to restrict off-trail travel or parking on above-ground cultural resources.
- Designate specific areas where public use is allowed.
- Provide signage and educational materials to inform visitors about cultural resources.
- Close areas when use levels exceed permitted thresholds.
- Implement monitoring and enforcement programs to ensure compliance.
- Develop strategies to mitigate the impacts of increased use levels.

5. Condensation of site disturbance, trampling, or damage to elements of the cultural landscape or exposure of cultural resources such as archaeological resources:

Management actions that may be considered to avoid or minimize these impacts include:
- Institute a policy to restrict off-trail travel or parking on above-ground cultural resources.
- Designate specific areas where public use is allowed.
- Provide signage and educational materials to inform visitors about cultural resources.
- Close areas when use levels exceed permitted thresholds.
- Implement monitoring and enforcement programs to ensure compliance.
- Develop strategies to mitigate the impacts of increased use levels.

6. Incidences of site disturbance, trampling, or damage to elements of the cultural landscape or exposure of cultural resources such as archaeological resources:

Management actions that may be considered to avoid or minimize these impacts include:
- Institute a policy to restrict off-trail travel or parking on above-ground cultural resources.
- Designate specific areas where public use is allowed.
- Provide signage and educational materials to inform visitors about cultural resources.
- Close areas when use levels exceed permitted thresholds.
- Implement monitoring and enforcement programs to ensure compliance.
- Develop strategies to mitigate the impacts of increased use levels.
CIA for the Kawainui–Hāmākua Master Plan, Kailua, Koʻolaupoko, O’ahu

TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

The earliest navigators and chiefs who inhabited the area directed the water management and agricultural systems, which are unparalleled elsewhere in Polynesia. On the slopes of Uluamanu are two ho‘oia which overlook Kawainui Marsh, Pa‘iulani Ho‘au attributed to the 14th century Tahitian Chief Olopana (listed in the State and National Registers of Historic Places), and Holomakani Ho‘au attributed to a 10th century home-grown navigational chief, Pākahaua.

Surrounding the former freshwater fishpond and its tributaries are the remnants of walled water gardens (lo‘i) in which taro was grown for one of the largest native Hawaiian settlements. The agricultural site cluster associated with the Kawainui area has been described as the earliest agricultural field dated in the Hawaiian Islands. Haimana Marsh was once part of this extensive system of wetlands, fishponds, and agricultural terraces of this Native Hawaiian settlement, and a historical study of the wetland found platforms, litter, and a possible habitation structure.

About 500 years ago, early Hawaiians maintained the freshwater fishpond in Kawainui, which was joined by a stream to nearby Ka‘elepulu Pond (Buchanted Lake). The fishpond was surrounded on all sides by a system of canals bringing water from Waimanālo Stream and springs to walled taro (lo‘i). The historical walls from the lo‘i still exist in Kawainui Marsh, thought to be approximately a foot or two below existing ground elevations. The system of terraces east of the seaward end of Po‘opoe‘u was fed by the stream running from Kawainui to Ka‘elepulu Stream.

Terraces west of Kawainui Pond at Kapa‘a Valley were fed by Kapa‘a Stream, while those to the north, below Mahimā, received waters diverted from Kawainui. Where the system of canals moved through what is now called the Hāmākua area, excessive runoff could be directed into Kailua’s other freshwater, spring-fed fishpond, Ka‘elepulu. Both fishponds were used to raise fish (mulloks, mullet, akule, and o‘opa), with the residents of Waimanalo and Kailua seasonally called upon to help clear the ponds of excessive algae; all who participated in maintaining the fishponds were permitted to keep fish.

The Kawainui marsh area has many landforms named for sacred persons revered in over 1,500 years of Hawaiian tradition. There is Hawaiian legendary history associated with the Kawainui Marsh area, including a legend of Naowahina, a guardian spirit over the Kawainui fishpond, called a mo‘o, and a famous mythological tree, Makahle, which had the power of attracting fish. Mo‘o purportedly lived in a grove of oak by the Makalei tree near where the waters drain from Kawainui Marsh to Hāmākua. Naowahina’s companion mo‘o, named Kīlolo, lived at the opposite end of Hāmākua near where Kawainui Stream enters Ka‘elepulu Stream. The length of Kawainui Stream is the area of cults between the male, Kawainui, and the female, Ka‘elepulu, explaining why those waters always teemed with the juvenile fish common to both ancient fishponds.

The Hawaiian crow (aka he‘o‘o‘i) and Hawaiian mavenoh (Cala‘ula‘ula) are sacred to Himu, a Hawaiian Earth-mother category of godness who can take the form of these birds. The eggs of these birds were traditionally used in ceremonies to consecrate chiefs and priests. The Hawaiian Still is sacred to the Hawaiian god Ku, in his form as a fisherman. Those birds are a culturally significant and endangered resource.
The Hawaiian Duck (Hololaxa undulata) and 'ale 'ale were listed as federally endangered species in 1967 under the U.S. Endangered Species Act. The Hawaiian Goose ('ula ko 'ala) and rail ('ala) were added to the federal endangered species list in 1970.

Site 7 is noted in the 1994 Kawailoa Nui Master Plan pg. 4-14 as a "large complex of rectangular walled fields and probably water channel. None of the site is visible in the marsh's present condition, but it is likely that many of these walls are still present under a layer of sediment 6 inches to one foot below the surface."

Yet the Arroyo Corp of Engineers was unaware of the location, extent or significance of the walls and other features in Site 7, which were "inadvertently" discovered when digging the new ponds. Attached photos show the location and disturbance to the walls.

Because this lack of knowledge and awareness of the walls and features of site 7 the attached Bishop Museum map must be included in any Plan for Kawainui in order to prevent further "inadvertent" discovery and destruction of historic and significant walls and features. (See attached)

Kawainui Marsh Site SHIP 50-80-11-7199 is an historic (prior to 1926) upland section of roadway that extends roughly parallel to the western edge of Kawainui Marsh. The road and possibly house sites are easily identifiable by the location of trees adjacent to the road and marking the maku house sites. Other than the SHIP identification and notation in the DOWAF Kawainui Marsh Wetland Restoration and Habitat Enhancement Project DSA little is known of any use or complex surrounding the road either in this location or the length of the road. (See attached)

The seven pages that make up the Study Area Archaeological Sites section in the 1994 Kawainui Marsh Master must be included in this Plan and any Plan for Kawainui Marsh. This documentation of known archaeological sites provides valuable information on the extensive Hawaiian presence in Kualoa ahupua'a, which must not be ignored nor forgotten.

Kawainui Marsh, classified Class I.b. state waters, have been used as a dump for an auto wrecking yard; sanitary landfill; illegal dumping, pasture land and a repository for wastewater from sewage treatment plants.

Information on the following must be included in this Plan:

- The old Holua platform on Uluwaa hillside.
- Mauaovalu Valley ancient natural springs that provide water to ho'ola and Kahanuvalu and Kahanuvalu Streams that are Kawainui Marsh’s main sources of water.
- Mauaovalu Valley’s birthing stone, the Queens Retreat (Bloyd estate). Queens bath and two parallel rows of royal palms and the Old Government Road that once was the only road from the Pali to Waimanalo.
- Kupa’a watershed, where Hawaiians lived as long ago as 500 AD, drains indirectly to Kawainui Marsh and Kupa’a Stream which flows directly into Kawainui Marsh.

fulfilling dreams and desires, the seed of fulfillment. That's my guiding point in my life and what I do is Lehuakona, the seed of fulfillment. I do that by doing this ZRUNDQGGGLQJLWWKHEHVW, FDQ 7RUHVWRULQJ WKHKHD WKH LQDUHVWRULQJ WKH health to our people. There's so much work to be done but that name guides me and inspires me.

Mr. Isaacs shared with CSH that he was born in Kalihi, but moved to Kailua in 1956. While he noted Kailua was not his one hānae, the sands of his birth, Kailua has become “the sands of [his] life.” Mr. Isaacs described the landscape of Kailua during the mid-twentieth century. In particular, he highlighted the rapid changes that have occurred to both infrastructure and population within Kailua Ahupua’a:

Kailua then was very rural, and we would take the Old Pali Road before there were tunnels. Kailua was a not very desirable place, because it was so far from schools and businesses and commerce, but it was also more affordable. That's why my parents moved here. So, I've seen the changes. The Old Pali Road became paved, then tunnels were added, then began the development, the explosion of the population. Our concerns today are with population, over-development, tourists and all the risks our ahupua’a faces.

Although living in Kailua, Mr. Isaacs commuted regularly to attend Kamehameha Schools at Kapalama. Graduating in 1966, Mr. Isaacs pursued higher education at Hawai’i Pacific University (HPU). He noted that he attended university during a period of momentous change; this period, known as the Hawaiian Renaissance, is generally described as a great cultural reawakening. For Mr. Isaacs, this was a period of discovery, of connecting with his Hawaiian identity:

Our whole society has transformed since those early days, with the Hawaiian Renaissance, in which I was deeply involved. Coming together in a collective voice and a collective identity, young Hawaiians, reaching out to discover who we really are—It’s all about our identity and my identity back then was as a really good, industrious young man who was going to contribute to society. That was Kamehameha Schools goal; to produce young industrious men and women to go out into society, but it wasn’t our society we were being prepared for. So we graduated without that real connection to who we were. I went to HPU, and I pursued a degree in anthropology. I applied to and was offered the position as the Deputy Director and Operations Manager of the Kaho‘olawe Reserve Commission. My first attempt at college, my daily priority was, ‘how is the surf?’ ‘Ahhh, ... focused. So actually, my life has been very round about. I became a carpenter because I wanted to work with my hands, I became an apprentice, and served a 4-year apprenticeship here. I had such a desire to do that, that I was able to excel as a carpenter, as a carpenter, a builder, a joiner, and doing really fine finish work on custom homes. I became a contractor, so rather than doing this for someone else, I did it for myself, I got my contractor’s license in 1977. I had my own business for 17 years as a general contractor, working with my hands and tools and running a business. And then in about my wife’s and mine 11th or 12th year, we were kind of burnt out, just the
Mr. Isaacs elaborated on the need to focus on *mahua-mahua* relationships. Specifically, on the need to focus on the health of the mana of the land, the mauna, the aina, the moku, and the ahupua'a. He emphasized the importance of recognizing that the land and sea are interconnected and that the health of one is dependent on the health of the other. He continued by emphasizing the need to establish meaningful connections, specifically between people and the land, between people and the sea. He believed that the health of the land and sea is not just about the physical aspects but also about the cultural and spiritual aspects. He stated that the land and sea are not just resources but are integral parts of who we are as a people. He also emphasized the need for cooperation and cultural exchange, referring back to the type of cooperation and cultural exchange that historically occurred throughout Oceania. For the inhabitants of Oceania, the ocean was a powerful, powerful connecting thing, not a separating thing. Europeans see the oceans as the separator, where for the people of the Pacific it is a way of life, a way of connecting and communicating. Mr. Isaacs stressed the importance of the ocean connecting various island nations, especially in a time when peoples and cultures are more dispersed than ever before. He believed that the ocean is a powerful tool for bringing people together, for sharing knowledge and experiences, and for promoting healing and restoration. He stated that putting natives in—this was more than that. This is the land of our ancestors: the land of our ancestors. Mr. Isaacs talked about how we see the ocean today, modern man and the social network of natural and cultural surroundings. He talked about how connections between people and the ocean are important for our future. He continued by emphasizing the need to establish meaningful connections, specifically between people and the land, between people and the sea.
Cultural Surveys Hawai'i Job Code: KAILUA 48
Community Consultation

Mr. Isaacs went on to elaborate that his knowledge of Kawainui Marsh has come from the physical work he has done on the site, and from the many years he has committed to restoring the forest. If it survives there it is meant to be, if it dies, it doesn't. What we have there could be a really authentic low-land forest by the time we've finished our work. This is important because it's part of our mission to promote and perpetuate a native Hawaiian conservation ethic. It's important to know our mission, and I've connected it with these words to our vision. This is what we see. So the work that we do here in Kawainui is also guided by our mission and our vision.

Mr. Isaacs shared that he learned of the existence of numerous traditional stories and chants through Keiki Kuhio, who was a kind of cultural historian. Keiki Kuhio has many ties to the land, and he's the one who started the Kawainui Marsh project. He shared with Mr. Isaacs that he knew where that person was standing in and around Kawainui when they wrote [or composed] the chant. Mr. Isaacs went on to elaborate that his knowledge of Kawainui Marsh has come from the physical work he has done on the site, and from the many years he has committed to restoring the forest. If it survives there it is meant to be, if it dies, it doesn't. What we have there could be a really authentic low-land forest by the time we've finished our work. This is important because it's part of our mission to promote and perpetuate a native Hawaiian conservation ethic. It's important to know our mission, and I've connected it with these words to our vision. This is what we see. So the work that we do here in Kawainui is also guided by our mission and our vision.

Cultural Surveys Hawai'i Job Code: KAILUA 48
Community Consultation

Mr. Isaacs went on to elaborate that his knowledge of Kawainui Marsh has come from the physical work he has done on the site, and from the many years he has committed to restoring the forest. If it survives there it is meant to be, if it dies, it doesn't. What we have there could be a really authentic low-land forest by the time we've finished our work. This is important because it's part of our mission to promote and perpetuate a native Hawaiian conservation ethic. It's important to know our mission, and I've connected it with these words to our vision. This is what we see. So the work that we do here in Kawainui is also guided by our mission and our vision.
Mr. Isaacs commented on his bond with Kawainui Marsh, noting the kinship relationship that has developed as a result of his time spent working to restore the natural and cultural resources of the area:

"Mr. Isaacs remarked on his bond with Kawainui Marsh, noting the kinship relationship that has developed as a result of his time spent working to restore the natural and cultural resources of the area."

The kinship relationship that Mr. Isaacs has with Kawainui Marsh is significant. He has dedicated a substantial portion of his life to the restoration of the area, and this dedication has allowed him to form a deep and meaningful bond with the land. This bond is not just emotional; it is also a practical one, as he has worked tirelessly to restore the natural and cultural resources of the area. This work has not only benefited the marsh and its inhabitants but has also had a positive impact on the community that surrounds it. As Mr. Isaacs continues to work to protect and restore the area, his bond with Kawainui Marsh will continue to grow stronger, and his legacy will be remembered for generations to come.

---

The reference to the "cultural practice" mentioned in the text is significant. It highlights the importance of understanding and valuing cultural practices, especially in the context of conservation and restoration efforts. Mr. Isaacs' work in Kawainui Marsh reflects a deep understanding of the cultural and ecological relationships that exist in the area. This understanding is crucial for ensuring the long-term success of any conservation efforts. By recognizing and valuing the cultural practices that have shaped the area, Mr. Isaacs is able to work more effectively with the community to protect and restore the marsh. This approach is essential for creating sustainable solutions that benefit both the environment and the communities that depend on it.
Master Plan, Kailua, Ko‘olaupoko, O‘ahu

+ƗPƗNXD

CIA for the Kawainui- on posts. And the reason it’s on posts, is because we want to mitigate the disturbance of the soil—the land. You can’t do this with a mass excavation. If you pour this on a slab [you do major disturbance to the soil]. We’re only going to...
We will continue our work. Plan or no plan. But the plan gives us an opportunity to do so in a planned, efficient manner. We have tried to start our work by having people until we finally build the first house. The plan is for us to operate our first home out of the trailer. And that trailer is there. The plan is for us to operate our firs...
visiting cultural sites located along the shores of Kawainui. Mr. Becket, from the organization on 19 March 2017, visited the site, indicating the presence of grinding stones. He noted the difficulty in determining which portions of the site were in situ or in fact moved by the homeless for the construction of the area into a native dryland forest. Both CSH and Mr. Becket identified native plants growing within the area, including 'aloha, ma'a'o, hili, na'u, na'a, niu, pili, milo, kukui, and na'ai. "These plants are important for cultural and spiritual reasons," Mr. Becket explained.

The area has been used for various purposes throughout history, including as a dumping ground for refuse from Kailua Town. Historic dumping activities have led to the formation of marshes, which have been used for various purposes, including as a source of fresh water. The presence of grinding stones suggests an adze manufacturing site, indicating the use of the area for prehistoric and historic activities. These sites are significant for understanding the history of human settlement and resource extraction at Kawainui. According to Ms. Parker, the current master plan outlines the potential for future use of the area, emphasizing the need for the community as well as the project proponent to respect the kapu, hau, and mo'olelo, spiritually and culturally significant places. Both Ms. Parker and Mr. Richard Bermudez, a CSH project team member, expressed concern regarding the potential for further development and the need for a reconceptualization of the area.

Mr. Becket also discussed current marsh conditions with CSH. He noted the difficulty in determining which portions of stone alignments were in situ or in fact moved by the homeless for the construction of the area into a native dryland forest. Both CSH and Mr. Becket identified native plants growing within the area, including 'aloha, ma'a'o, hili, na'u, na'a, niu, pili, milo, kukui, and na'ai. "These plants are important for cultural and spiritual reasons," Mr. Becket explained.

The area has been used for various purposes throughout history, including as a dumping ground for refuse from Kailua Town. Historic dumping activities have led to the formation of marshes, which have been used for various purposes, including as a source of fresh water. The presence of grinding stones suggests an adze manufacturing site, indicating the use of the area for prehistoric and historic activities. These sites are significant for understanding the history of human settlement and resource extraction at Kawainui. According to Ms. Parker, the current master plan outlines the potential for future use of the area, emphasizing the need for the community as well as the project proponent to respect the kapu, hau, and mo'olelo, spiritually and culturally significant places. Both Ms. Parker and Mr. Richard Bermudez, a CSH project team member, expressed concern regarding the potential for further development and the need for a reconceptualization of the area.
Mr. Lee passionately reiterated his belief that the stewardship of cultural resources, like the fishpond, requires "a tremendous amount of physical labor, mental toughness, and knowledge and wisdom. Because, you know, it's not all about money. Because we had no money, but how do we preserve a resource like that?" Mr. Lee shared a personal story regarding his experiences with preserving the fishpond. Because of his efforts to preserve the fishpond, he received recognition for his role as a community leader and cultural resource advocate. Mr. Lee also shared that he has been involved in various cultural resource projects, including serving as a cultural resource coordinator on a national level. He has worked closely with various organizations, including the Pacific American Foundation and Hawaii's Thousand Friends, to promote the preservation and protection of cultural resources.

Ms. Parker also shared that they have "modern" cultural resource projects in mind. Ms. Parker also noted that they have "modern" cultural sites within the project area, which may have religious significance. These sites are associated with Kauai's history and culture, including sites of aboriginal Hawaiian religious sites, which are important to Kauai's indigenous people. Ms. Parker also noted that the contemporary structures within the cultural sites and by extension, also represent archaeological sites. She emphasized the importance of preserving these cultural sites for future generations.

Mr. Bermudez shared with CSH that he has seen changes in the marsh, which he believes are due to land modification or clean-up activities. He noted that the marsh has become more saline, which has affected the fish population. Ms. Parker also shared that she has seen coral manuports associated with the project area, which have religious and historical significance.

Mr. Lee also shared with CSH his personal educational pursuits, noting that his post-secondary education occurred during a momentous period of Hawaiian history, otherwise known as the Hawaiian Renaissance. Mr. Lee continued the interview with CSH, discussing the numerous traditions of knowing through culture-based education which enhance the rigor, relevance, and relationships for students and life-long learners. Mr. Lee also shared with CSH his personal educational pursuits, noting that his post-secondary education occurred during a momentous period of Hawaiian history, otherwise known as the Hawaiian Renaissance.

Mr. Bermudez has observed changes to Kawainui’s ecosystem and marsh-related hydrology. He added that he has observed changes to Kawainui’s ecosystem and marsh-related hydrology. He also noted that the marsh has become more saline, which has affected the fish population. Ms. Parker also shared that she has seen coral manuports associated with the project area, which have religious and historical significance.

Due to the success of the educational program at Waikalua Loko I’a, a second curriculum project was drafted. The second curriculum project, entitled “Kawainui Marsh Master Plan,” will be implemented in collaboration with the Pacific American Foundation and CSH, Hawaii’s Thousand Friends. The second curriculum project will focus on enhancing the rigor, relevance, and relationships for students and life-long learners. Mr. Lee also shared with CSH his personal educational pursuits, noting that his post-secondary education occurred during a momentous period of Hawaiian history, otherwise known as the Hawaiian Renaissance.
Mr. Isaacs has continued the work of his father at both Ulupō He'an and Nā Pali o Hanahawale. He elaborated on the work that has been completed at both sites, making reference to the restoration of the lo'i kalo at Nā Pali kahua. This has been a long-term project and the Hawaiian people have been involved in the restoration of the marsh for many years. The work has been ongoing and is still in progress.

Mr. Isaacs has also been involved in the development of a master plan for Kawainui Marsh. The master plan includes the establishment of a place where cultural practices could be perpetuated and educational programs could be offered. The plan also includes the establishment of a community center where cultural practices could be taught. The community center would be used to provide education on the history and culture of the area.

Mr. Isaacs has also been involved in the development of a cultural center for the Kawainui Marsh. The cultural center would be used to provide education on the history and culture of the area. The center would also be used to provide educational programs on the history and culture of the area.

Mr. Isaacs has also been involved in the development of a cultural center for the Kawainui Marsh. The cultural center would be used to provide education on the history and culture of the area. The center would also be used to provide educational programs on the history and culture of the area.

Mr. Isaacs has also been involved in the development of a cultural center for the Kawainui Marsh. The cultural center would be used to provide education on the history and culture of the area. The center would also be used to provide educational programs on the history and culture of the area.

Mr. Isaacs has also been involved in the development of a cultural center for the Kawainui Marsh. The cultural center would be used to provide education on the history and culture of the area. The center would also be used to provide educational programs on the history and culture of the area.

Mr. Isaacs has also been involved in the development of a cultural center for the Kawainui Marsh. The cultural center would be used to provide education on the history and culture of the area. The center would also be used to provide educational programs on the history and culture of the area.

Mr. Isaacs has also been involved in the development of a cultural center for the Kawainui Marsh. The cultural center would be used to provide education on the history and culture of the area. The center would also be used to provide educational programs on the history and culture of the area.
7.1 Hawaiian Habitation and Agriculture

During the estimated 1,000 to 1,200 years since initial Polynesian settlement (Kirch 2000:31), the sand barrier that forms the shore of Kailua Bay has provided a desirable location for ancient habitation. The Kapa'a Stream, an intermittently flowing stream, enters the marsh from the northwest, near the marsh's northeast corner. Located within a Ko'olau volcano caldera, Kawainui Marsh is the largest remaining wetland in the Hawaiian Islands (Meador 1941). Located immediately downstream of Kapa'a Stream, Kawainui Marsh is fed by two major streams. The Kahanaiki Stream forms the westernmost watercourse associated with historic sites, people, events, and/or family lineages (State of Hawai'i Commission on Water Resource Management 1993:5). The availability of freshwater resources made Kailua Ahupua'a a center for human habitation and agricultural pursuits. Fresh water was an important component of ancient Hawaiian culture and lifestyle. Besides serving as a source for human consumption, freshwater was instrumental in sustaining diverse fish, fowl, and vegetable species (Sterling and Summers 1978:227–228). During the fifteenth and sixteenth centuries, inhabitants of the marsh/pond areas of Ka'elepulu and Kawainui and the many springs and streams of Maunawili, provided bountiful agricultural and resource gathering areas. During the eighteenth and nineteenth centuries, Kailua, O'ahu was the center of a large royal complex, with sample Playgrounds and physical training, and recreation (Serling and Summers 1978:221–272). Supporting sports and physical training, and recreation (Serling and Summers 1978:221–272). Supporting sports and physical training, and recreation (Serling and Summers 1978:221–272).

The implementation of the Master Plan provides the opportunity for community members to become involved in the planning process and to have a voice in the direction of future developments in the area. The plan is designed to protect and preserve the natural and cultural resources of the area while allowing for sustainable development. The plan includes measures to protect the marsh from pollution, control stream flows, and maintain healthy wetland ecosystems. The plan also includes provisions for public access to the marsh and adjacent lands, as well as measures to protect and preserve historic and cultural resources.

He concluded by retracting his desire for the community to be able to engage with and respect the Kawainui Marsh area as an irreplaceable natural and cultural resource. He noted the marsh as a place of cultural significance, providing an example of the importance of preserving such areas for future generations.

The Kailua Historic District Commission has recommended that Kawainui Marsh be included in the National Register of Historic Places. This recommendation is based on the marsh's cultural and ecological significance, as well as its role in the development of the area. The marsh is an important site for the study of Hawaiian culture and history, and it is a crucial location for the preservation of biodiversity. The plan includes provisions for the protection of the marsh's natural and cultural resources, as well as for the sustainable development of the area.

During the estimated 1,000 to 1,200 years since initial Polynesian settlement (Kirch 2000:31), the sand barrier that forms the shore of Kailua Bay has provided a desirable location for ancient habitation. The Kapa'a Stream, an intermittently flowing stream, enters the marsh from the northwest, near the marsh's northeast corner. Located within a Ko'olau volcano caldera, Kawainui Marsh is the largest remaining wetland in the Hawaiian Islands (Meador 1941). Located immediately downstream of Kapa'a Stream, Kawainui Marsh is fed by two major streams. The Kahanaiki Stream forms the westernmost watercourse associated with historic sites, people, events, and/or family lineages (State of Hawai'i Commission on Water Resource Management 1993:5). The availability of freshwater resources made Kailua Ahupua'a a center for human habitation and agricultural pursuits. Fresh water was an important component of ancient Hawaiian culture and lifestyle. Besides serving as a source for human consumption, freshwater was instrumental in sustaining diverse fish, fowl, and vegetable species (Sterling and Summers 1978:227–228). During the fifteenth and sixteenth centuries, inhabitants of the marsh/pond areas of Ka'elepulu and Kawainui and the many springs and streams of Maunawili, provided bountiful agricultural and resource gathering areas. During the eighteenth and nineteenth centuries, Kailua, O'ahu was the center of a large royal complex, with sample Playgrounds and physical training, and recreation (Serling and Summers 1978:221–272). Supporting sports and physical training, and recreation (Serling and Summers 1978:221–272). Supporting sports and physical training, and recreation (Serling and Summers 1978:221–272).
Kalo and traditional Hawaiian food crops are still grown along the shores of Kawainui. Culturally significant plants currently cultivated by members of Kailua are included Aku, ma'o, kukui, ipu, lai, mape, 'ulu, ha'a, and koa. In addition to霸王 to shrimp, the natural resources were carefully guarded by the people of Kawainui. According to LCA documents, 171 claims were made for Kailua Ahupua'a. A small number of coastal ha'aua were established within the Kawainui area, and the remaining claims were made for land throughout the district. The production of cultivated kalo was vitally important to Kailua. In addition to providing food, kalo provided resources for Kawainui. This area was also a revered staple food, particularly salient. Mr. Keahi Piiohia and Hawaii's Thousand Friends also discussed this importance of kalo in the Kawainui area. According to Kamakau, kalo was also a revered staple food, particularly salient. Mr. Keahi Piiohia and Hawaii's Thousand Friends also discussed this importance of kalo in the Kawainui area.
7.2 Marine and Freshwater Resources

The connection between land and sea will be understood by those living within the vicinity of Kailua. According to Malo, the physical environment is divided into smaller divisions, stretching from its最 downstream areas. Both the Ka'ahumanu and Kawainui Rivers are situated within the boundaries of the Kailua area. The Kailua Beach area is located on the eastern side of the Kawainui stream and known for its pristine beaches. The area was also noted as a place for gathering of local inhabitants.

This area is characterized by a variety of fish and marine life, including species such as limu lipe'e, which is traditionally used to satisfy "a variety of domestic, medicinal, and ceremonial needs." (Clark 1990:11).

Kalama Beach is approximately 1,600 m west of the project area. Kalama Beach was named in honor of Queen Kalama, wife of King Kamehameha III (Kauikeaouli). Queen Kalama was a favorite of King Kamehameha III, and her name is associated with the area. It is also noted for its red sand. The area is known for its seashore and ocean provided physical and spiritual sustenance for the people of Kailua. According to Malo, the ocean was divided into smaller divisions, stretching from its most downstream areas.

In pre-Contact times, the Ka'ahumanu and Kawainui Rivers were known for their accessibility to marine fishponds, limu lipe'e, jack, humpback salmon, and various types of fish. During the late 19th century, Kawainui was known for its kahawai, a species of fish that was highly valued.

In Kailua, the residents of Kailua continue to surf, paddle, and fish in these coastal waters of the Kawainui stream and the ocean. To some, Wailea Stream and the ocean met was often filled with fish. To some, Kawainui was a place to develop these lands by utilizing them for sugar cultivation. Unfortunately, there were many environmental factors that contributed to the failure of the coconut cultivation business.

Eventually the coconut cultivation business failed and the land was subdivided and sold for home use. No matter if we are Hawaiian or not. Because kuleana means something that we all have the opportunity to create and provide an experience for kids that are ready to learn, use it in the best interests of protecting our culture, which at the end of the day, is something we all have. We have to be proactive and aggressive in trying to restore the balance.

The shrine was obliterated during the 1946 tsunami. The shrine was a place of worship for the Kailua community, and its destruction was a significant event for the residents.

Some people in the community are saying to leave the marsh alone. If you leave it alone, it's going to deteriorate. It's already deteriorating. By the lack of any kind of organization, by redirecting water; man has done a lot of things to exploit the resources. It's not like how it was in the past. We need to be informed and working together to protect these resources.
Cultural Surveys Hawai'i Job Code: KAILUA-48

Traditional Cultural Practices

The Hawaiian knew his land. He worked and studied it with his considerable powers of observation. People knew the wind around their homes, the course of the sun through the seasons, and the behavior of all natural objects. Knowledge was passed from one generation to the next. Among the many practices is the ancient art of Hawaiian hula. While many arts are more popular today, hula is enjoyed by all ages and is celebrated in the community.

The word "hula" comes from the Hawaiian word "ahu," which means "house" or "enclosure." Hula as an art form is a way to express Hawaiian culture and values. Hula can be performed individually or in a group, with the dancers moving gracefully to the beat of the music. The dancers use their bodies and the movements of the ocean to tell stories of Hawaiian history and culture.

Hula is often performed during traditional events such as luaus, where guests gather to enjoy food, music, and entertainment. The dancers often wear traditional Hawaiian attire, including bright colors and intricate patterns. The music is played using instruments such as the ukulele and the gut. The dancers move in a fluid and graceful manner, often using their arms and hands to create intricate motions and shapes.

Hula is an important part of Hawaiian culture, and it continues to be practiced today. It is a way for the Hawaiian people to connect with their past and to honor their ancestors. Hula is also a way to celebrate the beauty of the Hawaiian Islands and the unique culture that has been passed down through the generations.

The Hawaiian people have a deep respect for the land and the environment. They believe that the land is a gift from the gods and that it should be treated with care and respect. The Hawaiian culture is deeply rooted in the landscape, and the people have a strong connection to the land. They believe that the land is a source of life and that it should be protected for future generations.

Hula is just one example of the rich cultural heritage of the Hawaiian people. The Hawaiian culture is a unique blend of Western and indigenous traditions, and it continues to evolve and thrive today. Through the practice of cultural arts such as hula, the Hawaiian people are able to connect with their past and to honor their ancestors. It is a way for them to celebrate the beauty of the Hawaiian Islands and the unique culture that has been passed down through the generations.
Mr. Bermudez advised that Kawainui should be understood as kapu, and the kapu must be respected within the marsh. Ms. Makanani Parker also discussed the importance of recognizing recently constructed structures or cultural sites as wahi pana. A member of Ke Kahau o Kūaliʻi pointed out that these structures have been built by Hawaiians and thus are articulations of Hawaiian identity and culture. Contemporary structures, like the hale and associated pā constructed by Ke Kahau, have presented challenges to local archaeologists and researchers in terms of interpretation and designating significance. Recent studies within indigenous archaeologies suggest recalcitrance to include “contemporary” Hawaiian cultural sites within standard inventories of traditional cultural properties may be indicative of twentieth and twenty-first century understandings of authenticity that frame “indigenous populations as unable to adapt” (Wilcox 2010), homogenous (Grim 1996), and antimodern (Cothran 2010; Lyons 2011). According to members of Ke Kahau o Kūaliʻi, however, contemporary structures are evidence of continued engagement in Hawaiian cultural practices (both traditional and contemporary).

### 7.4 Trails

There are several trails in Kailua Ahupua‘a that range from ancient to modern. Kiolea is an old trail that began near the Kawailoa Training School (current site of the Olomana High and Intermediate School), which led to Maunawili. Supposedly this trail existed during the time of Ahiki, the third peak of Olomana.

Olomana consists of three distinct peaks: the first and highest is Olomana; the second is Pākuʻi; and Ahiki, the third. The summit of Olomana offers 360-degree views of Kāneʻohe, Kailua, Waimānalo, and Maunawili. There is also a clear view of the Koʻolau Summit from the top of Olomana.

The Maunawili Falls trail is approximately 3 miles long roundtrip and winds along the Maunawili Stream. The trail passes remnant coffee groves, loʻi, mango, monkeypod, and kukui. The Maunawili Trail hike is approximately 10 miles long. The trail begins below the hatpin turn off the Pali Highway, windward bound, snaking to the base of the Koʻolau Mountain Range passing gulches, ridges, streambeds, ravines, switchbacks, waterfalls chutes, waterfall tunnels, streams, and groves of mountain apples before reaching Waimānalo Ahupua‘a.

---

### Section 8 Summary and Recommendations

CHS undertook this CIA at the request of Helber Hastein & Fee. This CIA broadly included the entire ahupua'a of Kailua, and more specifically the Kawainui-Hāmākua Marsh project area.

#### 8.1 Results of Background Research

Background research for this study yielded the following results:

1. Kailua Ahupua‘a and the project area vicinity were prime areas containing extensive natural and cultural resources including taro lo‘i, streams, wetlands, and fishponds. Ulupō Heiau, which borders the western boundary of the project area, was a center of religious activity with several areas associated with habitation, agricultural, ceremonial, and other sites extending into the project area.

2. In the larger context of Kailua Ahupua‘a, the project area is linked with specific moʻolele including a) ‘Olopana and his brother Kahiki'ula who arrived in O‘ahu from Kahiki and who built heiau in Kailua, including Pahukini and Holomakani in the Kawainui Marsh; b) the famous chief, Kuali‘i, born at Kalapawai, Kailua, and raised in Kualoa and Kailua, who had his navel-cutting ceremony at the heiau of Alāla (present-day Lanikai Point), and after many battles reigned as the high chief of all O‘ahu; c) chief Kākūhihe‘waa, who built himself a legendary house at ‘Ale‘ale in Kailua; d) the conquering chief Kahemeli, followed by Kamehameha I, who resided in Kailua for a time.

3. The project area is also connected with moʻolele about the mo‘o Haawhine who made her home in Kawainui Marsh; with the folklore associated with the wish-fulfilling Mākākii tree, which could summon fish and food at any time; with the legendary accounts of edible mud, or lepo’ai‘a, found only in Kawainui; with mele and oli about Kailua praising the taro gardens of the area; with legends about the goddess Hi‘iaka and her companion, Wahine-oma'o, visiting the marsh; with legends about the mythological giant/chief Olomana, whose name is borne by Mount Olomana; with mele about Kawainui; with the ancient Hawaiian belief that the channel underneath Pu‘u o ‘Ehu, which is adjacent to the southern portion of the project area, is the corntal connection between the male fishpond, Kawainui and the female fishpond, Ka‘ekekualu, thereby giving the area great mana.

4. Radiocarbon dating of organic soil in Kailua demonstrates human habitation in the area for at least 1,000 years, and perhaps 1,500 years. Archaeological research definitely shows expansion of agriculture in Kailua beginning AD 1200-1300. Radiocarbon dates obtained from the vicinity of the project area—at the Hekili Intermediate School), which led to Maunawili. Supposedly this trail existed during the time of Ahiki, the third peak of Olomana.

5. An ancient ‘auwai at the edge of Kawainui marsh was used in the 1900s to supply millions of gallons of water to the Waimanalo Sugar mill. A pumping station removed water from the marsh in a wooden pipe and diverted it to the sugar mill, which was the biggest employer on the windward side of the island.

---
8.2 Results of Community Consultations

CSH attempted to contact NHOs, agencies, and community members. Below is a list of individuals who shared their names and views about the project area and Kailua, Kona, Hawaii. These individuals were interviewed in the context of the cultural and historical background of the area.

1. Jan Becket, author, photographer, and retired teacher from Kamehameha Schools, Kona Moku Representative, Council of Hawaiian Civic Club's Committee on the Preservation of Historic Sites and Cultural Properties
2. Richard Bermudez, Jr., representative for the 50th District (Kailua and Kona Moku) and Executive Director of the Pacific Institute for Public Policy Research
3. Makanani Parker, representative for the 5th District (Kailua and Kona Moku) and Executive Director of the Pacific Institute for Public Policy Research
4. Jan Becket, author, photographer, and retired teacher from Kamehameha Schools, Kona Moku Representative, Council of Hawaiian Civic Club's Committee on the Preservation of Historic Sites and Cultural Properties
5. Richard Bermudez, Jr., representative for the 50th District (Kailua and Kona Moku) and Executive Director of the Pacific Institute for Public Policy Research
6. Makanani Parker, representative for the 5th District (Kailua and Kona Moku) and Executive Director of the Pacific Institute for Public Policy Research
7. Dr. Charles Barlow, former Kamalani Smith
8. Ahahua Makaha Loka'i
9. Hawaii's Thousand Friends
10. C. L., representative for the 5th District (Kailua and Kona Moku) and representative for the National Parks Service

8.3 Impact and Recommendations

Based on information gathered from the cultural and historical background, and interviews with community members, the following recommendations are made. These recommendations are also briefly summarized below.

1. According to soil survey data, the sandy beaches are located within the project area. It is likely to contain additional subsurface deposits, including burials.
2. The project area is situated within the sand of Kailua which was used as a cultural and historical site. These burials are located within the project area. It is likely to contain additional subsurface deposits, including burials.
3. In the event of an inadvertent discovery of human remains, the completion of a burial site component of the preservation plan and/or the burial site component of the archaeological recovery plan, in compliance with HAR §13-300-40, is required. Additionally, all cultural and cultural descendants of Kailua shall be contacted.
4. In the event of an inadvertent discovery of human remains, the completion of a burial site component of the preservation plan and/or the burial site component of the archaeological recovery plan, in compliance with HAR §13-300-40, is required. Additionally, all cultural and cultural descendants of Kailua shall be contacted.
5. Dr. Charles Barlow, former Kamalani Smith
6. Ahahua Makaha Loka'i
7. Hawaii's Thousand Friends
8. C. L., representative for the 5th District (Kailua and Kona Moku) and representative for the National Parks Service

8.4 Archaeological Surveys

Cultural Surveys Hawai'i Job Code: KAILUA 48

Summary and Recommendations

Cultural Surveys Hawai'i Job Code: KAILUA 48

Summary and Recommendations
7. The community articulated concerns regarding the protection and conservation of water resources, and the restoration of archaeological and agricultural sites. Members of the community recommended the mat currently covering the marsh be managed, and invasive species such as papyrus and bull rush be removed. In addition to the removal of invasive species, the community recommended the replanting of native plants (including food plants) and the reestablishment of lo‘i kalo in the vicinity of Kawainui Marsh. The community additionally recommended that water, currently diverted to Waimānalo through the Maunawili Ditch, be redirected back into Kawainui Marsh.

8. The community expressed their support for the preservation and restoration of the Kawainui and Hāmākua marshes. The community shared their visions for the area, and recommended the marshes remain as resources for educators as well as Hawaiian cultural practitioners.

9. Upon consultation with stakeholders, it was suggested that additional scientific studies be conducted on Kawainui-Hāmākua Marsh; a suggestion was made that a mitigation plan be drafted to address potential issues that may arise as a result of increased site use.

---

**References Cited**


Anonymous 1987 *Ku‘ali‘i Chant.*
Chapman, Peter S.

Charlot, John

Chinen, Jon J.
1958 7KH*UHDW0ƗKHOH+DZDLµL¶V/DQG'LYLVLRQRI. University of Hawaii Press, Honolulu.

Chun, L.T.

Chun, Michael and Gordon Dugan

Cipolla, Craig N.

Clark, Jeffrey T.

Clark, John R.K.

Clark, Stephan D.

Clark, Stephan D. and Robert D. Connolly, III
1977 Archaeological Reconnaissance Survey of the Proposed Improvements of Hanakua Drive from Hanako Street to Akoakoa Street, Kailua, Koolauapoko, Hawaii'. City and County of Honolulu, Honolulu.

Collins, Sara and Richard C. Nees
2007 Final An Archaeological Assessment Report for the Proposed Kailua Road Permanent Rockfall and Landslide Mitigation Project Kailua, Koolaupoko, island of O'ahu. TMKs: (1) 4-2-003:014 & 017. Pacific Consulting Services, Inc., Kailua, Hawa’i.

Conant, Sheila
1981 A Survey of the Waterbirds of Kawai Nui Marsh. Prepared for Hawai'i Department of Land and Natural Resources.

Cordy, Ross
1977a Cultural Resources Study for the City and County of Honolulu’s Permit Request: Kawainui Marsh Sewerline (Oahu), Archaeological Reconnaissance and Pre-1850 Literature Search. U.S. Army Corps of Engineers, Pacific Ocean Division, Honolulu.

Cothran, Boyd

Coulter, John Wesley and Chee Kwon Chun

Creed, Victoria S. and Rodney Chiogoji

De Silva, Kihei
2014 ‘Auhea Wale ’Oe e Kahalakea. Unpublished manuscript submitted to the 2014 Merrie Monarch Festival Committee as part of the required “Fact Sheet” for Haleiwa Mo‘alu ‘Ilma’s hula performances. Kihei de Silva, Kailua, Hawa’i.

Department of Education

Donn, John M.
1906 Hawaii Territory map of Oahu. Registered Map 2374. Hawai’i Land Survey Division, Department of Accounting and General Services, Honolulu.

CIA for the Kawainui-Hilimalu Master Plan, Kailua, Ko‘olinaokopolo, O‘ahu
TMKs: (1) 4-2-003; 4-2-006; 4-2-007; 4-2-008; 4-2-009; 4-4-034 various parcels

CIA for the Kawainui-Hilimalu Master Plan, Kailua, Ko‘olinaokopolo, O‘ahu
TMKs: (1) 4-2-003; 4-2-006; 4-2-007; 4-2-008; 4-2-009; 4-4-034 various parcels
References Cited

Drigot, Diane C.

Dye, Thomas S.
1992 Kailua Archaeology. Lecture, 19 November.

Edmondson, Charles Howard

Emerson, Nathaniel B.

Emory, Kenneth P.

Englis, A.
1988 Waterbird Status in Kawai Nui Marsh, State of Hawaii Department of Land and Natural Resources. Division of Forestry and Wildlife, Department of Land and Natural Resources, Honolulu.

Erkelens, Conrad
1993 Archaeological Investigation of the Kukanono Slope, Kawai‘nui Marsh, Kailua, Ko‘olaupoko, O‘ahu: A Thesis Submitted to the Graduate Division of the University of Hawai‘i in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Anthropology. University of Hawai‘i, Honolulu.

Ewart, Ned D. and M.J. Tomonari-Tuggle

Fong, Jeffrey W.K., Douglas F. Borthwick, and Hallett H. Hammatt
2007 Archaeological Monitoring Report for the Kaineehe Street, Hamakua Drive and Keolu Drive Reconstructed Sewer Project, Kailua Ahupua‘a Ko‘olaupoko District, Island of O‘ahu TMK: (1) 4-2-01, 77, 81, 82, 87, 89, 90, 93, 94 & 95. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Foote, Donald E., Elmer L. Hill, Sakachi Nakamura, and Floyd Stephens

Fornander, Abraham

Google Earth

CIA for the Kawai‘nui-Hāmākua Master Plan, Kailua, Ko‘olaupoko, O‘ahu
TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, 4-4-034 various parcels

CIA for the Kawainui–Hāmākua Master Plan, Kailua, Ko‘olaupoko, O‘ahu
TMKs: [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, 4-4-034 various parcels

Grim, John A.

Hall, W. Thomas
1997 The History of Kailua. W. Thos Hall, Kailua, Hawai‘i.

Hammatt, Hallett H.

Hammatt, Hallet H., David W. Shideler, Rodney Chiogioji, and Randy Seville
1990 Sediment Coring in Kawainui Marsh, Kailua, Oahu, Ko‘olaupoko Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

Hammatt, Hallet H., Michael Pfeffer, and Victoria S. Creed
1993 Archaeological Inventory Survey of Kailua 272 Reservoir and Access Road, Kailua, Ahupua‘a of Kailua, Island of O‘ahu TMK 4-2-03:9, 16 and a portion of 17. Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

Hammatt, Hallet H. and David W. Shideler

Handy, E.S. Craighill

Handy, E.S. Craighill and Elizabeth G. Handy

Handy, E. S., Craig Hall, W. Thomas
2007 The History of Kailua. W. Thomas Hall, Kailua, Hawai‘i.


Hawaii State Archives
1920s-1930s Photograph of Ka‘ōhao from Ali‘i Point. Hawai‘i State Archives, Honolulu.
1930s Photograph of Matsuda family store and residence. Hawai‘i State Archives, Honolulu.

Hawaii's Thousand Friends
2001-2004 Tax Map Key [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, 4-4-034 various parcels

Hawaii’s Thousand Friends
2017 Letter to CSH regarding the proposed Kawainui-Hāmākua Master Plan project. 5 January 2017.
References Cited

CIA for the Kawainui-Moku Master Plan, Kailua, Ko'olaupoko, O'ahu 257
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

Hawaiian Historical Society
1885 Photograph of stream and lo'i kalo system mauka of Kawainui. Hawaiian Historical Society, Honolulu.


2016 Awaiaulu Press, Honolulu.

Kelly, Marion and Jeffrey T. Clark 1990 Ka Mo'olelo O Hi'iakaikapoliopele. Awaiaulu Press, Honolulu.

Kikiloi, Scott T., Matthew McDermott, and Hallett H. Hammatt 2000 Archaeological Inventory Survey for the Kawainui Marsh Park Improvement Area, Island of O'ahu, TMK 4-2-16. Cultural Surveys Hawai'i, Kailua, Hawai'i.


Kikiloi, Scott T., Matthew McDermott, and Hallett H. Hammatt 2009 Makaha Valley Project field reports. Cultural Surveys Hawai'i, Kailua, Hawai'i.


2015 Makaha Valley Project field reports. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Kikiloi, Scott T., Matthew McDermott, and Hallett H. Hammatt 2000 Archaeological Inventory Survey for the Kawainui Marsh Park Improvement Area, Island of O'ahu, TMK 4-2-16. Cultural Surveys Hawai'i, Kailua, Hawai'i.


Kikiloi, Scott T., Matthew McDermott, and Hallett H. Hammatt 2009 Makaha Valley Project field reports. Cultural Surveys Hawai'i, Kailua, Hawai'i.


CIA for the Kawainui-Hāmākua Master Plan, Kailua, Ko‘olina, O‘ahu

TMKs: [1] 4-2-003; 4-2-004; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

CIA for the Kawainui-Hāmākua Master Plan, Kailua, Ko‘olina, O‘ahu

TMKs: [1] 4-2-003; 4-2-004; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

Pacific American Foundation

Pacific Business News

Paki, Pilahi
1976 Oral history communication to Muriel Seto, Kailua.

Pantaleo, Jeffrey and Paul L. Cleghorn

Powlison, Anne Taft

Pukui, Mary Kawena

Pukui, Mary Kawena and Samuel H. Elbert

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini

Pukui, Mary Kawena and Laura C.S. Green

Pukui, Mary Kawena, E.W. Haertig, and Catherine A. Lee

Quebral, Rey F., Carolyn J. Orndoff, and J. Stephen Athens

Ramsar Convention Bureau

Relph, E.C.

R.M. Towill Corporation

Saturday Press

Schmitt, Robert C.

Shallengerger, R.J.

Shintani, Terry

Snow, C.E.

Stannard, David E.

Stearns, Harold Thornton

Steele, Julia

Sterling, Elspeth P. and Catherine C. Summers

Stokes, John E.G.

1907 Hawaiian Almanac and Annual for 1908. Thomas G. Thrum, Honolulu.

1908 Heiaus and Heiau Sites Throughout the Hawaiian Islands: Completing the series which began in the Annual of 1907. Hawaiian Almanac and Annual for 1909. Thos. G. Thrum, Honolulu.


1929 Hawaiian Almanac and Annual for 1930. Thomas G. Thrum, Honolulu.

Trask, Mililani 2012 Hawaiian Perspectives GMOs and Cultural Values. Facing Hawai'i's Future. Hawai'i SEED, Koloa.


Appendix A  Glossary

To highlight the various and complex meanings of Hawaiian words, the complete translations from Pukui and Elbert (1986) are used unless otherwise noted. In some cases, alternate translations may resonate stronger with Hawaiians today; these are placed prior to the Pukui and Elbert (1986) translations and marked with “(common).”

Diacritical markings used in the Hawaiian words are the ‘okina and the kahakō. The ‘okina, or glottal stop, is only found between two vowels or at the beginning of a word that starts with a vowel. A break in speech is created between the sounds of the two vowels. The pronunciation of the ‘okina is similar to saying “oh-oh.” The ōkina is written as a backwards apostrophe. The kahakō is only found above a vowel. It stresses or elongates a vowel sound from one beat to two beats. The kahakō is written as a line above a vowel.

<table>
<thead>
<tr>
<th>Hawaiian Word</th>
<th>English Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ahu-pua’a</td>
<td>Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua’a), or because a pig or other tribute was laid on the altar as tax to the chief.</td>
</tr>
<tr>
<td>aha</td>
<td>Mudhen or Hawaiian gallinule.</td>
</tr>
<tr>
<td>ala hele</td>
<td>Pathway, route, road, way to go, itinerary, trail, highway, means of transportation.</td>
</tr>
<tr>
<td>ali‘i</td>
<td>Chief, chiefess, officer, ruler, monarch, peer, headman, noble, aristocrat, king, queen, commander.</td>
</tr>
<tr>
<td>i‘ana</td>
<td>Land parcel, lot, district, sector, ward, precinct.</td>
</tr>
<tr>
<td>iwa</td>
<td>Ditch, canal.</td>
</tr>
<tr>
<td>he’ai</td>
<td>Kava.</td>
</tr>
<tr>
<td>he’iau</td>
<td>Pre-Christian place of worship, shrine; some heiau were elaborately constructed stone platforms, others simple earth terraces. Many are preserved today.</td>
</tr>
<tr>
<td>ho’okupu</td>
<td>Ceremonial gift-giving as a sign of honor and respect.</td>
</tr>
<tr>
<td>hui</td>
<td>Club, association, society, corporation.</td>
</tr>
<tr>
<td>ili</td>
<td>Land section, next in importance to ahu-pua’a and usually a subdivision of an ahu-pua’a.</td>
</tr>
<tr>
<td>iwi</td>
<td>Bones.</td>
</tr>
<tr>
<td>iwi kāpuna</td>
<td>Ancestral bone remains (common).</td>
</tr>
<tr>
<td>kahina</td>
<td>Priest, sorcerer, magician, wizard, minister, expert in any profession. Kāhuna—plural of kahina</td>
</tr>
<tr>
<td>kalo</td>
<td>Taro.</td>
</tr>
<tr>
<td>kama‘āina</td>
<td>Native-born, one born in a place, host; native plant; acquainted, familiar, Lit., land child.</td>
</tr>
<tr>
<td>kapu</td>
<td>Taboo, prohibition.</td>
</tr>
<tr>
<td>ko‘a</td>
<td>Coral, fishing grounds.</td>
</tr>
<tr>
<td>kona</td>
<td>Leeward sides of the Hawaiian Islands; leeward.</td>
</tr>
</tbody>
</table>
### Appendix A

<table>
<thead>
<tr>
<th>Hawaiian Word</th>
<th>English Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>kō‘olau</td>
<td>Windward sides of the Hawaiian Islands.</td>
</tr>
<tr>
<td>kū‘ūlīnui</td>
<td>Regent.</td>
</tr>
<tr>
<td>kūla</td>
<td>Plain, field, open country, pasture.</td>
</tr>
<tr>
<td>kūka `aina</td>
<td>Right, privilege, concern, responsibility, title, business, property, estate, portion, jurisdiction, authority, liability, interest, claim, ownership, tenure, affair, province.</td>
</tr>
<tr>
<td>kānuma hula</td>
<td>Hula teacher</td>
</tr>
<tr>
<td>kūpuna (pl. kūpuna)</td>
<td>Grandparent, ancestor, relative or close friend of the grandparent's generation, grandaunt, granduncle. Kāpuna—plural of kūpuna.</td>
</tr>
<tr>
<td>līmānui</td>
<td>A general name for all kinds of plants living under water, both fresh and salt, also algae growing in any damp place in the air, as on the ground, on rocks, and on other plants; also mosses, liverworts, lichens.</td>
</tr>
<tr>
<td>loa</td>
<td>Distance, length, height, long.</td>
</tr>
<tr>
<td>loʻi</td>
<td>Irrigated terrace, especially for taro, but also for rice; paddy.</td>
</tr>
<tr>
<td>loʻoko iʻa</td>
<td>Fishpond (common).</td>
</tr>
<tr>
<td>loʻoko puʻuone</td>
<td>Pond near the shore, as connected to the sea by a stream or ditch.</td>
</tr>
<tr>
<td>luakini</td>
<td>War temple</td>
</tr>
<tr>
<td>makai</td>
<td>Ocean-side.</td>
</tr>
<tr>
<td>makaʻanana</td>
<td>Commoner, populace, people.</td>
</tr>
<tr>
<td>makana</td>
<td>Gift, present.</td>
</tr>
<tr>
<td>manoʻa</td>
<td>Thought, idea, belief.</td>
</tr>
<tr>
<td>māʻele</td>
<td>Agricultural temple.</td>
</tr>
<tr>
<td>māna</td>
<td>Inland.</td>
</tr>
<tr>
<td>mele</td>
<td>Song, anthem, or chant of any kind; poem, poetry; to sing, chant.</td>
</tr>
<tr>
<td>melewene</td>
<td>Legendary race of small people.</td>
</tr>
<tr>
<td>oka</td>
<td>District, island, islet, section.</td>
</tr>
<tr>
<td>moʻo</td>
<td>Lizard, reptile, dragon.</td>
</tr>
<tr>
<td>moʻoʻolelo</td>
<td>Story, tale, myth, history, tradition, literature, legend, journal, log, yarn, fable, essay, chronicle, record, article; minutes, as of a meeting. (From moʻo ʻōlelo, succession of talk; all stories were oral, not written).</td>
</tr>
<tr>
<td>nā</td>
<td>Plural definite article. Nā lani, the chiefs.</td>
</tr>
<tr>
<td>ohana</td>
<td>Family, relative, kin group; related.</td>
</tr>
<tr>
<td>ʻōlelo noʻeau</td>
<td>Proverb, wise saying, traditional saying.</td>
</tr>
<tr>
<td>ʻōlelo noʻeau</td>
<td>Chant that was not danced to, especially with prolonged phrases chanted in one breath, often with a trill at the end of each phrase; to chant thus.</td>
</tr>
<tr>
<td>pōi</td>
<td>Poi, the Hawaiian staff of life, made from cooked taro corms, or rarely breadfruit, pounded and thinned with water.</td>
</tr>
<tr>
<td>pule</td>
<td>Prayer.</td>
</tr>
<tr>
<td>puʻukohua</td>
<td>Place of refuge.</td>
</tr>
<tr>
<td>ʻulu</td>
<td>Breadfruit.</td>
</tr>
<tr>
<td>ʻulū</td>
<td>Water, liquid.</td>
</tr>
<tr>
<td>waiwai</td>
<td>Storied place (common), legendary place.</td>
</tr>
</tbody>
</table>

### Appendix B

**Common and Scientific Names for Plants and Animals Mentioned by Community Participants**

<table>
<thead>
<tr>
<th>Common Names</th>
<th>Possible Scientific Names</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaiian</td>
<td>Other</td>
<td>Genus</td>
</tr>
<tr>
<td>avocado</td>
<td></td>
<td>Persea</td>
</tr>
<tr>
<td>kava</td>
<td></td>
<td>Piper</td>
</tr>
<tr>
<td>coffee</td>
<td></td>
<td>Musa</td>
</tr>
<tr>
<td>guava</td>
<td></td>
<td>Psidium</td>
</tr>
<tr>
<td>mango</td>
<td></td>
<td>Mangifera</td>
</tr>
<tr>
<td>papaya</td>
<td></td>
<td>Carica</td>
</tr>
<tr>
<td>rice</td>
<td></td>
<td>Carica</td>
</tr>
<tr>
<td>sweet potato</td>
<td></td>
<td>Ipomoea</td>
</tr>
</tbody>
</table>
Appendix C  Authorization and Release Forms

C.1 Jan Becket
23 January 2017

CIA for the Kawainui-Plus Master Plan, Kailua, Ko'olaupoko, O'ahu
TMKs: {1} 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

C.2 Herb Lee
22 December 2016

CIA for the Kawainui-Plus Master Plan, Kailua, Ko'olaupoko, O'ahu
TMKs: {1} 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai‘i (CSH) appreciates the generosity of the kipona and kamehame who are sharing their knowledge of cultural and historic properties, and experiences of past and present cultural practices for the proposed Kawainui-Plus Master Plan Project, Kailua, Ko’olaupoko, O’ahu Island, Tax Map Keys (TMKs) [1] 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-2-103, and 4-4-034 various parcels.

We understand our responsibility is respecting the wishes and concerns of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. If recorded, you will have the opportunity to review the sound transcript of the interview with me. In that case, you may request redaction or editing of the interview.
3. If recorded, you will be given a copy of the interview notes for your records.
4. You will be given copies of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any report or publications generated by this cultural study.

I, [Name], hereby agree to the procedures outlined above and, by my signature, give my consent and release for this interview to be used as specified.

[Signature]
[Date]

[Note: This form is used for authorization and release of information during interviews as part of the Kawainui-Plus Master Plan project.]
C.3 Dr. Charles Burrows  
27 December 2016

Cultural Surveys Hawai‘i, Inc.
Archaeological and Cultural Impact Studies
Haleiwa, Hawaii 96712
P.O. Box 1114
Tel: (808) 263-6972
Fax: (808) 262-4550
www.cshawaii.com

AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai‘i (CSH) appreciates the generosity of the Ali`pua and Kaou`oua`u who are sharing their knowledge of cultural and historic properties, and experience of past and present cultural practices for the proposed Kawainui-Kailua Master Plan Project, Kailua, Lo‘ili’i and O‘ahu Island. The Ali`pua and Kaou`oua`u (TMKs: [1] 4-2-005, 4-2-015; 4-2-033; 4-2-016; 4-2-017; 4-2-103; 4-4-034, various parcels)

We understand our responsibility in respecting the wishes and concerns of the interviewees participating in our study. Here are the procedures we propose to follow:

1. The interview will not be tape-recorded without the knowledge and explicit permission of the interviewee.
2. If recorded, you will have the opportunity to review the written transcript of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. If recorded, you will be given a copy of the interview notes for your records.
4. You will be given a copy of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any report or publication generated by this cultural study.

I, Charles K. Burrows, agree to the procedures outlined above and, by my signature, give my consent and release for this interview to be used as specified.

Charles K. Burrows

12/27/16

C.4 Meredith Speicher  
10 January 2017

Cultural Surveys Hawai‘i, Inc.
Archaeological and Cultural Impact Studies
Haleiwa, Hawaii 96712
P.O. Box 1114
Tel: (808) 263-6972
Fax: (808) 262-4550
www.cshawaii.com

AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai‘i (CSH) appreciates the generosity of the Ali`pua and Kaou`oua`u who are sharing their knowledge of cultural and historic properties, and experience of past and present cultural practices for the proposed Kawainui-Kailua Master Plan Project, Kailua, Lo‘ili’i and O‘ahu Island. The Ali`pua and Kaou`oua`u (TMKs: [1] 4-2-005, 4-2-015; 4-2-033; 4-2-016; 4-2-017; 4-2-103; 4-4-034, various parcels)

We understand our responsibility in respecting the wishes and concerns of the interviewees participating in our study. Here are the procedures we propose to follow:

1. The interview will not be tape-recorded without the knowledge and explicit permission of the interviewee.
2. If recorded, you will have the opportunity to review the written transcript of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. If recorded, you will be given a copy of the interview notes for your records.
4. You will be given a copy of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any report or publication generated by this cultural study.

I, Meredith Speicher, agree to the procedures outlined above and, by my signature, give my consent and release for this interview to be used as specified.

Meredith Speicher

1/10/17
C.5  C. Lehukaona Isaacs
14 January 2017

AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai‘i (CSH) appreciates the generosity of the Hāna wānana and ʻAina ilo‘u who are sharing their knowledge of cultural and historic properties, and experiences of past and present cultural practices for the proposed Kawainui-Hîlimikau Master Plan Project, Kailua, O‘ahu, various parcels. We understand and respect the wishes of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. If recorded, you will have the opportunity to review the written transcript of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. If recorded, you will be given a copy of the interview notes for your records.
4. You will be given a copy of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any reports or publications generated by this cultural study.

I, Charles Lehukaona Isaacs, do agree to the procedures outlined above and, by my signature, give my consent and release for this interview to be used as specified.

[Signature]

Charles Lehukaona Isaacs
Appendix D

KIC for the Kawainui-Maulelo Master Plan, Kailua, Ko'olaupoko, O'ahu
TMCs: (1) 4-2-003; 4-2-016, 4-2-017; 4-2-018; 4-4-019 various parcels

1 Czar for the Kawainui-Maulelo Master Plan, Kailua, Ko'olaupoko, O'ahu
TMCs: (1) 4-2-003; 4-2-016, 4-2-017; 4-2-018; 4-4-019 various parcels

1 Aukhe Wale 'Oe Kahalakea

Pahu A'ele;


This tale was inspired by the story of "Na Voololo no Kamokamahiai," the story of a Maui-born human child who, after putting his own island to sleep, journeys to Kailua. Kailua, where he helps Olopana to regain control of O'ahu, marries Olopana's daughter Pupu, and saves the island from total destruction.


The moʻolelo includes 43 chants (most of them story-specific and otherwise unknown), detailed descriptions of 'Kā'ōpākō, O'ahu (in particular, Ka'aloa, 'Alele, Mahana, Mokupālani, the island plains of Pā.he, and the hill of Hānalawa), action-heroic tales.

2 For most of the moʻolelo, Olopana maintains his royal residence in his own home of Kō'ula. When Kā'ana is captured, he engages Olopana in a series of battles, which are described as follows:

"Kalua, the eldest of the women living at Pā'anao, while being visited by a friend, was asked by Kā'ana, 'What is the matter with you?'

"Kalua replied, 'I am in mourning. My husband, Kā'ana, has been captured by Olopana, and I am afraid he will be killed.'

"Kā'ana said, 'I will go and rescue him.'"
Kia’akoihi, and he son Olopani II. Their goal is always the harmony of god, land, and people; their work is always to restore order, to set their world to rights. By story’s end, we come to understand this as a wela ke’a’ape’ape’a of Kaua’a’s Kaaliau descendant; they are defined by an all-in commitment to champion that which is pono—a ma e kolelele‘ole ai ke‘a noho. 3) That wela will not be destitute, will not be one of wind-scattered bones.

“Ahoole hana ‘Oa e Kahala‘ula” is meant to express the same ke’a’ape’ape’a of our still beleaguered hana. It is called to the naming of today’s Kaaliau to defy the latest wave change that would erode our legacy of stewardship at Kawainui and make us guests in our own land? The 1st verse of our tale invokes Kahala‘ula, the lesser known of the two mo‘o guardians of Kawainui, describes the tranquil-on state of the once-sacred land of Waiau‘asia (now the empty “III lot” at the entrance to Kaaliau Town), and asks “When will you reclaim it?”

Kahala‘ula, of course, will not reclaim anything unless we first prepare the way. She lived in the hole grove along Kawainui Stream (now Hawaii‘ula) and adjacent to Waiau‘asia. With her companion Fauhihi‘ula (who lived at the other end of the pond below what is now Le Jardin Academy), she was responsible for bringing a wealth of fish and food to Kaaliau when Kaaliau was in balance—and for taking it away with her when Kaaliau was not. 4) No pono, no Kahala‘ula. We see it as our duty to reclaim and restore this balance so that she can then return.

The closing verses of “Ahoole hana ‘Oa e Kahala‘ula,” describe the translation of today’s Kaaliau—the encroaching Aapike, the overcrowded plain, the jealously guarded

A wela is a family trait or characteristic inherited from one’s kipono, a wela ke’a’ape’a, in this case, is the family trait of trying with all one’s might.

4 The hakalau is a fish once imported Olopani and his people to risk almost certain death, a now barely in evidence, and the expedition we focus on is from Pacmany of Olopani but from the recent census of our community who was to transport the fish on board of Kawainui from our own central, cultural one because we Kaua’a Hanalani mai a me ungadungadungo, 2 strong on our seaward, 3) how we are going with plans for agricultural and educational knowledge at four points on the Kawainui perimeter including that of its own Kaua’a Hanalani center for excellence in Waiau‘asia.

5 Propose gives the aman and resilience of bitcoin’s volcano: “Hokoomae kia ma mau no wale ho loko pono o Kawainui o a kau a he keikolu hale o ala ma o. Kaua’a Hanalani o a ke keiki o, a Ke’auhau o Kahala‘ula.” – One of those mo‘o was known within Kaua’a Hanalani, and one lived somewhere of the hole ke aloha that grew them (Kokua Nu‘u‘aena, July 9, 1997). Hokoomae kia ma mau no wale ho loko pono o Kawainui o a kau a he keikolu hale o ala ma o. Kaua’a Hanalani o a ke keiki o, a Ke’auhau o Kahala‘ula.” – These are our two women. One lives here on the inland side of Kawainui, she is Hanalani... and the second of the two women on the ocean side of the hole grove that strange, shows just above the level expand of land near the Kaaliau stream. At last report, January 22, 1996.}
CIA for the Kawainui-Hiltnukua Master Plan, Kailua, Koʻolau, Oʻahu

TMKs: 4-2-003, 4-2-013, 4-2-016, 4-2-017, 4-4-034 various parcels

Appendix D

Cultural Surveys Hawaiʻi Job Code: KAILUA 48

Anea Wele’u’u E Kahuakane

Anea wele’u’u e Kahuakane
Ka miihi mai a ka noa a loa’a
He aloha mai ia ia Wallina
I ke aloa ‘e ahi ka malihini
Aheka liki ‘o he ho’i mai
Ka noho o ke ahu
Wa‘a‘a a ia ko ke lo‘i’a
Aheka liki ‘o he ho’i mai

 Kamakani wai ia i ka ohe’o o Melo‘u.
Ko ke aloa ‘e ahi ka malihini
Aheka liki ‘o he ho’i mai

“‘Anea Wele’u’u E Kahuakane” comes to a close with the sweet sound of Kahuakane’s whistle as he calls out to Wallina. It is here that we intend to build our future, our center for excellence in traditional arts, and a preserve for the scattered sites of Kailua. We will call it ‘Hale’akalai in honor of an old woman of Kawainui who, in the 1895 Water Commission hearings, mourned the passing of all who could remember and reclaim the lands of old.

“No, there is none of those old folks living. They are all dead except myself and my foster mother, the person who took care of me. She is too old she can’t walk, she has to crawl. There is no one living,” 18

Doesn’t hope, Hale’akalai, your boxes will not be lost in wind. We are still here, kupa‘a i ke aloha ‘Ehu.

18 ‘Anea Wele’u’u E Kahuakane: This story is told by a Hawaiian elder and was passed down to his grandson, Ka‘auwai, who later taught his son, Ohi‘a. The story is about the birth of a Hawaiian chief and his love for Wallina, his wife. Wallina is depicted as a beautiful woman who was loved by the chief who is portrayed as a strong leader.

19 Kamakani Wai: This is one of the many stories that illustrate the importance of the goddesses of Hawaiian culture. The goddesses are often associated with the elements of fire, earth, and water. In this story, Wallina is the goddess of fire and earth, and she is associated with the chief through their marriage.

20 Kamakani Wai: This story is about the birth of a Hawaiian chief and his love for Wallina. The chief is portrayed as a strong leader, and Wallina is depicted as a beautiful woman who was loved by the chief. The story is about the birth of a Hawaiian chief and his love for Wallina, his wife. Wallina is depicted as a beautiful woman who was loved by the chief who is portrayed as a strong leader.

21 Melo‘u: This is the place where the chief and his wife lived, and it is still a sacred place today. The site is known for its beautiful views and natural surroundings.

22 Hale’akalai: This is the place where the story of the chief and his wife takes place. The site is known for its beautiful views and natural surroundings.

23 Abali: This is the place where the chief and his wife lived, and it is still a sacred place today. The site is known for its beautiful views and natural surroundings.

24 Abali: This is the place where the chief and his wife lived, and it is still a sacred place today. The site is known for its beautiful views and natural surroundings.

25 Abali: This is the place where the chief and his wife lived, and it is still a sacred place today. The site is known for its beautiful views and natural surroundings.
Waimahana wai o e Ke'aka24
Ke kani a ka pio hole i ke kala
Kokekeleia'ole a ka kedona
Hana'a ia mai ana ka puna
E ka 'o Hiku alai iwai kui'ulu.

Where are you, Kehalani?
I am caught up in the ceiling mist
Oh how I love Waiau!
On the road now sampled by newcomers
When will you return?

The biting of the Upalaikai
Cuts crossing the leisure of old
Is like bath-water to the natives of the land
Who reside in the sacred house of Mau'iwai'olema
Glowing with health in the bosom of Mokou.

'Idole is seen directly behind us
Think with hope on the sands of Aholihi
We have gone quietly inland
To the fish that touch the skins of kana
When all has been done to perfection.

Softly fragrant are you, Ke'akalikilii
The sound of your whistle carries sweetly across the plain
So that life will be one of wind-scattered boughs
Tell the summary of the song
Here is Hiku'ali'i, my loa is complete.

24Ke'aka: short tour of Ke'akaliokiiokii. He was the grandson of Kauonuiokii and Ohoue's daughter Kohola'illopo. He was the father, with Kohola'illopo, of Ohoue II. Ke'akalikilii was noted; he communicated by means of chants that he voiced with his creaking voice (pau'a no).

CIA for the Kawainui-Hilmau Master Plan, Kailua, Ko'olaupoko, O'ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

The following notes were written by Luchi de Silva for Kaka'akea's son who is employed by the non-profit 501(c)(3) Hikaiwai as its cultural and conservation expert at Waiau and Kapa. Kaka'akea uses those notes as background for talks he gives to visiting student and service-learning groups at Waiau. © Luchi de Silva, Sept. 2010

TALKING POINTS FOR WAFALIA

Waiauia is perhaps pronounced wai-a-ua, a contraction of wai-a-ua la, meaning “water that has been turned aside, diverted.” “Diverted water” is, in fact, an accurate description of the water of Kawainui pond as it turned the bend into Kawahui stream (now called Hāneula Stream/Canal), joined Kalihi Stream (near the current Waiau Channel), and flowed into the sea. (Starting and Summarizing: Sites of Culture) Identify Waiauia as the land on which the Mackay Radio and Telegraph Station was built in the late 1920s. Their informants say this was the birthplace of people whose ranks were so high that they could come and go as they pleased. Munet Seto (a collector of Kula oral history in the 1980s) told me that the ranks of Waiauia’s residents was such that they bowed to no one.” A confusing fragment of a story in Sten's tells of chiefs who crossed their arms here and required visitors to jump over them perhaps a test of the right of these visitors to enter each sacred ground. An almost forgotten chant in the legend of Ke'akaalihimahoe (J.W.K. Kaulukuliihi, Nuehpa Kukuou, Jan. 14, 1871) describes the slice and practice as follows:

He aloha mai ka au ia Waiauia,
I ke ali a e ehu a ka mahina,
Ke olohe ia na lihi ki o alani,
E kahi ana ao e ke ake, ma;
E kee ohe o ke lupa o ikaa ana,
E kei o ka limi kapu hilihi,
A he ali ai e hiku ilii,
A e ke i no ho lupa halele loa,
A e mai ho kei wahi noho i ke pa-a,
He mea hehi ku na li na no hoone o hanau,
A hanau mau awa nei li o Kuakapou,
Hanau ton-e;

[My rough translation]
O how I love Waiauia
For the road that brings the stranger to a stop
The all are blocking the road there (with crossed arms)
Indicating that no one can proceed
But this is nothing to the native-born of my land
Where the most sacred ones will rise up
Not many will then succeed there
A hakaani amos, an excess of lepo,
So too does the pa'a-dwelling woman rise up
The chiefs of my birth-land are people who trample the kapu

CIA for the Kawainui-Hilmau Master Plan, Kailua, Ko'olaupoko, O'ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
Cultural Surveys Hawai'i Job Code: KAILUA 48
Appendix D

And soon the alliʻi Kualapuʻu will give birth
Will give birth, indeed.

Muriel Seto also told me that Frishi Pili (a very learned and highly respected Hawaiian thinker/teacher of the mid-20th century) described the significance of the Waiauas area as arising from the fact that it is “coastal” — it is the pivoting-place of the waters of the inland Kawaihui with the female Kailua‘ulu. New life is born from this union.

The Moolelo of the Makākī tree. Again, according to Sterling and Summers, this was the female tree of a pair of prosperously bearing trees that once grew at Paliku on Hawai‘i island. Westervelt and Emerson say that Makākī was brought to Kailua by the bird "Kūkiwaikealēhui," and the Sotes informants say that it was planted near Waiauas ("next door" to MacKay’s). It was responsible for attracting a wealth of fish to Kawaihui Pond. The other tree was named Kailākākapio and was responsible for attracting a similar bounty of vegetation food to Paliku. Moses Manu relates the full version of this moolelo (apparently lifted by Westervelt without credit) in his "Moolelo Kailua no Keʻomeneke" (Kūko‘olau, April 18, 1889).

The Makākī tree and Kailākākapio (its ‘ai-attracting counterpart, also called Makākī) are brought from Paliku, Hawai‘i to Nu‘uanu, Oahu, for the wedding of Keakaneleme and Kailanaialeakaua. Kailākākapio arrives without incident, but when the Makākī climbs toward the sea of Kailua, the纳mehnineh of Wādani think that it is a powerful kupua from Kalihi come to destroy them. They are so terrified by its appearance that they raise a great commotion and the tree falls back into the fishpond of Kawaihui at Waiauas where it remains till this very day. And if the reader of this story is unaware of this tree in its location, he need only ask the Kama‘ina of Kailua, Koa‘oku, Oahu.

... aia hoina laa, nei e pili mai ana maloiki mai o ke kai, a i ka ia i ka i laa nei ma ka i laa i o Kawaihui, ia pakaheha ae ia ka maanao a ia papa maehnineh a pau o Wādani a hoinoa aku ia laa e uwe ia ka leo nui, o ka kumuhu i keo i ka laa koa ana i kai kea, waimano laakou he kupua kaikeia mai Kailua mai e hele mai ana e laakou ia, a ia ko laakou i kea ia ma ma na nui waaalou, a ia mahanu no, ia hine koa aku ia Mākākī ia la i Kawaihui a Hanono maile, aia leia leia maloiki e waialo nei a kai ia laa, ia (he poa e heleheheana ia ia koa moolelo, a mahina la hele mai ana ma Kailua a ——— i kai e waialo a ia leia laa, e n(dlau i ka aamaaina o Kailua ma Koa‘oku o Oahu.

The moolelo of the Makākī branch. In a serialized Hawaiian language newspaper story told by Samuel Kekonow in Kukui‘u of the early 1950s, the word-like Makākī branch of the goddess Hānaea is used by one of her descendants — the ‘ehu named Kahukūhui ‘ia — to remove the fish of Kawaihui and Kailua‘uluu ponds until harmony is restored in the relationships between Kailua’s people, pond overseers, and chiefs. The boy stands at the maikahā of Kawaihui — located just uka of Waiauas — and waves his branch over the waters. The fish come in swarms, surging over the surface of the water like skipped pebbles, and he leads them into hiding in a pool in

CIA for the Kawainui-Hiloakuma Master Plan, Kailua, Koʻolau, O'ahu
TMKs. {1} 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-033; 4-4-034 various parcels

Maunawili valley until amendments can be made. The branch has rejuvenating, pregnancy-encouraging, and childbirth-easing powers as well as the ability to collect attract fish; it also changed into a red-stemmed palapaia fern when the boy hid it in a clump of ferns growing next to his Maunawili pool. Specific Waiauas events in Kekowaei:

- Kahinihiwata weaves the Makākī branch of his ancestress Hānaea to catch the fish of Kawaihui into hiding in Maunawili. "Hehe aku la kaia o ka koko o ka akahua, noho iho la maia me ka hui o ke alo i ka lao, a kuko iho la i ka lau malai nuanu o kona alo, o ka wa no ia o na mea aupua ike mai ai i ka maahui o ka lai maumea apani kia lao?" (Ku‘oko‘a, Feb. 2, 1922).

- Paki‘u goes to the maikahā at Waiauas to offer niu and niu to Hauwaiwehe in hopes of getting the fish to return to Kawaihui (Akhi) suggests that the absence of fish is the result of the pondkeeper’s hanno; Akhi orders Paki‘u to make immediate amends.) Paki‘u makes his offering at night, steps into Kawaihui from maikahā and finds himself on the slippery back of Hauwaiwehe who kokowaei compares in size to the Nautilus of Captain Nemo. The maikahā was named Kekowaei until this incident, afterwards it was called Kahiakahakalea because of Paki‘u’s encounter in the mud there with Hauwaiwehe. (Ku‘oko‘a, Feb. 10, and 17, 1922.)

- Kahinihiwata establishes his ancestor’s authority over Oolona and Akhi (the ruling chief of Kailua and his tonohi) by placing a long branch (Koi‘okomakalani) over Oolona pool (the royal bathing pool at Waiauas) and walking above Oolona while the all is bathing below.

- Kahinihiwata again wields the Makākī to catch the fish back to Kawaihui; upon their return, he places the branch into the maikahā where it continues to ensure an abundance of fish at the pond.

Waiauas is the site of the royal residences of Oolona and Oolona as recorded in the moolelo of Kukana‘u (Ka Leo o Ka Lāhui, 6-04-1891) and Kamaikokumahia (Ku‘oko‘a, 21 January 1871). As described in Kukana‘u the house stood unburnished at Waiauas on the plain of ‘Alea, and it is because of Oolona’s residence here that the familiar saying originated: “E hoakaua o e no Waiauas ke kai i.” The meaning of this expression is that the land has high born children.

Waiauas is a land adjacent to Pāhoa (or Kūko‘a), the royal residence of Kukana‘u as described in the moolelo of Lonokalamaikahili: Lono bathes in the cool waters of Waiauas and then walks (presumably a short distance) to Kukana‘u’s halau ahi where the two engage in a hoopōla session over the question of whose island is the least fertile. Lonokalamaikahili wins the argument through “ai lepo” wordplay. He references the edible must of Kawaihui (lepai ‘ai) and claims that Oahu is such a barren land that its people are accustomed to eating dirt; the people of Hawai‘i Island, he says, are never that desperate. In the course of their argument, Lonokalamaikahili asks Kukana‘u where Kawaihui and its mud are located. Lonokalamaikahili says that his royal house,}
Kāmoa Hale, is situated on 'Aleie plain with Kawainui at its back and Kāelepulu off to one side.

"I hou aku ia o Lono kemakahi kia Kaliihewa, auhea ia ia lohe. Mai ia ia o Kaliihewa, eia ia lohe ma ke fua o ko' u Nahiku. Aia kea lohe o Kāelepulu ma kea aina..." — Aga'ih Lono asked Kaliihewa, "Where is this pond?" Kaliihewa said "Kawainui pond is here at the back of my royal house... and Kāelepulu pond is on that side."

("He Moemlo No Lono kemakahi kia Pu'a Ali'i Kiekie na Kau'ana, Ke Ali'i Nui o Hawaii," Nupepea 10:08, January 14, 1886).

Although many more recently written accounts say that Palono was located near the ocean in the vicinity of Kapaa and Kainalu Streets, this older nokepea account puts Palono/Kāmoa Hale in a much closer relationship to Kawainui and Kāelepulu ponds: Kawainui is in back and Kāelepulu is on the side. This sounds to me like its right next to Wainaku.

Kamakau’s description of the function of Ponoa in reign of Kaliihewa:

"O kona mai kahu e noho al o Ewa, o Waikiki, o Kailua i Koolaupoko; ma Aleie i Kaliiu; kuku iho a oia i hele Aupuni rona. He kanaha ana ia loa, he umikumalima anana ia i lama, o Ponoa ia noo o u ha'aia iu. O ka ha'aia nui malo'ina o lala ha'aia, o ka kaka ainoa, o ka hahi puna, o ke kua ao hana, o ke kua ka'au, o ke aia ao o'ana, o ka ao ma ka'au, o ka ao ka kau, o ka ao o'ana, o ka ao mele kupuna Ali'i me Ali'i, o ka kui, o ka kai, o ka i'e, o ka honohono, o ka pina, o ka mahine. Naka ka i'a, a ho o Kaliuhehu he Ali'i Kaulana, ma Hawaii ka Kaua'i."

...at 'Aleie in Kailua, [Kaliuhiwah] built for himself a house of chiefly affairs. It was 40 acres long and 15 acres wide, and the name of this house was Palono. The main activities of this house were: oratory, politics, history, genealogy, battle strategy, club wielding, spear throwing,forecasting, architecture, astronomy, konane, instruction in ancestral and chiefly songs, foot-racing, cliff-climbing, ulumakiai (ruling and pahu a sliding), boxing, hand wrestling, ukele, long jumping, and hand-to-hand combat. All the body strengthening activities, as well as the work of farming and fishing.

("Noho Aupuni o Kaliihewa" in "Ka Moemlo o Hawai'i Nui," by Samuel Kamakau, Kukui, September 23, 1865. English translation here and in all other excerpts: Kūhoe de Silva.)
Kawainui-Hāmākua Carrying Capacity

Throughout the community meetings, we consistently heard there needs to be an understanding of the amount of stress a given site can take before it is subject to impacts to the resources. This includes imports to the cultural and historic resources and the ability to provide living culture, impacts to wildlife and ecosystems, and the function of the marsh. No legislative strongly recommends that every site include the development of a carrying capacity plan that can address these concerns. This would help facilitate the development of management actions that could avoid impacts, trigger appropriate management actions if resources experience impacts, improve the experience for people within the marsh, and encourage an understanding and stewardship of the resources.

For the purposes of our recommendation, Carrying Capacity refers to the number of individuals who can be supported in a given area within natural resource limits, and without degrading the natural, social, cultural and economic environment for present and future generations. Thus it is important to know what you want to protect, define what will trigger a reduction in use, and define what action will be taken if the trigger is reached. There are a number of models and approaches to conducting the research and developing a plan. Existing planning frameworks that address both ecological and social impacts and involve public participation throughout the process is included in the appendices. Below are links to guidelines. Recommendations on how to conduct a study for the Master Plan update are follow these links.

- “Visitor Experience and Resource Protection (VERP) is specifically designed for managing carrying capacity in the national parks system. Carrying capacity is managed by formulating desired resources and social conditions by means of a series of indicators and standards of quality. Indicator values are monitored over time to ensure that standards of quality are maintained. If standards of quality are violated, the VERP process requires that management action be taken.”

- “Limits of Acceptable Change (LAC) Systems for Wilderness Planning is a framework for establishing acceptable and appropriate resource and social conditions in recreation settings... the amount of change to be allowed is defined explicitly by means of quantitative standards, the appropriate management actions needed to prevent further change are identified, and procedures for monitoring and evaluating management performance are established.” Another resource can be found at http://lacoos.epa.gov/wildlands/limits.htm, http://www.trailbuild.com/Articles/BC9TrailsD29Standards/2-5.htm, and http://www.americantrails.org/resources/index.html.

Developing a Carrying Capacity Analysis - Kawainui Master Plan Update

Carrying capacity, or user capacity, is defined as the type and level of visitor use that can be accommodated while sustaining the desired resource and social conditions and visitor experiences that complement the purpose of Kawainui-Hāmākua and its’ desired conditions. The premise behind user capacity is that some level of impact inevitably accompanies public use; therefore, we must determine the level of impact that is acceptable and what actions are needed to keep impacts within acceptable limits. User capacity methodologies currently employed by most land managing agencies follow the “limits of acceptable change” process developed by the USDA Forest Service. This process involves the following steps:

- Develop prescriptions for resource and visitor experience conditions in various land units or zones (e.g. Ulupu, ACOE ponds, Ilu Pokulu) what are the desired resource conditions, visitor experience opportunities, and general levels of development and management for different types of use
- Identify indicators (measurable variables) of those conditions that can be monitored over time (e.g. number of areas of trail erosion or widening of the trail to twice the width of adjacent sections)
- Set standards that represent minimum acceptable conditions (e.g. no more than two occurrences in each mile of trail)
- Monitor conditions in relation to indicators and standards (e.g. annually inspect all trail segments to assess their condition)
- Take management actions to ensure that conditions remain at or above standard (e.g. temporarily close the trail until corrective measures are completed, or redesign the route, or organize and conduct trail work parties, or change the standard)

Potential Use-related Concerns:

There is an expectation that public use will increase and the area will become better known. With this potential for increasing public use, the following summary outlines some concerns that may arise on conditions change, challenging the ability of the states and partners to manage for the desired conditions.

- Increased public access and use could impact areas of deep-spiritual or cultural significance to Native Hawaiians and their use of these areas to practice their cultural traditions. Users/visitors may not be respectful of these traditions.
- Cultural landscapes, archaeological sites, historic structures, traditional places are the other resources for interpretation and veneration. The resources are ways for users to understand and
experience the Hawaiian culture. These resources are particularly sensitive to public use and are not renewable, so care must be taken in planning and managing use in these areas. In general, impacts from theft, vandalism, soil erosion, vegetation changes, and trail width.
- Informal trail activity, where visitors leave the designated trail or area, could create impacts. Social or informal trails may lead people to direct contact with sensitive cultural and natural resources.
- Natural resources, endangered water birds, sensitive and rare plants and wildlife may be disturbed.
- Visitor crowding, disturbance of private property owners, increased presence of tour bus activity that is not regulated or pre-arranged may overwhelm sites and create visitor conflicts.
- Increasing public use may degrade visitor experiences

**Potential User Capacity Indicators and Related Management Actions**

Below are some potential management actions that could address some of the impacts.

**Incidences of effect of Native Hawaiian traditional practice**

Management actions that may be considered to avoid or minimize these impacts include: educate visitors/users to Native Hawaiian values and to respectful behavior, direct visitors to alternate locations when important cultural activities are underway, develop a reservation or permit system to redistribute or limit use, limit use in specific areas.

**Incidences of site disturbance: trampling, or damage to elements of the cultural landscape or exposure of cultural material such as archaeological resources**

Management actions that may be considered to avoid or minimize these impacts include: institute a policy to restrict off-trail travel or climbing on above-ground cultural resources, provide information on the regulations and the importance of staying on the trail and off resources to protect sites, manage sites to better define appropriate use areas, erect signage to better define appropriate use areas or areas that are off-limits to use, increase enforcement, institute a volunteer watch program, close specific areas, redirect use to alternative areas, rehabilitate sites, reduce use levels.

**Numbers of informal trails or areas of trampling disturbance, especially in close proximity to sensitive natural and cultural resources**

Management actions that may be considered to avoid or minimize these impacts include: institute a policy to restrict off-trail travel, educate the user to the fragility of the resources, provide information on regulation for off-trail activity and the importance of staying on trails to protect resources, manage sites to better define appropriate use areas, erect signage to better define appropriate use areas or areas that are off-limits to use, increase enforcement, close specific areas, redirect use to alternative areas, rehabilitate sites, reduce use levels.

**Incidences of vandals or theft of cultural resources**

Management actions that may be considered to avoid or minimize these impacts include: institute a non-collection policy of the public, increase information on the sensitivity and value of the sites' cultural resources and on the non-collection policy for the public, increase information on the sensitivity and value if the site's cultural resources.

value of the cultural resources and on the non-collection policy. Increase patrols and law enforcement in target areas. Institute a volunteer watch program. Discourage the purchase of archeological resources, direct use away from sensitive cultural resource areas, close areas with sensitive cultural resources.

**Condition of trail tread (e.g., width, erosion, vegetation damage)**

Management actions that may be considered to avoid or minimize these impacts include: clearly define the trail by keeping the tread clear of weeds or other encumbrances, educate the user to stay on the trail, increase information on the sensitivity and value of the trail's cultural and natural resources, close specific sections to the trail and re-route use, change allowed uses, reduce use levels.

**Incidences of disruption to private property owners**

Management actions that may be considered to avoid or minimize these impacts include: educate users on minimizing disturbance to private property owners, sign private property, manage the trail and sites to better define appropriate use areas, focus management on areas where trash dumping or vandalism is occurring, institute a licensed/certified guide program, increase enforcement, close specific areas, redirect use to alternative areas, reduce use level.

**People at one time at important interpretive sites, markers, or viewpoints**

Management actions that may be considered to avoid or minimize these impacts include: provide advanced planning information to encourage visits to lesser used areas or off peak times, provide real-time information about parking availability, close areas when full and actively redistribute use to other sites, re-route access points to better distribute use, reduce use level.

**Approach to Priority Setting for Monitoring of Indicators**

Once indicators and standards are in place, it is important to set priorities and schedule of monitoring. One approach would be to predict specific trail and site uses that have the highest potential for overuse and related impacts leading to the need for higher levels of management attention. Sites would be assessed based on their vulnerability to resources and visitor experience concerns:

- Fragility of the cultural resources
- Vulnerability of natural resources
- Ease of access
- Proximity to population centers
- Popularity of the sites
- Degree of unadvanced sites
- Sensitivity of the user experience
Information from Community Meetings regarding Kawainui and Cultural Practices

Cultural Break-Out Session – Community Meeting Maunawili 9/13/2011

On Tuesday evening, Ho‘okūpuna members invited the community to participate in the very first community outreach meeting focused on interpreting Kawainui and Hānālulu. The first part of the meeting included two presentations—one being a brief overview of the history and background on Kawainui and Hānālulu and the other a quick course on interpretation and the interpretive planning process. The participants then split into three break-out groups to discuss opportunities for interpretation focused on Natural Resources, Water, and Cultural Resources. The information below summarizes the public comments and discussions from these break-out groups.

What cultural sites are important to you? Or what sites do you visit?

- Every Sunday a cultural practitioner group, Ke Kaha O Kāna‘i, visits to malae area and engage in cultural practices.
- Nā Pua‘ihe and Ulapa Helau with Māhali for work days (3 people)
- Kahalani Stream - as part of the Mauana Valley Neighborhood Park
- Makalana

How do you want to learn?

- A pamphlet or information provided for the tourists to understand Hawaiian culture and sites could be included for all visitors/tour buses
- Development of a land stewardship program through a Hawaiian lens
  - Provide the community access and use of the resource
  - Allow Hawaiian practices including cultural practitioners’ religious and spiritual practices, iwi, and burial sites
- Allow people to physically participate in caring and understanding.
- Offer current, living cultural practices for people to engage in and provide the opportunity for local participation and use of the sites.

Issues and Solutions

- Tour buses park on Mana Aloha St and in the TMKA/Church Lawns lots throughout the day. (not just nighttime ghost tours parking on Kualoa Rd). August traffic count on Mana Aloha = 1,900 vehicles in 24 hours. High impact of tours on community as well as the resources.

- There is a large educational learning curve. Request that the National Park Service assist by providing lessons learned and assess what could work and provide recommendations for Kawainui.

  - There should be an EA/EIS for the whole system
    - Impact of development
    - Stabilization of headlands
    - Something that covers all impacts - avoid piecemeal
  - WIP is the DNBR Master plan update address this?
  - We need to take responsibility of the resources as a community
    - Teach our community and collectively understand resources
  - Stewards
  - Provide through a Hawaiian lens
  - Kālua needs a pi'o that defines the community, this could be it.

  - Make into a cultural place
  - Stewards should treat as a pu‘uhonua

Ho‘o‘auliina ‘ia Kawainui Community Meeting - Coconut Grove 9/24/2011

On Saturday morning, Ho‘okūpuna members invited the community to participate in the second community outreach meeting focused on interpreting Kawainui and Hānālulu. The first part of the meeting included two presentations—one being a brief overview of the history and background on Kawainui and Hānālulu and the other a quick course on interpretation and the interpretive planning process. The participants then split into two break-out groups to discuss opportunities for interpretation focused on Natural and Cultural Resources and Water. The information below summarizes the public comments and discussions from these break-out groups.

Natural and Cultural Resources Break-Out Session

Kawainui/Hanalu means to you or your thoughts on approach...

- Balance needed - not overly developed but with some opportunities for interpretation. Don’t want to see it off-limits to people
  - Experience it, but not overused
  - Recreation and preservation
  - Restoration and remove alien species

- Offer a better setting through stewardship

- Lawmakers point of view - help us find solutions. For example - we hear about impacts from horses, tours, impact of use on neighborhoods, concerns over bathrooms, night use, etc. Help us come up with solutions!

- Discuss with the City/County/public buses to have better access such as at Kapaa Quin Road
Cultural Surveys Hawai'i Job Code: KAILUA 48

Appendix E

CIA for the Kawainui-Mālama Master Plan, Kailua, Kāne‘ohe, O‘ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

- What does it mean? We need to develop a vision - what do resources mean? Want to see it through a Hawaiian lens - it makes sense, we need to interact with the natural environment [as Hawaiians], interpret this to visitors and same lens. Allow our living cultural practices to take place.

**Solutions**
- Use a model of neighborhood watch
  - Train volunteers who will report but not enforce
  - Get funds from private land owners to implement
  - Put up monitoring video
  - We (residents) need to take responsibility
- Educational orientation needed for visitors (especially with a cultural/Hawaiian focus).
  - This should occur before people visit the site.
  - Have a location for a visitor center
  - Have the visitor-cultural center (one idea) at Kaneohe Ranch building near the ITT site. Have bike paths to the ITT site and small buses to take people to the different spots. Avoid the need for new parking lots.
  - The walkways could be loops at each of the sites for interpretation
  - Need to figure out a way for residents to use/visit without having to pay (have visitors pay to support the infrastructure)
  - NOTE: comment that due to state laws, the private land owner might have to donate or sell the property to the State if there is any fees associated with the service.
- Involve schools and have a cultural immersion and teaching opportunities. - e.g. Ulupō, lo‘i, a way to keep the culture alive, working on the land.
- Include a cross section of the marsh for the PowerPoint presentation for people to better understand the floating mat of vegetation
- Private land owners and the dune lands need to keep the water flowing off of their sites clean - need to know there are not new sources of pollution getting into the marsh.
- The source of pollution needs to be addressed
- Channel traffic and buses to sites to reduce impacts
- Exchange the YUYA land near Ulupō for another site, this could be an opportunity for a center for the entire marsh
- Need to have presence - actively manage the area adjacent to Kapaa Quarry Road and the paths.
- Include private land owner (John King) in these discussions of presence along Kapaa Quarry Road.
- Vision - Watchmen’s cabin idea - a family or elders could live within the marsh and become the guides and access the sites
  - Hawaiian presence
  - Serve for educational purposes.

- The idea of exchanging the Y site and cultural site is a big mistake. We need to get the pressure off and get bases etc. out of this neighborhood area. Find another location.
- Interpretive devices - different ones would work in different locations.
- There is no culture in the plan. There is a need to bring local Hawaiians and lineal descendants into the discussion. This is a living culture, why interpret a living culture?
- Why can’t here be people living their culture?
  - More respect
  - Have in different area
  - Make it a center for Hawaiian culture
  - Focus on the living culture that is dedicated to Hawaiian culture
- How do we do it?
  - Review suggestions of how to bring in Hawaiian culture into the master plan - this has been done. Make sure this is included. Ask Kēō KeʻO for this plan and suggestions to have this be a more prominent part of the plan.
- There is no dedicated place just for Hawaiian culture
  - This could be that place.
  - Be at the forefront and take the opportunity
  - Have people live there? Practice? Or both? Consider options.
  - Creating a sense of place - allow the opportunity for Hawaiians to be Hawaiian.
  - This boost the commercialization of culture (no Wāhikili)
  - Ask more cultural leaders from the ahupua‘a.
  - Some benefit back to the state to manage - include a user impact fee?

He‘o‘olonalima Kāwainui Community Meeting - Oct. 5, 6:30pm, Kālāheo

High School Cafeteria Comments

On Wednesday evening, Ho‘olonalima invited the community to participate in the third community outreach meeting focused on interpreting Ka‘awainui and Hāmākiea. The first part of the meeting included two presentations – one being a brief overview of the history and background on Ka‘awainui and Hāmākiea and the other a quick course on interpretation and the interpretive planning process. The participants then split into two break-out groups to discuss opportunities for interpretation focused on Natural and Cultural Resources and Water. The information below summarizes the public comments and discussions from those break-out groups.

**Natural and Cultural Resources Break Out Session**

A small group breakout session discussed numerous issues related to natural resources. There are a couple of suggestions related to cultural resources as well. The following summary touches on the needs, ideas, and solutions.

CIA for the Kawainui-Mālama Master Plan, Kailua, Kāne‘ohe, O‘ahu
TMKs: [1] 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
Suggestions

- No structures in the marsh
- We can do a lot with brochures
- Education with teachers and students coming to the site
- Education = good stewardship
  - How and where to best educate the public
- Agreement then others on no or limited impact (e.g., teachers)
- No bikeways
- No trolleys
- No noise from the site
- Noise from nearby
- How to enforce and to pay for it? Does there need to be legislation?
- Interpretation is difficult - needs a video or off site education to understand the bigger picture
- It is a sacred site for Hawaiians - Have Hawaiians interpret the site
- Protect the small healthy pockets of the marsh
- We should focus on the marsh to make the marsh healthy again
- Phase out ranching
- Community input is essential to the protection of the marsh
- Management strategies
  - Visitor Center outside of the marsh
    - Need clear goals that the community can agree on
    - Conditions around the marsh are critical
    - Have we “ever managed” the marsh?
- Minimal parking:
  - No tour buses
  - Better to have transportation to the site
  - Manage and control access to avoid negative impacts

Issues

- Dogs are a problem on trails
- Access and bus/transportation
- Traffic
- The marsh is “sick” - problem with cattle/hotest growth

Ho‘olanima 13 Kawainui Community Meeting - Oct. 20, 7:00pm, St. John Vianney’s Social Hall - Community Comments

On Wednesday evening, Ho‘olanima members invited the community to participate in the third community outreach meeting focused on interpreting Kawainui and Ho‘olanima. The first part of the meeting included two presentations – one being a brief overview of the history and background on Kawainui and Ho‘olanima and the other a quick course on interpretation and the

interpretive planning process. The participants then split into two break-out groups to discuss opportunities for interpretation focused on Natural and Cultural Resources and Water. The information below summarizes the public comments and discussions from these break-out groups.

Cultural Break-Out Session

A small group break-out session discussed numerous issues related to culture. The following summary touches on the needs, ideas, and solutions.

Why is it important to you? Why are you here?

- As a geologist and interested to similar situations in other locations, would like to bring this perspective to the process
- Involved with descendants, saw the development in Iwa (grew up in Iwa) and has a passion to see it done differently with respect for culture
- Hawaiian culture and perpetuation of culture is very important, bringing hula, mele, and the ability to live the Hawaiian culture is very important.
- Interested in the cultural component, this was missing in the last plan and really want to hear what people have to say
- Concerned with development and want to be aware and allow for culture to be integral in this

Suggestions

- If it becomes an attraction, it will increase development
- Reserve and protect the area until the Hawaiian Community has a plan - with the entire community in agreement
- Opposed to interpretation, would rather focus on land around the marsh and stop the use of chemicals
- Expand the wilderness area
- Group of native Hawaiians are working on a plan for a cultural and environmental center that embodies culture in a living form
- Want to see this plan for the cultural and environmental center to be in the Master Plan update. It is a parallel effort
- Want Kawainui to be a place to live culture - interpretation by living the culture and sharing with others as a living and teaching place
- Most robust expression of culture - could include all aspects of Hawaiian culture and have it be a hub for people to practice, including voyaging
- An example of an inspirational way to embody culture is from the Festival of Pacific Arts. This is an excellent example of a successful sharing of culture and promotes the perpetuation of the living culture by allowing students and practitioners to live their culture, share their culture, and provide the location to do that. After this experience, we asked ourselves, why do we have to go to another island to do this? Why can’t we do it on our own lands? This has led to the development of the dream for a cultural and environmental center (discussed above)
Full integration of the center with the land- this includes stewardship and restoration of the land. It provides a way to demonstrate the Hawaiian land management techniques by allowing practitioners to live their culture. This would be an integral component and would be optional for others as well. The concept of lokahi is what this center is based on.

Gathering place that allows for the sharing of culture

Not have development on and around the marsh

Concerned with the land around the marsh, the areas that feed the marsh and provide its life.

Concerned with Makalii- In 2012 the lease will expire and may not continue. This is a big concern and we may want to enlarge our understanding of Kawainui and include those areas that are essential for the sustainability of the marsh in terms of ecological processes, cultural practices, etc. This location (Makalii) is where the springs that feed the marsh are located. You need to see and feel this place to truly feel that mana.

Stories and comparisons of where we are now with land management provide an opportunity for interpretation. We should learn about how Hawaiians managed the land and what the results were and compare that to how modern day society is managing land and what the results are. This could be done through demonstrations.

Also include why the infrastructure exists as it does today

The target audience should be the local residents first. Don’t cater to the tourists, but allow for them to still learn.

The use of wayfinding exhibits and kiosks is not what I want to see. An example of how this can go wrong - In Kauai on the north shore there the only hula platform that has survived from ancient times. A group of users cleaned up this area, the trail, and tried to use the trail to keep visitors in specific locations and not impact the area. The opposite occurred and visitors did not understand the significance and many inappropriate behaviors resulted. So the group now does not clean up the area and tries to keep visitors out.

Limit access and determine what and where people (visitors) should go

Build something with the land and involve groups in the development of this concept

Develop ways to manage the visitors and keep centers and buildings outside of the marsh area. Be creative with getting people to select locations.

RAMSAE designation has a cultural component but needs to be interpreted locally.

Signage - if going to be put up, it should be for local residents first and not specifically for the tourists. We should determine what messages should be included.

Issues

- Concerned with hard surfaces and run off

- Food Security

- Military practices of detonating explosive devices where they find them. That destroys cultural and natural resources and could impact Kawainui

- Visitors are already here. We already have issues with boxes and we need to address the bad behaviors, the lack of understanding of the resources, and manage the sites for future generations.
Appendix F  Materials from Hawai'i’s Thousand Friends
Appendix F

Cultural Surveys Hawai'i

CIA for the Kawainui Marsh Restoration and Habitat Enhancement Project

3.5.2 Avifauna and Faunal Resources

Avifauna Resources

Kawainui Marsh provides habitat for various migratory waterfowl, wintering shorebirds, and a variety of resident and introduced bird species. Sizable ponds, wet pastures, and open water areas are attractive habitat for migratory waterfowl during the summer season. Migratory waterfowl are found within the small ponds in the wet pasture and in the larger open water areas of the marsh during winter months.

Migratory geese and ducks reported include Northern Pintail (Anas acuta), Northern Shoveler (Anas clypeata), Mallard (Anas platyrhynchos), Canada Goose (Branta canadensis), Emperor Goose (Chen canagica), Ring-necked Duck (Aythya collaris), Lesser Scop (Aythya affinis), Green-winged Teal (Anas crecca), American Wigeon (Anas americana), and Redhead (Aythya americana).
CIA for the Kawainui-Hilimilua Master Plan, Kailua, Koʻolaupoko, Oʻahu
TMKs: (1) 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels

6-4

CIA for the Kawainui-Hilimilua Master Plan, Kailua, Koʻolaupoko, Oʻahu
TMKs: (1) 4-2-003; 4-2-013; 4-2-016; 4-2-017; 4-2-103; 4-4-034 various parcels
APPENDIX

TRAFFIC IMPACT ANALYSIS REPORT
KAWAINUI-HĀMĀKUA MASTER PLAN
KAILUA, O‘AHU, HAWAII - October 2017
Prepared by: Julian Ng Incorporated
# Table of Contents

1. Introduction ................................................................................................................ 1
   Figure 1 – Project Location and Study Intersections .............................................. 1

2. Existing Traffic Conditions ........................................................................................ 3
   Table 1 – Count Data, North of the Project (State Route 65) ............................... 3
   Table 1a – Count Data, South of the Project (State Route 61) ............................. 4
   Figure 2 – Existing Peak Hour Traffic Volumes .................................................... 5
   Table 2 – Existing Conditions, Signalized Intersection
      Mākapu Saddle Road and Kapa’a Quarry Road ............................................ 5
   Table 3 – Existing Conditions, Signalized Intersection
      Kālamānā’ole Highway and Kapa’a Quarry Road ........................................ 6
   Table 4 – Existing Conditions, Signalized Intersection
      Kālamānā’ole Highway, Kailua Road, and Ulukahiki Street ............................. 6
   Table 5 – Existing Conditions, Signalized Intersection
      Kailua Road, Hāmākua Drive, and Kaineehe Street ........................................ 7

3. Future Traffic Conditions ........................................................................................... 8
   Figure 3 – Future Peak Hour Baseline Traffic Volumes ........................................ 8
   Table 6 – Future Baseline Conditions, Signalized Intersection
      Mākapu Saddle Road and Kapa’a Quarry Road ............................................ 8
   Table 7 – Future Baseline Conditions, Signalized Intersection
      Kālamānā’ole Highway and Kapa’a Quarry Road ........................................ 9
   Table 8 – Future Baseline Conditions, Signalized Intersection
      Kālamānā’ole Highway, Kailua Road, and Ulukahiki Street ............................. 9
   Table 9 – Future Baseline Conditions, Signalized Intersection
      Kailua Road, Hāmākua Drive, and Kaineehe Street ........................................ 9

4. Potential Project Impacts ............................................................................................ 10
   Figure 4 – Project Impact to Peak Hour Traffic .................................................... 10
   Figure 5 – Future Peak Hour (with Project) Traffic Volumes ............................... 11
   Table 10 – Potential Project Impacts to Peak Hour Traffic .................................. 10
   Table 11 – Future With-Project Conditions, Signalized Intersection
      Mākapu Saddle Road and Kapa’a Quarry Road ............................................ 11
   Table 12 – Future With-Project Conditions, Signalized Intersection
      Kālamānā’ole Highway and Kapa’a Quarry Road ........................................ 11
   Table 13 – Future With-Project Conditions, Signalized Intersection
      Kālamānā’ole Highway, Kailua Road, and Ulukahiki Street ............................. 12
   Table 14 – Future With-Project Conditions, Signalized Intersection
      Kailua Road, Hāmākua Drive, and Kaineehe Street ........................................ 12

5. Impacts to Traffic During Construction ................................................................... 13

6. Conclusions ................................................................................................................ 13

Appendix A – Summaries of Field Traffic Counts
Appendix B – Intersection Analyses Worksheets, Existing Conditions
Appendix C – Intersection Analyses Worksheets, Future Baseline Conditions
Appendix D – Intersection Analyses Worksheets, Future With-Project Conditions
1 Introduction

1.1 This traffic study has been prepared to address the potential traffic impacts of implementation of the Kawainui-Hāmākua Master Plan master plan. While the master plan focuses on wetland restoration and management, there are possible traffic impacts due to its objectives of providing increased opportunities for cultural, educational, and passive recreational activities. Due to the types of activities proposed, traffic impacts are expected to occur throughout the day, but after the morning peak commuting period. The greatest impacts, therefore, would be occur during the afternoon peak hour.

The project is located in Kailua on the windward side of the island of O’ahu. Traffic counts were taken in the field at four intersections where impacts to traffic could be expected. The area affected by the master plan and these intersections are shown in Figure 1.

1.2 Section 2 discusses the existing traffic conditions based on field observations and manual counts taken during the afternoon peak period in the fall of 2016.

1.3 Section 3 presents the findings of the analyses of potential project impacts to traffic and future conditions.

1.4 Section 4 discusses the relationship between the project and pedestrian and bicycle use of nearby roadways.

1.5 Section 5 discusses potential impacts to bicycle and pedestrian facilities.

1.6 Section 6 discusses the potential traffic impacts during construction and possible mitigation measures.

1.7 Traffic analyses were done to quantify existing and future conditions. The intersection analysis procedures from the 2000 Highway Capacity Manual were used to identify peak hour conditions.

For signalized intersections, the results of the analyses include utilization (volume/capacity ratio), average delay, and Level of Service for each lane group, as well as an overall condition for the intersection. The Levels of Service are based on the average delay per vehicle described below; Level of Service D or better is usually considered adequate for peak hour conditions (however, individual lane groups, especially those for minor movements, often will have poor levels of service due to the long signal cycles that may be needed to either provide overall capacity or to accommodate pedestrian crossings).

<table>
<thead>
<tr>
<th>Average Delay (seconds per vehicle)</th>
<th>General Description of Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 10</td>
<td>Little or no delay</td>
<td>A</td>
</tr>
<tr>
<td>&gt; 10 and ≤ 25</td>
<td>Short traffic delays</td>
<td>B</td>
</tr>
<tr>
<td>&gt; 25 and ≤ 35</td>
<td>Average traffic delays</td>
<td>C</td>
</tr>
<tr>
<td>&gt; 35 and ≤ 55</td>
<td>Long traffic delays</td>
<td>D</td>
</tr>
<tr>
<td>&gt; 55 and ≤ 80</td>
<td>Very long traffic delays</td>
<td>E</td>
</tr>
<tr>
<td>&gt; 80</td>
<td>Very long traffic delays</td>
<td>F</td>
</tr>
</tbody>
</table>

---

2 Existing Traffic Conditions

2.1 Major roadways near and serving the area affected by the proposed project include Kapaa Quarry Road, M Kapu Saddle Road, Kalanianaole Highway, Kailua Road, and Ulukahiki Street. Kapaa Quarry Road is a two-lane roadway, mostly privately-owned and approximately 2.6 miles in length, running in a generally north to south orientation from M Kapu Saddle Road to Kalanianaole Highway.

M Kapu Saddle Road is a divided four-lane minor arterial roadway that is part of State Route 65 under the jurisdiction of the State of Hawaii’s Department of Transportation, Highways Division, running between Kaneohe and Kailua.

Parts of Kalanianaole Highway and Kailua Road are divided four-lane major arterial highways that are portions of State Route 61, which connects downtown Honolulu with Kailua, generally from west to east. Where Kalanianaole Highway becomes Kailua Road, they are also designated State Route 72. State Route 72 continues around the east end of the island and terminates in the Kaimuki area of East Honolulu.

Ulukahiki Street is a two-lane City street that is the north leg of the intersection that also includes Kalanianaole Highway and Kailua Road.

2.2 Data from recent traffic counts obtained from the Highways Division are shown in Tables 1 and 1a.

**Table 1 – Count Data, North of the Project (State Route 65)**

<table>
<thead>
<tr>
<th>M Kapu Saddle Road</th>
<th>Day One of Count</th>
<th>Day Two of Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastbound</td>
<td>AM Peak Hour</td>
<td>PM Peak Hour</td>
</tr>
<tr>
<td>West of Kapa’a Quarry Rd. (2015)</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td>929</td>
<td>929</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>1,097</td>
<td>1,097</td>
</tr>
<tr>
<td>Day One of Count</td>
<td>Eastbound</td>
<td>Westbound</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>2,183</td>
<td>2,183</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td>3,000</td>
<td>3,000</td>
</tr>
</tbody>
</table>

**Table 1a – Count Data, South of the Project (State Route 61)**

<table>
<thead>
<tr>
<th>Kalanianaole Highway</th>
<th>Day One of Count</th>
<th>Day Two of Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastbound</td>
<td>AM Peak Hour</td>
<td>PM Peak Hour</td>
</tr>
<tr>
<td>West of Kapa’s Quarry Rd. (2015)</td>
<td>1,356</td>
<td>1,356</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td>1,356</td>
<td>1,356</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>1,356</td>
<td>1,356</td>
</tr>
<tr>
<td>Day One of Count</td>
<td>Eastbound</td>
<td>Westbound</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>2,095</td>
<td>2,095</td>
</tr>
<tr>
<td>AM Peak Hour</td>
<td>2,951</td>
<td>2,951</td>
</tr>
</tbody>
</table>

Manual counts taken as part of this traffic study showed PM Peak Hour volume on M Kapu Boulevard, therefore, would be greater than the 22,500 vehicles per day counted in December 2013.
2.3 The comparisons of traffic counts discussed above suggest that traffic demand is increasing with the passage of time. However, these increases are not consistent (increases on some legs of Mōkapu Boulevard but not all, and increases in different directions at different locations along State Route 61). The differences could also be seasonal (the counts taken for this study were done with schools in normal session). The turning movement data from the 2016 counts will be used as the baseline for evaluating existing (and future) conditions.

2.4 Summaries of the manual turning movement counts are appended to this report. The peak hour turning volumes from the field counts are shown in Figure 2.

Figure 2 – Existing Peak Hour Traffic Volumes

2.5 At the intersection of Mōkapu Saddle Road and Kapa’a Quarry Road, five-phase operation of the traffic signal provided left turns from Mōkapu Saddle Road leading protected phases when more than two vehicles were queued. Left turns, however, are also permissive (i.e., can be made against oncoming traffic when the through movements on Mōkapu Saddle Road have a green light); results of the level-of-service analysis assuming two-phase operation are summarized in Table 2.

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalāheʻe High School</td>
<td>0.07</td>
<td>17.1</td>
<td>C</td>
</tr>
<tr>
<td>Westbound approach on Mōkapu Saddle Road</td>
<td>0.70</td>
<td>13.0</td>
<td>B</td>
</tr>
<tr>
<td>Eastbound approach on Mōkapu Saddle Road</td>
<td>0.81</td>
<td>16.0</td>
<td>C</td>
</tr>
<tr>
<td>Kapa’a Quarry Road (northbound)</td>
<td>0.69</td>
<td>27.7</td>
<td>C</td>
</tr>
<tr>
<td>Overall Intersection</td>
<td>0.85</td>
<td>16.9</td>
<td>C</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)  
Delay = Average delay per vehicle, expressed in seconds  
LOS = Level of Service

2.6 At the intersection of Kalanianaʻole Highway and Kapa’a Quarry Road, the traffic signal has three-phase operation with protected left turns from eastbound Kalanianaʻole Highway. While there is a right turn lane on the westbound approach, it is short and that approach was considered to have a shared through and right turn lane in the analysis. Results of the level-of-service analysis are summarized in Table 3.

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapa’a Quarry Road (southbound)</td>
<td>0.65</td>
<td>39.1</td>
<td>D</td>
</tr>
<tr>
<td>Westbound approach on Kalanianaʻole Hwy</td>
<td>0.91</td>
<td>23.9</td>
<td>C</td>
</tr>
<tr>
<td>Eastbound left turns on Kalanianaʻole Hwy</td>
<td>0.62</td>
<td>44.6</td>
<td>D</td>
</tr>
<tr>
<td>Eastbound approach on Kalanianaʻole Hwy</td>
<td>0.79</td>
<td>8.6</td>
<td>A</td>
</tr>
<tr>
<td>Overall Intersection</td>
<td>0.77</td>
<td>17.4</td>
<td>C</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)  
Delay = Average delay per vehicle, expressed in seconds  
LOS = Level of Service

2.7 At the intersection of Kalanianaʻole Highway, Kailua Road, and Ulukahiki Street, the traffic signal has six-phase operation with protected left turns from eastbound Kalanianaʻole Highway and westbound Kailua Road, and split operation for the northbound and southbound approaches. Access to separate right turn lanes on the westbound and eastbound approach are far enough back of the approach that those movements were not considered to be part of the signal in the analysis. While a separate right turn lane is provided for the northbound approach, access to it was often blocked by the queue of northbound traffic, so northbound right turn volumes were included in the analysis. Results of the level-of-service analysis are summarized in Table 4.
3 Future Traffic Conditions

3.1 For future traffic conditions without the proposed project, existing peak hour volumes were increased by 5% as a baseline for determining potential project traffic impact (this increase was applied not so much in anticipation of growth, but to account for day-to-day variation in traffic demand). Figure 3 shows these traffic assignments.

2.8 At the intersection of Kailua Road, Hāmākua Drive, and Kainhe Street, the traffic signal has three-phase operation with permissive left turns from the eastbound and westbound approaches of Kailua Road, and split operation for the northbound and southbound approaches. Access to separate right turn lanes on the eastbound and westbound approach are far enough back of the approach that those movements were not considered to be part of the signal in the analysis. While a separate right turn lane is provided for the northbound approach, access to it was often blocked by the queue of northbound traffic, so northbound right turn volumes were included in the analysis. Results of the level-of-service analyses are summarized in Table 5.

Table 4 – Existing Conditions, Signalized Intersection
Kalaniana'ole Highway, Kailua Road, and Ulukahiki Street

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulukahiki Street (southbound)</td>
<td>0.69</td>
<td>67.7</td>
<td>E</td>
</tr>
<tr>
<td>Westbound approach on Kailua Road</td>
<td>0.53</td>
<td>27.0</td>
<td>C</td>
</tr>
<tr>
<td>Westbound left turn from Kailua Road</td>
<td>0.71</td>
<td>64.2</td>
<td>E</td>
</tr>
<tr>
<td>Eastbound left turn from Kalaniana'ole Hwy.</td>
<td>0.58</td>
<td>22.0</td>
<td>E</td>
</tr>
<tr>
<td>Eastbound approach on Kalaniana'ole Hwy.</td>
<td>0.91</td>
<td>49.9</td>
<td>D</td>
</tr>
<tr>
<td>Northbound approach on Kalaniana'ole Hwy.</td>
<td>0.85</td>
<td>52.4</td>
<td>D</td>
</tr>
<tr>
<td>Overall Intersection</td>
<td>0.82</td>
<td>46.4</td>
<td>D</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)
Delay = Average delay per vehicle, expressed in seconds
LOS = Level of Service

Table 5 – Existing Conditions, Signalized Intersection
Kailua Road, Hāmākua Drive, and Kainhe Street

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kainhe Street approach (southbound)</td>
<td>0.97</td>
<td>88.1</td>
<td>F</td>
</tr>
<tr>
<td>Westbound approach on Kailua Road</td>
<td>0.39</td>
<td>23.3</td>
<td>C</td>
</tr>
<tr>
<td>Eastbound approach on Kailua Road</td>
<td>0.93</td>
<td>44.2</td>
<td>D</td>
</tr>
<tr>
<td>Hāmākua Drive approach (northbound)</td>
<td>0.92</td>
<td>58.9</td>
<td>E</td>
</tr>
<tr>
<td>Overall Intersection</td>
<td>0.94</td>
<td>48.3</td>
<td>D</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)
Delay = Average delay per vehicle, expressed in seconds
LOS = Level of Service
4 Potential Project Impacts

4.1 The proposed project’s impact to traffic will result from better access to the property provided by improved facilities, including parking lots. Activities at these facilities will be managed to mitigate adverse impacts to the natural environment.

Annual use estimates were used to compute peak hour traffic impact for a peak day, as summarized in Table 10. Figure 4 shows the project impact to PM Peak Hour traffic volumes at the studied intersections, and Figure 5 shows the future with-project traffic assignments.

<table>
<thead>
<tr>
<th>Table 10 - Potential Project Impacts to Peak Hour Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Kahanaiki- Nā Pōhaku - Kapa’a</td>
</tr>
<tr>
<td>Wa’anaa-Ulupō-Mokulana</td>
</tr>
<tr>
<td>Kapa’a-Kalāheo (canoe/park)</td>
</tr>
</tbody>
</table>

A comparison of the results of the analyses shows that, while average delays will increase, future conditions would generally remain unchanged.
4.2 The impact of less than 100 added vehicles in the peak hour, as shown in Table 10, is not expected to have significant traffic impact.

4.3 The level of service analyses previously done for the existing and future baseline traffic volumes were repeated with the volumes shown in Figure 5; results are shown in Tables 11, 12, 13, and 14. Overall intersection level of service did not change at three of the intersections; however, increased delay at the intersection of Kailua Road, Hāmākua Drive, and Kainehe Street pushed the level of service from "D" to "E" (average delay increased 2.9 seconds, or 5.3%, compared to baseline).

Table 11 – Future With-Project Conditions, Signalized Intersection
Kalani‘a’ole Highway and Kapaa Quarry Road

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalāheo High School driveway (southbound)</td>
<td>0.08</td>
<td>17.2</td>
<td>C</td>
</tr>
<tr>
<td>Westbound approach on Mōkapu Blvd.</td>
<td>0.79</td>
<td>15.6</td>
<td>C</td>
</tr>
<tr>
<td>Eastbound approach on Mōkapu Blvd.</td>
<td>0.87</td>
<td>18.8</td>
<td>C</td>
</tr>
<tr>
<td>Kapaa Quarry Road (northbound)</td>
<td>0.75</td>
<td>30.7</td>
<td>C</td>
</tr>
<tr>
<td>Overall Intersection</td>
<td>0.92</td>
<td>19.8</td>
<td>C</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)
Delay = Average delay per vehicle, expressed in seconds
LOS = Level of Service

Table 12 – Future With-Project Conditions, Signalized Intersection
Kalaniana‘ole Highway and Kapaa Quarry Road

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapa’a Quarry Road approach (southbound)</td>
<td>0.71</td>
<td>41.2</td>
<td>D</td>
</tr>
<tr>
<td>Westbound approach on Kalaniana‘ole Hwy.</td>
<td>0.97</td>
<td>30.5</td>
<td>C</td>
</tr>
<tr>
<td>Eastbound approach on Kalaniana‘ole Hwy.</td>
<td>0.69</td>
<td>49.1</td>
<td>D</td>
</tr>
<tr>
<td>Overall Interaction</td>
<td>0.83</td>
<td>9.8</td>
<td>A</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)
Delay = Average delay per vehicle, expressed in seconds
LOS = Level of Service

Table 13 – Future Baseline Conditions, Signalized Intersection
Kalaniana‘ole Highway, Kailua Road, and Ulukahiki Street

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulukahiki Street (southbound)</td>
<td>0.76</td>
<td>73.0</td>
<td>E</td>
</tr>
<tr>
<td>Westbound approach on Kailua Road</td>
<td>0.56</td>
<td>27.6</td>
<td>C</td>
</tr>
<tr>
<td>Westbound left turn from Kailua Road</td>
<td>0.74</td>
<td>66.3</td>
<td>E</td>
</tr>
<tr>
<td>Eastbound left turn from Kalaniana‘ole Hwy.</td>
<td>0.64</td>
<td>76.8</td>
<td>E</td>
</tr>
<tr>
<td>Eastbound approach on Kalaniana‘ole Hwy.</td>
<td>0.96</td>
<td>57.3</td>
<td>E</td>
</tr>
<tr>
<td>Northbound approach on Kalaniana‘ole Hwy.</td>
<td>0.90</td>
<td>56.7</td>
<td>E</td>
</tr>
<tr>
<td>Overall Interaction</td>
<td>0.96</td>
<td>50.7</td>
<td>D</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)
Delay = Average delay per vehicle, expressed in seconds
LOS = Level of Service

Table 14 – Future With-Project Conditions, Signalized Intersection
Kailua Road, Hāmākua Drive, and Kainehe Street

<table>
<thead>
<tr>
<th>PM Peak Hour</th>
<th>X</th>
<th>Delay</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kainehe Street approach (southbound)</td>
<td>0.99</td>
<td>58.2</td>
<td>E</td>
</tr>
<tr>
<td>Westbound approach on Kailua Road</td>
<td>0.41</td>
<td>23.6</td>
<td>C</td>
</tr>
<tr>
<td>Eastbound approach on Kailua Road</td>
<td>1.00</td>
<td>73.7</td>
<td>E</td>
</tr>
<tr>
<td>Hāmākua Drive approach (northbound)</td>
<td>1.00</td>
<td>56.8</td>
<td>E</td>
</tr>
<tr>
<td>Overall Interaction</td>
<td>0.99</td>
<td>58.2</td>
<td>E</td>
</tr>
</tbody>
</table>

X = utilization (volume/capacity ratio)
Delay = Average delay per vehicle, expressed in seconds
LOS = Level of Service
5 Impacts to Traffic During Construction

5.1 Construction of the proposed project will occur mostly within the site and is not expected to significantly affect vehicular circulation on public streets. Lane closures would not occur, except in limited cases (short-term lane closures may be required for utility work). Work within the State Highways rights-of-way will require that the project contractor obtain a permit from the Highways Division. Other effects on public street use would require that the project contractor obtain necessary permits from the City.

5.2 Any detours required (whether for motorized vehicles, bicyclists, or pedestrians) and parking and storage for construction activities should be managed to minimize impacts to traffic on the surrounding roadways.

5.3 The contractor’s work schedule should recognize the existing traffic patterns so that conflicts between construction traffic and other traffic are minimized. The delivery of construction material and removal of debris should be scheduled during off-peak traffic hours. Construction activities should be coordinated to avoid times of special events in the affected area.

6 Conclusions

6.1 Existing traffic conditions in the vicinity of the proposed project are within acceptable levels of service. While there is some congestion and very long delays for some movements, overall conditions at the major intersections were found to be able to accommodate additional traffic with no change in levels of service.

6.2 At the intersection of Kailua Road, Hāmākua Drive, and Kaineehe Street, however, a 5% increase in peak hour traffic volumes independent of the proposed project would increase overall delay to change the PM Peak Hour level of service at the intersection from “D” to “E” (average delay increases from 48.0 to 55.1 seconds per vehicle, with the threshold between the LOSs being 55.0 seconds per vehicle). The additional traffic demand expected with the project would further increase the average delay, to 58.2 seconds, and volumes are near capacity.

6.3 The level-of-service analyses found that the project will not change levels of service at the intersections where the greatest impacts are expected.
Appendix A
Summaries of Field Traffic Counts

(two sheets follow):
Intersection of Kapa’a Quarry Road and Mōkapu Saddle Road
Intersection of Kapa’a Quarry Road and Kalaniana‘ole Highway
Intersection of Kalaniana‘ole Highway, Kailua Road, and Ulukahiki Street
Intersection of Kailua Road, Kainehe Street, and Hāmākua Drive

<table>
<thead>
<tr>
<th>Manual Traffic Counts for Kawainui - Hāmākua Marsh EA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapa'a Quarry Road at Kalaniana'ole Highway</td>
</tr>
<tr>
<td>Southerndoor</td>
</tr>
<tr>
<td>Right</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Wednesday, November 09, 2016</td>
</tr>
<tr>
<td>2:00 PM - 2:15 PM</td>
</tr>
<tr>
<td>2:15 PM - 2:30 PM</td>
</tr>
<tr>
<td>2:30 PM - 2:45 PM</td>
</tr>
<tr>
<td>2:45 PM - 3:00 PM</td>
</tr>
<tr>
<td>3:00 PM - 3:15 PM</td>
</tr>
<tr>
<td>3:15 PM - 3:30 PM</td>
</tr>
<tr>
<td>3:30 PM - 3:45 PM</td>
</tr>
<tr>
<td>3:45 PM - 4:00 PM</td>
</tr>
<tr>
<td>4:00 PM - 4:15 PM</td>
</tr>
<tr>
<td>4:15 PM - 4:30 PM</td>
</tr>
<tr>
<td>4:30 PM - 4:45 PM</td>
</tr>
<tr>
<td>4:45 PM - 5:00 PM</td>
</tr>
<tr>
<td>5:00 PM - 5:15 PM</td>
</tr>
<tr>
<td>5:15 PM - 5:30 PM</td>
</tr>
<tr>
<td>5:30 PM - 5:45 PM</td>
</tr>
<tr>
<td>5:45 PM - 6:00 PM</td>
</tr>
<tr>
<td>Count Total</td>
</tr>
<tr>
<td>Peak hour</td>
</tr>
</tbody>
</table>
### Manual Traffic Counts for Kawainui - Haʻikū Marsh EA

Traffic analyses from the terminus of Hamakua Drive, Kailua Road, and Ulukahiki Street

<table>
<thead>
<tr>
<th>Time</th>
<th>SB</th>
<th>Southbound</th>
<th>EB</th>
<th>Eastbound</th>
<th>NB</th>
<th>Northbound</th>
<th>WE</th>
<th>Westbound</th>
<th>Total</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2:30 PM</td>
<td>125</td>
<td></td>
<td>25</td>
<td></td>
<td>143</td>
<td></td>
<td>4</td>
<td></td>
<td>252</td>
<td>161</td>
<td>176</td>
</tr>
<tr>
<td>3:30 PM</td>
<td>129</td>
<td></td>
<td>33</td>
<td></td>
<td>158</td>
<td></td>
<td>5</td>
<td></td>
<td>217</td>
<td>134</td>
<td>130</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>132</td>
<td></td>
<td>30</td>
<td></td>
<td>162</td>
<td></td>
<td>6</td>
<td></td>
<td>221</td>
<td>139</td>
<td>146</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>134</td>
<td></td>
<td>29</td>
<td></td>
<td>165</td>
<td></td>
<td>7</td>
<td></td>
<td>220</td>
<td>143</td>
<td>154</td>
</tr>
</tbody>
</table>

### Appendix B

#### Intersection Analyses Worksheets, Existing Conditions

- **Intersection of Kapa’a Quarry Road and Mākapu Saddle Road**
  - (5 sheets)
- **Intersection of Kapa’a Quarry Road and Kalanianaʻole Highway**
  - (2 sheets)
- **Intersection of Kalanianaʻole Highway, Kailua Road, and Ulukahiki Street**
  - (2 sheets)
- **Intersection of Kailua Road, Kaineehe Street, and Hāmākua Drive**
  - (4 sheets)
### INPUT WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency/Company</td>
<td>Melvile South Rd &amp; Keppel Quarry Rd</td>
</tr>
<tr>
<td>Date Performed</td>
<td>May 15, 2017</td>
</tr>
<tr>
<td>Analysis Time</td>
<td>PM Peak Hour</td>
</tr>
<tr>
<td>Analysis Year</td>
<td>November 30.38 counts</td>
</tr>
</tbody>
</table>

#### Volume and Timing Input

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TT</td>
<td>MT</td>
<td>ST</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

#### Right Turn Factors

- **Right Turn Factor:**
  - **Perturbation Factor:** 0.95
  - **Net Right Turn Factor:** 0.95

#### Parking

- **Parking per BB:**
  - **Average:** 1.0
  - **Minimum:** 0.0
  - **Maximum:** 2.0
  - **Number:** 20

#### Signal Phasing

- **Signal Timer:**
  - **Duration:** 22.0
  - **Red:** 22.0
  - **Green:** 22.0

#### Volume Adjustment

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TT</td>
<td>MT</td>
<td>ST</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

### SUPPLEMENTAL WORKSHEET FOR PERMITTED LEFT TURNS

#### General Information

- **Project Name:** Melvile South Rd & Keppel Quarry Rd
- **Analysis Period:** November 2017 counts

#### Analysis Time

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TT</td>
<td>MT</td>
<td>ST</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

#### Right Turn Factors

- **Right Turn Factor:**
  - **Perturbation Factor:** 0.95
  - **Net Right Turn Factor:** 0.95

#### Parking

- **Parking per BB:**
  - **Average:** 1.0
  - **Minimum:** 0.0
  - **Maximum:** 2.0
  - **Number:** 20

#### Signal Phasing

- **Signal Timer:**
  - **Duration:** 22.0
  - **Red:** 22.0
  - **Green:** 22.0

#### Volume Adjustment

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TT</td>
<td>MT</td>
<td>ST</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

#### Notes

1. **Walking Distance:**
   - **Distance:** 0.054 |

2. **Saturation Flow Rate (per EAB):**
   - **Adjusted:** 0.462 - 0.462 |

---

### Notes

1. **Walking Distance:**
   - **Distance:** 0.054 |

2. **Saturation Flow Rate (per EAB):**
   - **Adjusted:** 0.462 - 0.462 |
### SUPPLEMENTAL WORKSHEET FOR PERMITTED LEFT TURNS OPPOSED BY MULTILANE APPROACH

**General Information**

| Project Location | Maluako Saddle R&B & Ekapu Quarry Rd. - November 2016 counts - PM Peak Hour |

**Input**

<table>
<thead>
<tr>
<th></th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle length, C (s)</td>
<td>40.0</td>
<td>40.0</td>
<td></td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>Effective permitted green time for 1 LANE group, G (s)</td>
<td>40.0</td>
<td>40.0</td>
<td></td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>Opposing effective green time, G (s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of lanes/LANE group, A</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Number of opposing approach, B</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Adjusted # vehicles (length, km)</td>
<td>190.0</td>
<td>236.0</td>
<td></td>
<td></td>
<td>190.0</td>
</tr>
<tr>
<td>Proportion of LANE group to LANE group, D</td>
<td>0.0114</td>
<td>0.0114</td>
<td></td>
<td></td>
<td>0.0114</td>
</tr>
<tr>
<td>Adjusted free flow for opposing approach, vS (km/h)</td>
<td>93.0</td>
<td>93.0</td>
<td></td>
<td></td>
<td>93.0</td>
</tr>
<tr>
<td>Nsurv for LANE group, s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Computation**

<table>
<thead>
<tr>
<th></th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVR volume per clyde, v = CVR * G (km/h)</td>
<td>0.029</td>
<td>0.029</td>
<td></td>
<td></td>
<td>0.029</td>
</tr>
<tr>
<td>Opposing lane utilization factor, Tn, refer to volume adjustment and saturation flow</td>
<td>0.950</td>
<td>0.950</td>
<td></td>
<td></td>
<td>0.950</td>
</tr>
<tr>
<td>Opposing flow per lane, per cycle, v = CVR * G (km/h)</td>
<td>95.28</td>
<td>95.28</td>
<td></td>
<td></td>
<td>95.28</td>
</tr>
<tr>
<td>1.15 * [EV, v + 0.00001]</td>
<td>21.071</td>
<td>5.093</td>
<td></td>
<td></td>
<td>21.071</td>
</tr>
<tr>
<td>Maximum K (crossover intersection, random)</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation rate, vS = Ki * A(i)</td>
<td>0.200</td>
<td>0.200</td>
<td></td>
<td></td>
<td>0.200</td>
</tr>
</tbody>
</table>

**Notes**

1. Refer to Exhibit C-6A. B, C-6D, C-6E, and C-6F for one-way parameters and adjustment factors.
2. For evasive left-turn lane, L is equal to the number of exclusive left-turn lanes. For shared left-turn lane, L is equal to the sum of the shared left-turn lane, through, and turn right lane (when exist) lanes in the approach.
3. For exclusive left-turn lane, p=0, and skip the next step. Last time, t0 may not be applicable for permitted case.
4. For exclusive left-turn lane, p=0, and skip the next step. Last time, t0 may not be applicable for permitted case.
5. For a multiple subject approach, F ≈ 2 if at left-turn dominate, then assume it to be a distinct exclusive left-turn lane and take the calculation.
6. For permitted left-turn with multiple exclusive left-turn lanes, t0 = t0 + t0.

---

### SUPPLEMENTAL WORKSHEET FOR PEDESTRIAN-BICYCLE EFFECTS ON PERMITTED LEFT TURNS AND RIGHT TURNS

**General Information**

| Project Location | Maluako Saddle R&B & Ekapu Quarry Rd. - November 2016 counts - PM Peak Hour |

**Permitted Left Turns**

<table>
<thead>
<tr>
<th></th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.15 * [EV, v + 0.00001]</td>
<td>21.071</td>
<td>5.093</td>
<td></td>
<td></td>
<td>21.071</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation rate, vS = Ki * A(i)</td>
<td>0.200</td>
<td>0.200</td>
<td></td>
<td></td>
<td>0.200</td>
</tr>
</tbody>
</table>

**Notes**

1. Refer to Exhibit C-6A. B, C-6D, C-6E, and C-6F for one-way parameters and adjustment factors.
2. If intersection signal timing is given, use Walk + Biking Don’t Walk (W + Y) if no pedestrian is queued. If signal timing not available, use 90s default time. Last time, t0 may be applicable for permitted case.
3. For a multiple subject approach, F ≈ 2 if at left-turn dominate, then assume it to be a distinct exclusive left-turn lane and take the calculation.
4. For permitted left-turn with multiple exclusive left-turn lanes, t0 = t0 + t0.

---

### SUPPLEMENTAL WORKSHEET FOR PEDESTRIAN-BICYCLE EFFECTS ON PERMITTED LEFT TURNS AND RIGHT TURNS

**General Information**

| Project Location | Maluako Saddle R&B & Ekapu Quarry Rd. - November 2016 counts - PM Peak Hour |

**Permitted Left Turns**

<table>
<thead>
<tr>
<th></th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective pedestrian green time, vP (s)</td>
<td>40.0</td>
<td>40.0</td>
<td></td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>Effective permitted green time, vS (s)</td>
<td>40.0</td>
<td>40.0</td>
<td></td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>Vmax = V0 + vP (s)</td>
<td>10</td>
<td>0</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>OCC1 = (1 + 1) * ln(Vmax)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCC2 = (1 + 1) * ln(vS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposing saturation flow, vS = Ki * A(i)</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Number of cross street receiving lanes, nS</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Number of turning lanes, nT</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Number of turning lanes, nT</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Number of turning lanes, nT</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>A1 = 1, OCC1 = v1 * nS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2 = 1, OCC1 = v1 * nS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OBE = (1 + 1) * ln(Vmax)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposing flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
</tbody>
</table>

**Notes**

1. Refer to Exhibit C-6A. B, C-6D, C-6E, and C-6F for one-way parameters and adjustment factors.
2. If intersection signal timing is given, use Walk + Biking Don’t Walk (W + Y) if no pedestrian is queued. If signal timing not available, use 90s default time. Last time, t0 may be applicable for permitted case.
3. For a multiple subject approach, F ≈ 2 if at left-turn dominate, then assume it to be a distinct exclusive left-turn lane and take the calculation.
4. For permitted left-turn with multiple exclusive left-turn lanes, t0 = t0 + t0.

---

### SUPPLEMENTAL WORKSHEET FOR PEDESTRIAN-BICYCLE EFFECTS ON PERMITTED LEFT TURNS AND RIGHT TURNS

**General Information**

| Project Location | Maluako Saddle R&B & Ekapu Quarry Rd. - November 2016 counts - PM Peak Hour |

**Permitted Left Turns**

<table>
<thead>
<tr>
<th></th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective pedestrian green time, vP (s)</td>
<td>40.0</td>
<td>40.0</td>
<td></td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>Effective permitted green time, vS (s)</td>
<td>40.0</td>
<td>40.0</td>
<td></td>
<td></td>
<td>40.0</td>
</tr>
<tr>
<td>Vmax = V0 + vP (s)</td>
<td>10</td>
<td>0</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>OCC1 = (1 + 1) * ln(Vmax)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCC2 = (1 + 1) * ln(vS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposing saturation flow, vS = Ki * A(i)</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Number of cross street receiving lanes, nS</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Number of turning lanes, nT</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Number of turning lanes, nT</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>A1 = 1, OCC1 = v1 * nS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2 = 1, OCC1 = v1 * nS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OBE = (1 + 1) * ln(Vmax)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposing flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing saturation flow, vS</td>
<td>0.67</td>
<td>0.67</td>
<td></td>
<td></td>
<td>0.67</td>
</tr>
</tbody>
</table>

**Notes**

1. Refer to Exhibit C-6A. B, C-6D, C-6E, and C-6F for one-way parameters and adjustment factors.
2. If intersection signal timing is given, use Walk + Biking Don’t Walk (W + Y) if no pedestrian is queued. If signal timing not available, use 90s default time. Last time, t0 may be applicable for permitted case.
3. For a multiple subject approach, F ≈ 2 if at left-turn dominate, then assume it to be a distinct exclusive left-turn lane and take the calculation.
4. For permitted left-turn with multiple exclusive left-turn lanes, t0 = t0 + t0.

---
### General Information

**Project Name:** Makaha Saddle Rd & Keap Quarry Rd  
**November 2018 counts**  
**PM Peak Hour**

### Capacity Analysis

<table>
<thead>
<tr>
<th>Phase Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase Type</td>
<td>P</td>
<td>F</td>
<td>P</td>
<td>F</td>
<td>P</td>
<td>F</td>
<td>P</td>
<td>F</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Lane Group</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>Lane Capac.</td>
<td>29</td>
<td>30</td>
<td>27</td>
<td>25</td>
<td>35</td>
<td>30</td>
<td>27</td>
<td>25</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Flow (veh/h)</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
<td>201,999</td>
<td></td>
</tr>
<tr>
<td>Volume (veh/h)</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
<td>201,999</td>
<td></td>
</tr>
<tr>
<td>Capacity (veh/h)</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

### Lane Group Capacity

- **Volume:** 201,999 veh/h  
- **Flow:** 12 veh/h  
- **Capacity:** 12 veh/h

### Volume and Timing Input

<table>
<thead>
<tr>
<th>Volume</th>
<th>V (veh/h)</th>
<th>1.000</th>
<th>1.000</th>
<th>1.000</th>
<th>0.996</th>
<th>1.000</th>
<th>0.984</th>
<th>0.984</th>
<th>0.968</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flows</td>
<td>Flow (veh/h)</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
</tr>
<tr>
<td>Lane 1</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Lane 2</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Lane 3</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Lane 4</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

### Volume Adjustment

<table>
<thead>
<tr>
<th>Volume</th>
<th>V (veh/h)</th>
<th>1.000</th>
<th>1.000</th>
<th>1.000</th>
<th>0.996</th>
<th>1.000</th>
<th>0.984</th>
<th>0.984</th>
<th>0.968</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flows</td>
<td>Flow (veh/h)</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
<td>201,999</td>
<td>192,559</td>
<td>180,520</td>
<td>186,606</td>
</tr>
<tr>
<td>Lane 1</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Lane 2</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Lane 3</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Lane 4</td>
<td>Flow (veh/h)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

### Notes

1. Flow and capacity are based on the single-lane group configuration.
2. Lane group configuration is based on the lane group configuration.
3. Volume and flow are based on the single-lane group configuration.
4. Flow and capacity are based on the single-lane group configuration.
5. Lane group configuration is based on the lane group configuration.
6. Volume and flow are based on the single-lane group configuration.
7. Flow and capacity are based on the single-lane group configuration.
8. Lane group configuration is based on the lane group configuration.
9. Volume and flow are based on the single-lane group configuration.
### CAPACITY AND LOS WORKSHEET

#### General Information

- Project Location: Kalanianaole Hwy / Koko Crk Rd - November 2015 counts - PM Peak Hour

#### Capacity Analysis

<table>
<thead>
<tr>
<th>Phase/Direction</th>
<th>1</th>
<th>4</th>
<th>2</th>
<th>3</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase number</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

#### Flow Factors

- Adjusted flow rate (veh/h)
  - 3.88 2011
  - 3.74 2011
  - 0.0 314 118

- Split: 1
  - 0.137 5.9
  - 0.75 0.5625
  - 0.125 0.125

- Flow rate (veh/h): 234 2012
  - 0.75 0.7512
  - 1.88 2.77

- Split: 1
  - 0.064 0.0658
  - 0.0 0.0

- Total flow rate (veh/h): 234 2012
  - 0.6 0.6

- Critical flow rate for capacity, Ke:
  - 0.774

#### Lane Group Capacity, Control Delay, and LOS Determination

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>30</th>
<th>20</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Group 1</td>
<td>232 2011</td>
<td>232 2011</td>
<td>7.88 232 232</td>
</tr>
<tr>
<td>Lane Group 2</td>
<td>232 2012</td>
<td>232 2012</td>
<td>7.88 232 232</td>
</tr>
</tbody>
</table>

#### Other Parameters

- Split: 1
  - 0.416 0.416
  - 0.003 0.003

- Lane capacity, Qc:
  - 0.314 0.314
  - 2.27 2.27

- Total generation, Qc:
  - 0.218 0.218
  - 0.368 0.368
  - 0.235 0.235

- Uniform delay, d0:
  - 0.217 0.217
  - 0.273 0.273
  - 0.667 0.667

- Incremental delay, di:
  - 0.157 0.157
  - 0.27 0.27
  - 0.3 0.3

- Interference delay, AI:
  - 0.0 0.0

- Propagation adjustment factor, in
  - 1.000 1.000
  - 1.000 1.000

- Intersection delay, dI:
  - 4.66 4.66
  - 1.25 1.25
  - 0.314 0.314

- Intersection level of Service (Exhibit 16-B)
  - E 4

#### Notes

1. For permitted turns, the minimum capacity is C/(1 + MU). (MINC)
2. Primary and secondary phase parameters are computed with lane group parameter.3. For protected or non-priority time, Ke = 0.5. Otherwise, refer to Exhibit 16-13.
4. T = analysis duration (s), T = T/2, where the analysis duration is 20 min.

### INPUT WORKSHEET

#### General Information

- Project Location: Kalanianaole Hwy, Koko Crk Rd - November 2015 counts - PM Peak Hour

#### Volume and Timing Input

<table>
<thead>
<tr>
<th>Phase/Direction/Group</th>
<th>1</th>
<th>4</th>
<th>2</th>
<th>3</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
</tr>
</tbody>
</table>

#### Other Parameters

- Traffic flow, Q (veh/h):
  - 34.18 34.18 34.18 34.18
  - 0.96 0.96 0.96 227 0.96 0.96

- Lane occupancy, p (veh/h):
  - 0.9 0.9 0.9

- Peak hour factor (PHF):
  - 25 25 25 25

- Lane occupancy, p (veh/h):
  - 0.9 0.9 0.9

- Parking maneuvers, Np (veh/h):
  - 0 0 0

- On-street % of demand: 1.00 1.00 1.00 1.00

#### Volume Adjustment and Saturation Flow Rate Worksheet

#### General Information

- Project Location: Kalanianaole Hwy, Koko Crk Rd - November 2015 counts - PM Peak Hour

#### Volume Adjustment

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>30</th>
<th>20</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Group 1</td>
<td>232 2011</td>
<td>232 2011</td>
<td>7.88 232 232</td>
</tr>
<tr>
<td>Lane Group 2</td>
<td>232 2012</td>
<td>232 2012</td>
<td>7.88 232 232</td>
</tr>
</tbody>
</table>

#### Other Parameters

- Traffic flow, Q (veh/h):
  - 34.18 34.18 34.18 34.18
  - 0.96 0.96 0.96 227 0.96 0.96

- Lane occupancy, p (veh/h):
  - 0.9 0.9 0.9

- Peak hour factor (PHF):
  - 25 25 25 25

- Lane occupancy, p (veh/h):
  - 0.9 0.9 0.9

- Parking maneuvers, Np (veh/h):
  - 0 0 0

- On-street % of demand: 1.00 1.00 1.00 1.00

#### Saturation Flow Rate (See Exhibit 16-7 to determine adjustment factors)

- Non-saturation flow rate, q, (veh/h):
  - 1,000 1,000 1,000 1,000
  - 1,000 1,000 1,000

- Number of lanes, N:
  - 1 1 1 1 1 1 1 1

- Approach width, W:
  - 15 15 15 15 15 15 15 15

- Lane width, W:
  - 15 15 15 15 15 15 15 15

- Lane width adjustment factor, fW:
  - 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

- Saturation flow rate, q, (veh/h):
  - 1,000 1,000 1,000 1,000 1,000 1,000 1,000 1,000

- Lane occupancy, p (veh/h):
  - 0.9 0.9 0.9

- On-street % of demand: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

- Lane occupancy, p (veh/h):
  - 0.9 0.9 0.9

- Parking maneuvers, Np (veh/h):
  - 0 0 0

- Lane occupancy, p (veh/h):
  - 0.9 0.9 0.9

- Parking maneuvers, Np (veh/h):
  - 0 0 0

- Parking maneuvers, Np (veh/h):
  - 0 0 0

- Parking maneuvers, Np (veh/h):
  - 0 0 0

- On-street % of demand: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

#### Notes

1. P2 = 1,000 for exclusive left turn lanes, and P3 = 1,000 for exclusive right turn lanes. Otherwise, they are equal to the proportions of turning volumes in the lane group.
### Capacity Analysis

#### Project Information
- Location: Kalakaua Ave, Kaimuki Rd & Kalanianaole Rd
- Analysis Year: November 2016
- PM Peak Hour

#### Capacity Analysis Table

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>Input Lane</th>
<th>Output Lane</th>
<th>Volume (veh/h)</th>
<th>Flow (s/veh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Lane Groups

- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type

#### Lane Length

- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type

#### Lane Width

- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type

#### Lane Unit Adjustment Factor

- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type

#### Bus/Truck Adjustment Factor

- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type

#### Right-turn/Left-turn Adjustment Factor

- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type
- Adjusted relative flow x vehicle type

### Volume and Timing Input

#### Input Worksheet

<table>
<thead>
<tr>
<th>Description</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lane Width</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lane Unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lane Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus/Truck</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right-turn/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes

1. Adjusted relative flow x vehicle type
2. Adjusted relative flow x vehicle type
3. Adjusted relative flow x vehicle type
4. Adjusted relative flow x vehicle type

### Volume Adjustment

#### WorkSheet

<table>
<thead>
<tr>
<th>Description</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume (veh/h)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow (s/veh)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted flow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted volume</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes

1. Adjusted relative flow x vehicle type
2. Adjusted relative flow x vehicle type
3. Adjusted relative flow x vehicle type
4. Adjusted relative flow x vehicle type

### LOS Calculation

#### General Information

<table>
<thead>
<tr>
<th>Description</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
<th>LT</th>
<th>TH</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOS B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOS C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes

1. LOS A, B, C for left, middle, right
2. LOS D for exclusive right turn
3. LOS E for exclusive left turn
### SUPPLEMENTAL WORKSHEET FOR PERMITTED LEFT TURNS

**OPPOSED BY MULTILANE APPROACH**

**General Information**
- Project Location: Kailua Rd, Hamakua Dr, & Kaneele St.
- November 2016 counts – PM Peak Hour

<table>
<thead>
<tr>
<th>Input</th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle length, C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total approach time, T</td>
<td>5.3</td>
<td>5.3</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Proportion of left-turn groups, L</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
</tr>
<tr>
<td>Opposing effective green time, g&lt;sub&gt;OL&lt;/sub&gt;</td>
<td>5.3</td>
<td>5.3</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Number of lanes, T</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Adjusted flowrate, v&lt;sub&gt;L&lt;/sub&gt;</td>
<td>118</td>
<td>48</td>
<td>59</td>
<td>79</td>
</tr>
<tr>
<td>Adjusted flowrate for opposing, v&lt;sub&gt;L&lt;/sub&gt;</td>
<td>118</td>
<td>58</td>
<td>59</td>
<td>79</td>
</tr>
<tr>
<td>Last lane of T</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Computed
- **LOS**
  - Total Lost, W<sub>LT</sub> = 520
  - Proportion of Lost for opposing, v<sub>LT</sub> = 0.346
- **Cycle Total Lost, W<sub>LT</sub>**
  - Total Lost, W<sub>LT</sub> = 520
  - Proportion for opposing, v<sub>LT</sub> = 0.346

### SUPPLEMENTAL WORKSHEET FOR PEDESTRIAN-BICYCLE EFFECTS

**ON PERMITTED LEFT TURNS AND RIGHT TURNS**

**General Information**
- Project Location: Kailua Rd, Hamakua Dr, & Kaneele St.
- November 2016 counts – PM Peak Hour

<table>
<thead>
<tr>
<th>Permitted Left Turn</th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective pedestrian green time, g&lt;sub&gt;P&lt;/sub&gt;</td>
<td>53.0</td>
<td>53.0</td>
<td>33.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Conflicting pedestrian volume, v&lt;sub&gt;P&lt;/sub&gt;</td>
<td>0</td>
<td>1.00</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>V&lt;sub&gt;ped&lt;/sub&gt; = v&lt;sub&gt;P&lt;/sub&gt; / g&lt;sub&gt;P&lt;/sub&gt;</td>
<td>0</td>
<td>1.00</td>
<td>182</td>
<td>773</td>
</tr>
<tr>
<td>OCC&lt;sub&gt;ped&lt;/sub&gt; = v&lt;sub&gt;P&lt;/sub&gt; / T&lt;sub&gt;cycle&lt;/sub&gt;</td>
<td>0.000</td>
<td>0.313</td>
<td>0.991</td>
<td>0.136</td>
</tr>
<tr>
<td>Opposing vehicle time, v&lt;sub&gt;L&lt;/sub&gt;</td>
<td>118</td>
<td>48</td>
<td>59</td>
<td>79</td>
</tr>
<tr>
<td>Number of opposing lanes, L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Right Turn
- **Effective pedestrian green time, g<sub>P</sub>**
  - Total Lost, W<sub>LT</sub> = 520
  - Proportion for opposing, v<sub>LT</sub> = 0.346
- **Cycle Total Lost, W<sub>LT</sub>**
  - Total Lost, W<sub>LT</sub> = 520
  - Proportion for opposing, v<sub>LT</sub> = 0.346

### Notes
1. Refer to EHS/ODH/KCCS/C IDEM, CB-7, and CB-1 for nose-specific parameters and adjustment factors.
2. For exclusive left-turn lanes, it is equal to the number of exclusive left-turn lanes. For shared left-turn lanes, it is equal to the sum of the shared left-turn lane, through, and opposing turn lane (if one exists), plus the approach.
3. For excluded left-turn lane, g<sub>L</sub> = 0, and skip the next step. Last time, T<sub>L</sub> may not be applicable for protected opposed case.
4. For excluded left-turn lane, g<sub>L</sub> = 0, and skip the next step. Last time, T<sub>L</sub> may not be applicable for protected opposed case.
5. For a multi-lane approach, F<sub>L</sub> = 2 for all left-turn shared lanes, then assume it to be a definite exclusive left-turn lane and redo the calculation.
6. For permitted left turns with multiple exclusive left-turn lanes, F<sub>L</sub> = 2.

### Formulae
- **Effective pedestrian green time, g<sub>P</sub>**
  - Total Lost, W<sub>LT</sub> = 520
  - Proportion for opposing, v<sub>LT</sub> = 0.346
- **Cycle Total Lost, W<sub>LT</sub>**
  - Total Lost, W<sub>LT</sub> = 520
  - Proportion for opposing, v<sub>LT</sub> = 0.346

### References
- 1. Refer to EHS/ODH/KCCS/C IDEM, CB-7, and CB-1 for nose-specific parameters and adjustment factors.
- 2. If intersection signal timing is given, use WB + F(=R) 1/2 = 1/WB. If signal timing is unknown (or an estimate), use Green Time – Lost Time per Phase from Quick Estimate of Control (D4) and OIS Worksheet.
- 3. Refer to supplemental worksheets for all turns.
- 4. If unopposed left-turn, then T<sub>L</sub> = 0, g<sub>L</sub> = 0 and OCC<sub>P</sub> = 0.
- 5. Refer to Volume Adjustment and Saturation Flow Rate Worksheet.
- 6. Likely determined from field data; otherwise, assume it equal to (T<sub>L</sub> – permitted phase) / T<sub>cycle</sub>.
- 7. If g<sub>P</sub> = 0, then v<sub>P</sub> = 0, OCC<sub>P</sub> = 0, and OCC<sub>P</sub> = 0.
- 8. P<sub>P</sub> = v<sub>P</sub> / OCC<sub>P</sub> is the proportion of protected vehicles over the total green, g<sub>P</sub> = V<sub>P</sub> / T<sub>cycle</sub>.
- 9. If only permitted right-turn phase exists, then v<sub>P</sub> = 0.
## Appendix C

### Intersection Analyses Worksheets, Future Baseline Conditions

#### Intersection of Kapa'a Quarry Road and Mōkapu Saddle Road

#### Intersection of Kapa'a Quarry Road and Kalaniana'ole Highway

#### Intersection of Kalaniana'ole Highway, Ka'ūlu Road, and Ulukahi Street

#### Intersection of Ka'ūlu Road, Kainehe Street, and Hāmākua Drive

---

**CAPACITY AND LOS WORKSHEET**

| General Information | Project Description: Kawainui Rd, Hāmākua Dr, & Kapolei St. | November 2017 Baseline - PM Peak Hour |
|---------------------|------------------------------------------------------------|
| **Capacity Analysis** |                                                            |
| Water number | 1 | 1 | 2 | 3 | 3 |
| Lane Group | F | F | F | F | F |
| Adjusted flow rate, (s/veh) | 1282 | 796 | 776 | 22 | 82 |
| Intersection flow rate, (veh/h) | 1072 | 962 | 1045 | 1195 | 1000 |
| Lane group capacity, (veh/h) | 431 | 460 | 0.03 | 0.03 | 0.03 |
| Capacity ratio, k/C | 33.5 | 33.5 | 333 | 333 | 333 |
| Delay, (s/veh) | 0.0405 | 0.0405 | 0.0275 | 0.0275 | 0.0275 |
| Lane group delay, (veh/h) | 0.286 | 0.286 | 0.286 | 0.286 | 0.286 |
| Lane group delay, (veh/h) | 0.286 | 0.286 | 0.286 | 0.286 | 0.286 |

#### Lane Group Capacity, Control Delay, and LOS Determination

<table>
<thead>
<tr>
<th>Lane Group</th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted flow rate, (s/veh)</td>
<td>1282</td>
<td>796</td>
<td>776</td>
<td>22</td>
</tr>
<tr>
<td>Lane group capacity, (veh/h)</td>
<td>431</td>
<td>460</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Capacity ratio, k/C</td>
<td>33.5</td>
<td>33.5</td>
<td>333</td>
<td>333</td>
</tr>
<tr>
<td>Total capacity, (veh/h)</td>
<td>1134</td>
<td>638</td>
<td>9.92</td>
<td>1.03</td>
</tr>
<tr>
<td>Capacity ratio, k/C</td>
<td>33.5</td>
<td>33.5</td>
<td>333</td>
<td>333</td>
</tr>
</tbody>
</table>

#### Uniform Delay Calculation

\[ d_U = \frac{0.09(t_l + t_g)}{V_c} \]  

**Intersection Delay Calculation**

\[ d_I = 0.19X + 0.06(t_g + t_l) \]

#### Effective Green Time

\[ t_g = t_c 	imes X_c \]

#### Critical Phase Selected

\[ X_c = \frac{V_c}{c} \]

**Program Specific Adjustment Factor, FR**

\[ F = \frac{1}{1 + 0.1} \]

**LOS for Lane Group (Table 18-6)**

<table>
<thead>
<tr>
<th>Intersection delay, (s)</th>
<th>4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection LOS of Service (Table 18-6)</td>
<td>D</td>
</tr>
</tbody>
</table>

**Note:**

1. All permitted left turns, the minimum capacity (1 + F)(3.85V_c)
2. Primary and secondary phase parameters are summed to obtain lane group parameters.
3. For protected or nonsignalized signals, X = 0.5. Otherwise, refer to Exhibit 18-13
4. T = analysis duration (s); typically, T = 150, which is for the analysis duration of 15 min.
5. N = upstream filtering merging adjustment factor; I = 1 for isolated intersections.
### INPUT WORKSHEET

**General Information**
- Location: Kapaa, HI & Kipapa Quarry Rd
- Project Scope: Kapaa, HI & Kipapa Quarry Rd - November 2015 counts (i.e., PM Peak Hour)

**Site Information**

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
</tbody>
</table>

**Volume and Timing Input**

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
</tbody>
</table>

**Volume and Saturation Flow Rate Worksheet**

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
</tbody>
</table>

**Notes**
1. Adjusted flow for one-way type
2. Adjusted flow for two-way type
3. Parking allowable for one-way type
4. Parking allowable for two-way type

### SUPPLEMENTAL WORKSHEET FOR PERMITTED LEFT TURNS

**General Information**
- Project Scope: Kapaa, HI & Kipapa Quarry Rd - November 2015 counts (i.e., PM Peak Hour)

**Input**

<table>
<thead>
<tr>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
<tr>
<td>LT</td>
<td>TH</td>
<td>LT</td>
<td>TH</td>
</tr>
</tbody>
</table>

**Notes**
1. For exclusive left turns, L = 1.00
2. For exclusive right turns, R = 1.00
3. For shared left turns, L = 0.90
4. For shared right turns, R = 0.90
5. For exclusive left turns, L = 1.00
6. For exclusive right turns, R = 1.00
7. For shared left turns, L = 0.90
8. For shared right turns, R = 0.90

---

**Additional Information**

- Analysis Type: 2015

---

**Observations**

- Analysis was performed for Kapaa, HI & Kipapa Quarry Rd - November 2015 counts (i.e., PM Peak Hour)

---

**Conclusion**

- The analysis concluded that the left turn capacity was sufficient for the traffic demand.

---

**References**

- Ref. to permits, CID-10-12, CID-10-13, CID-10-14, CID-10-15, and CID-10-16 for a specific parameter and adjustment factors.

---

**Analysis**

- The analysis showed that the left turn capacity was adequate for the traffic demand.
### SUPPLEMENTAL WORKSHEET FOR PERMITTED LEFT TURNS OPPOSED BY MULTIPLACE APPROACH

**General Information**

**Project Location:** Malaya Saddle Rd & Expo Parkway - November 2016 counts (±5%) - PM Peak Hour

**Supplemental Worksheet**

<table>
<thead>
<tr>
<th>Input</th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle length (C), C</td>
<td>420</td>
<td>420</td>
<td>420</td>
<td>420</td>
</tr>
<tr>
<td>Effect of permitted green time for left turn group, e1 (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Opposing effective green time, e2</td>
<td>40.0</td>
<td>40.0</td>
<td>40.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Number of lanes</td>
<td>[1]</td>
<td>[1]</td>
<td>[1]</td>
<td>[1]</td>
</tr>
<tr>
<td>Number of opposing approach, N2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Number of opposing left turn group, N1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Adjusted flow rate (vehicles/hour)</td>
<td>21</td>
<td>125</td>
<td>21</td>
<td>125</td>
</tr>
<tr>
<td>Proportion of left turns in left turn group, P1</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Adjusted flow rate for opposing approach, N2</td>
<td>930</td>
<td>930</td>
<td>930</td>
<td>930</td>
</tr>
</tbody>
</table>

**Computation**

<table>
<thead>
<tr>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 volume per cycle, T1,v0C/t = C000</td>
<td>0.055</td>
</tr>
<tr>
<td>Opposing lane utilization factor, T1,v0C/t = C000</td>
<td>0.695</td>
</tr>
<tr>
<td>Opposing flow rate per lane, per cycle, T1,v0C/t = C000</td>
<td>21.105</td>
</tr>
<tr>
<td>Opposing factor, T1,v0C/t = C000</td>
<td>2</td>
</tr>
<tr>
<td>Opposing factor, T1,v0C/t = C000</td>
<td>0.67</td>
</tr>
<tr>
<td>Opposing factor, T1,v0C/t = C000</td>
<td>0.57</td>
</tr>
<tr>
<td>Opposing factor, T1,v0C/t = C000</td>
<td>11.264</td>
</tr>
</tbody>
</table>

### SUPPLEMENTAL WORKSHEET FOR PEDESTRIAN-BICYCLE EFFECTS ON PERMITTED LEFT TURNS AND RIGHT TURNS

**General Information**

**Project Location:** Malaya Saddle Rd & Expo Parkway - November 2016 counts (±5%) - PM Peak Hour

**Pedestrian Left Turns**

<table>
<thead>
<tr>
<th>Input</th>
<th>EB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of permitted green time (Pedestrian), e1 (%)</td>
<td>22.0</td>
<td>22.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Effective pedestrian volume, vP2 (bph)</td>
<td>10.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Opposing pedestrian volume, vP1 (bph)</td>
<td>10.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Opposing pedestrian volume, vP1 (bph)</td>
<td>10.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Opposing pedestrian volume, vP1 (bph)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Opposing pedestrian volume, vP1 (bph)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Opposing pedestrian volume, vP1 (bph)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Notes**

1. Refer to Exhibit C6.2-C6.6, C8.5-C8.7, C8.17, and C8.18 for one-phase and adjustment factors.
2. For evaluation of text type, it is equal to the number of exclusive left turn lanes. For shared left turn lanes, it is equal to the sum of the shared left turn lanes, throughs, and opposing left turn lanes in the approach.
3. For evaluation of text type, it is equal to the number of exclusive left turn lanes. For shared left turn lanes, it is equal to the sum of the shared left turn lanes, throughs, and opposing left turn lanes in the approach.
4. For evaluation of text type, it is equal to the number of exclusive left turn lanes. For shared left turn lanes, it is equal to the sum of the shared left turn lanes, throughs, and opposing left turn lanes in the approach.
5. For evaluation of text type, it is equal to the number of exclusive left turn lanes. For shared left turn lanes, it is equal to the sum of the shared left turn lanes, throughs, and opposing left turn lanes in the approach.
6. For evaluation of text type, it is equal to the number of exclusive left turn lanes. For shared left turn lanes, it is equal to the sum of the shared left turn lanes, throughs, and opposing left turn lanes in the approach.
7. For evaluation of text type, it is equal to the number of exclusive left turn lanes. For shared left turn lanes, it is equal to the sum of the shared left turn lanes, throughs, and opposing left turn lanes in the approach.

**References**

1. **Supplemental Worksheet**
2. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
3. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
4. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
5. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
6. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
7. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
8. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
9. If intersection signal is given, use Walk + Biking Don't Walk (Green V + F)
### GENERAL INFORMATION

- Project Location: Maloof Saddle Rd & Quarry Rd
- Analysis Year: 2016
- Number of Approaches: 3
- Type of Analysis: LOS

### CAPACITY AND LOS WORKSHEET

<table>
<thead>
<tr>
<th>Phase Type</th>
<th>Length (mi)</th>
<th>Volume (veh/h)</th>
<th>Saturation Factor</th>
<th>LOS</th>
<th>Delay (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>0.35</td>
<td>3190</td>
<td>1.000</td>
<td>A</td>
<td>3190</td>
</tr>
<tr>
<td>Right</td>
<td>0.35</td>
<td>1511</td>
<td>1.000</td>
<td>A</td>
<td>1511</td>
</tr>
<tr>
<td>Parking</td>
<td>0.10</td>
<td>0</td>
<td>0.900</td>
<td>B</td>
<td>0</td>
</tr>
</tbody>
</table>

### INPUT WORKSHEET

- **Volume and Timing Input**
  - Lane: LB
  - Volume: 3190 veh/h
  - Queue: 0
  - Delay: 0
  - LOS: A
- **Volume and Timing Input**
  - Lane: RB
  - Volume: 1511 veh/h
  - Queue: 0
  - Delay: 0
  - LOS: A
- **Volume and Timing Input**
  - Lane: PB
  - Volume: 0 veh/h
  - Queue: 0
  - Delay: 0
  - LOS: B

### VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

- **Volume Adjustment**
  - LB: 3190 veh/h
  - RB: 1511 veh/h
  - PB: 0 veh/h

### Notes

1. Primary and secondary phase parameters are current to obtain lane-group parameter.
2. For extended or saturated signal, a = 0.5. Otherwise, refer to Table 16-2.
3. 4 = analyze duration (s); typically, T = 0.8, which is for the analysis duration of 15 min.
4. 1 = maximum filtering moving adjustment factor; l = 1 for related intersections.
### CAPACITY AND LOS WORKSHEET

#### General Information
- Project Name: Alakalinaole Hwy / Kupuna Quarry Rd - November 2016 counts (+5%)
- PM Peak Hour

#### capacity Analysis
<table>
<thead>
<tr>
<th>Phase</th>
<th>Number of Lanes</th>
<th>Green Time (s)</th>
<th>Red Time (s)</th>
<th>Total Time (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tl</td>
<td>1</td>
<td>200</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>200</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>200</td>
<td>100</td>
<td>300</td>
</tr>
</tbody>
</table>

#### Service Level Determination
- Intersection delay, $d_i = \frac{V_i}{Q_i - Y_i}$ (veh/s)
- Intersection level of service (Exhibit 16-8) C

#### Notes
1. For permitted turns, the minimum gap is $g = 1 + 0.05V_i$.
2. Primary and secondary phase parameters are considered to obtain lane group parameter.
3. For protected or coordinated signals, $g = 0.5$. Otherwise, refer to Exhibit 16-13.
4. $A$ = analysis duration (in seconds), $T_a = 15$ s, which is for the analysis duration of 15 min.
5. $I_i$ = in-lane filtering entering adjustment factor, $I_i = 1$ for all intersections.

### INPUT WORKSHEET

#### General Information
- Project Name: Alakalinaole Hwy, Kupuna Rd & Ulukahiki Rd - November 2016 counts (+5%) - PM Peak Hour

#### Analysis
- Analysis Site: Alakalinaole Hwy, Kupuna Rd & Ulukahiki Rd - November 2016 counts (+5%) - PM Peak Hour

#### Volume and Timing Input
<table>
<thead>
<tr>
<th>Phase</th>
<th>Tl</th>
<th>Lf</th>
<th>Other</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veh/h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Volume and Saturation Flow Rate Worksheet

### VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

#### General Information
- Project Name: Alakalinaole Hwy, Kupuna Rd & Ulukahiki Rd - November 2016 counts (+5%) - PM Peak Hour

#### Analysis
- Analysis Site: Alakalinaole Hwy, Kupuna Rd & Ulukahiki Rd - November 2016 counts (+5%) - PM Peak Hour

#### Flow Rate Worksheet (Exhibit 3-7) to Determine Adjustment Factor
- Gross saturation flow, $F(SO)$ (veh/h)
- Number of lanes, $N$
- Approach width, $W$
- Lane width, $W$
- Lane width adjustment factor, $W_{adj}$
- Right-turn adjustment factor, $R_{adj}$
- Left-turn adjustment factor, $L_{adj}$
-舌turn adjustment factor, $T_{adj}$
- Approach distance, $A$ (veh)
- Lane distance, $d_{lan}$ (veh)
- Lane distance adjustment factor, $d_{adj}$
- Right-turn distance adjustment factor, $R_{adj}$
- Left-turn distance adjustment factor, $L_{adj}$
-舌turn distance adjustment factor, $T_{adj}$

#### Notes
1. $P_0 = 1000$ for inclusive left-turns, and $P_0 = 100$ for exclusive right-turns. Otherwise, they are equal to the proportions of turning volumes in the lane group.
<table>
<thead>
<tr>
<th>Group/Phase</th>
<th>Lane</th>
<th>1.000</th>
<th>0.947</th>
<th>0.979</th>
<th>0.865</th>
<th>1.000</th>
<th>1.000</th>
<th>1.000</th>
<th>1.000</th>
<th>1.000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

1. Peak flow period as defined by MADD (2010).
2. 75th percentile period as defined by MADD (2010).
3. Results are based on preliminary analysis and subject to further review.
4. For preliminary analysis purposes, the effective range of 10,000 vph is assumed.

**Additional Information**

- Agency: **MADD** (Motorcycle Accident Data System)
- Date: **October 2017**
- Study Area: **Bi-State Area**
- Data Source: **Bi-State Area Traffic Count System**

**Volume Adjunct and Saturation Flow Rate Worksheet**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Volume (veh/h)</th>
<th>Flow Rate (veh/h)</th>
<th>Saturation Flow Rate (veh/h)</th>
<th>Number of Vehicles</th>
<th>Number of Observations</th>
<th>Average Volume (veh/h)</th>
<th>Average Flow Rate (veh/h)</th>
<th>Average Saturation Flow Rate (veh/h)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional Information**

- **General Information:**
  - Agency: **Bi-State Area Traffic Count System**
  - Date: **October 2017**
  - Study Area: **Bi-State Area**

**Capacity and OS Worksheet**

| Time Period | Volume (veh/h) | Flow Rate (veh/h) | Saturation Flow Rate (veh/h) | Number of Vehicles | Number of Observations | Average Volume (veh/h) | Average Flow Rate (veh/h) | Average Saturation Flow Rate (veh/h) | Location |
|-------------|----------------|------------------|------------------------------|-------------------|------------------------|------------------------|----------------------------|                                     |----------|
|              |                |                  |                              |                   |                        |                        |                            |                                     |          |

**Additional Information**

- **General Information:**
  - Agency: **Bi-State Area Traffic Count System**
  - Date: **October 2017**
  - Study Area: **Bi-State Area**

**Volume Adjunct and Saturation Flow Rate Worksheet**

| Time Period | Volume (veh/h) | Flow Rate (veh/h) | Saturation Flow Rate (veh/h) | Number of Vehicles | Number of Observations | Average Volume (veh/h) | Average Flow Rate (veh/h) | Average Saturation Flow Rate (veh/h) | Location |
|-------------|----------------|------------------|------------------------------|-------------------|------------------------|------------------------|----------------------------|                                     |----------|
|              |                |                  |                              |                   |                        |                        |                            |                                     |          |

**Additional Information**

- **General Information:**
  - Agency: **Bi-State Area Traffic Count System**
  - Date: **October 2017**
  - Study Area: **Bi-State Area**

**Capacity and OS Worksheet**

| Time Period | Volume (veh/h) | Flow Rate (veh/h) | Saturation Flow Rate (veh/h) | Number of Vehicles | Number of Observations | Average Volume (veh/h) | Average Flow Rate (veh/h) | Average Saturation Flow Rate (veh/h) | Location |
|-------------|----------------|------------------|------------------------------|-------------------|------------------------|------------------------|----------------------------|                                     |----------|
|              |                |                  |                              |                   |                        |                        |                            |                                     |          |
### Appendix D

**Intersection Analyses Worksheets, Future With-Project Conditions**

1. **Intersection of Kapa’a Quarry Road and Mōkapu Saddle Road**
   - Future With-Project Conditions
   - (5 sheets)

2. **Intersection of Kapa’a Quarry Road and Kalaniana‘ole Highway**
   - Future With-Project Conditions
   - (2 sheets)

3. **Intersection of Kalaniana‘ole Highway, Kapaa Road, and Ulukahiki Street**
   - Future With-Project Conditions
   - (2 sheets)

4. **Intersection of Kapaa Road, Kainee Road, and Hāmākua Drive**
   - Future With-Project Conditions
   - (4 sheets)

---

**Capacity and LOS Worksheet**

### General Information

- Project Location: Kailua Rd, Hānalei Dr, Kapaa Saddle Rd
- November 2017
- County: Kauai
- PM Peak Hour

### Capacity Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
<th>Value 5</th>
<th>Value 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Type</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Lane Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Flow, c/(veh/h)</td>
<td>3162</td>
<td>3466</td>
<td>3140</td>
<td>1201</td>
<td>1053</td>
<td></td>
</tr>
<tr>
<td>Lane Capacity, c/(veh/h)</td>
<td>53.0</td>
<td>53.0</td>
<td>32.5</td>
<td>22.5</td>
<td>22.5</td>
<td></td>
</tr>
<tr>
<td>Traffic Flow, c/(veh/h)</td>
<td>3162</td>
<td>3466</td>
<td>3140</td>
<td>1201</td>
<td>1053</td>
<td></td>
</tr>
<tr>
<td>Traffic Flow, c/(veh/h)</td>
<td>3162</td>
<td>3466</td>
<td>3140</td>
<td>1201</td>
<td>1053</td>
<td></td>
</tr>
</tbody>
</table>

### D1. Traffic Impact Analysis

- **Intersection of Kapaa Quarry Road and Kalaniana‘ole Highway**
- **Intersection of Kalaniana‘ole Highway, Kailua Road, and Ulukahiki Street**
- **Intersection of Kailua Road, Kainee Road, and Hāmākua Drive**

**Notes**

1. The permitted signal, the minimum capacity (1 + F) * (0.5 + 0.3) = (1 + F) * (0.5 + 0.3) = 0.75 + 0.3F
2. Primary and secondary phase parameters are summed to obtain lane group parameters.
3. For protected or not protected signals, Y = 0.5. Otherwise, refer to Exhibit 15-15
4. Traffic Analysis duration (T), typically, T > 0.5, which is for the analysis duration of 15 min.
5. Typically, F = 1.1 for isolated intersections.
**INPUT WORKSHEET**

**General Information**
- Project Location: Malpais Saddle Rd & Esquire Quarry Rd
- Notes: Nov 2015 counts (5% x project)
- PM Peak Hour

**Table 1: Volume and Timing Input**

<table>
<thead>
<tr>
<th>FT</th>
<th>EB</th>
<th>WB</th>
<th>PB</th>
<th>SB</th>
<th>LT</th>
<th>RT</th>
<th>EB</th>
<th>WB</th>
<th>PB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>142</td>
<td>164</td>
<td>122</td>
<td>241</td>
<td>268</td>
<td>5</td>
<td>230</td>
<td>15</td>
<td>230</td>
<td>5</td>
</tr>
</tbody>
</table>

**Table 2: Volume Adjustment**

<table>
<thead>
<tr>
<th>Type</th>
<th>EB</th>
<th>WB</th>
<th>PB</th>
<th>SB</th>
<th>LT</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLT</td>
<td>0.99</td>
<td>0.98</td>
<td>1.00</td>
<td>0.99</td>
<td>0.98</td>
<td>0.98</td>
</tr>
</tbody>
</table>

**Table 3: Saturation Flow Rate**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>EB</th>
<th>WB</th>
<th>PB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak</td>
<td>1242</td>
<td>164</td>
<td>122</td>
<td>241</td>
</tr>
<tr>
<td>Off Peak</td>
<td>142</td>
<td>164</td>
<td>122</td>
<td>241</td>
</tr>
</tbody>
</table>

**Notes**
- 1. 15% empty busses/h are applicable.
- 2. Use project counts of 5% x counts for peak hour.
- 3. Use project counts of 5% x counts for off-peak hour.
- 4. Peak phase count = 1.000

---

**SUPPLEMENTAL WORKSHEET FOR PERMITTED LEFT TURNS**

**General Information**
- Project name: Malpais Saddle Rd & Esquire Quarry Rd
- Notes: Nov 2015 counts (5% x project)
- PM Peak Hour

**Input**

<table>
<thead>
<tr>
<th>FT</th>
<th>EB</th>
<th>WB</th>
<th>PB</th>
<th>SB</th>
<th>LT</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>22.0</td>
<td>22.0</td>
<td>22.0</td>
<td>22.0</td>
<td>22.0</td>
<td>22.0</td>
</tr>
</tbody>
</table>

**Supplemental Table**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>EB</th>
<th>WB</th>
<th>PB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak</td>
<td>1242</td>
<td>164</td>
<td>122</td>
<td>241</td>
</tr>
<tr>
<td>Off Peak</td>
<td>142</td>
<td>164</td>
<td>122</td>
<td>241</td>
</tr>
</tbody>
</table>

**Notes**
- 1. Refer to Exhibit C8 for C8 x counts for each approach.
- 2. Use project counts of 5% x counts for peak hour.
- 3. Use project counts of 5% x counts for off-peak hour.
- 4. Peak phase count = 1.000
### SUPPLEMENTAL WORKSHEET FOR PERMITTED LEFT TURNS
#### OPPOSED BY MULTIPLE APPROACH

<table>
<thead>
<tr>
<th>General Information</th>
<th>Project Location: Malpas-Saddler Rd &amp; Esopus Quarry Rd - Nov 2016 counts (1.5% &amp; project) - PM Peak Hour</th>
</tr>
</thead>
</table>

#### Input
- **Project Location:** Malpas-Saddler Rd & Esopus Quarry Rd - Nov 2016 counts (1.5% & project) - PM Peak Hour

#### Output
- **Time:**
- **Volume:**
- **Effective pedalcyclist volume:**
- **Adjusted time of left turn:**
- **Adjusted time of left turn:**

#### Permitted Left Turn
- **Effective pedalcyclist volume:**
- **Adjusted time of left turn:**

#### Pedestrian-Bicycle Effects
- **Effective pedalcyclist volume:**
- **Adjusted time of left turn:**

#### Notes
- 1. Refer to Chapters 6 & 7 for case-specific parameters and adjustment factors.
- 2. Effective left-turn volume is the ratio of the number of left-turn movements to the left-turn lanes.
- 3. The left-turn volume is the ratio of the number of left-turn movements to the left-turn lanes.
- 4. Effective pedestrian volume is the ratio of the number of left-turn movements to the left-turn lanes.
- 5. Effective pedestrian volume is the ratio of the number of left-turn movements to the left-turn lanes.
- 6. Effective pedestrian volume is the ratio of the number of left-turn movements to the left-turn lanes.
- 7. Adjusted time of left turn is the ratio of the number of left-turn movements to the left-turn lanes.
- 8. Effective pedestrian volume is the ratio of the number of left-turn movements to the left-turn lanes.
- 9. Adjusted time of left turn is the ratio of the number of left-turn movements to the left-turn lanes.
### CAPACITY AND LOS WORKSHEET

#### General Information
- Project Name: Malapua Saddle Rd & Kapolei Quarry Rd - Nov. 2018 survey (3% + project) - PM Peak Hour

#### Capacity Analysis
<table>
<thead>
<tr>
<th>Phase group</th>
<th>Phase</th>
<th>Traffic Flow</th>
<th>Cycle</th>
<th>Phase Time</th>
<th>Phase Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Turn Volumes
<table>
<thead>
<tr>
<th>Phase group</th>
<th>Phase</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Lane Capacity
- Group Lanes: 1.000
- Right Lane: 1.000
- Left Lane: 1.000

#### Signal Information

#### Notes
- Includes Left & Right Turn Lanes
- GB = 0.5
- SC = 0.5

### INPUT WORKSHEET

#### General Information
- Jurisdiction: 
- Agency: 
- Date: May 26, 2017
- Analysis Year: 2017
- Project Description: Malapua Saddle Rd & Kapolei Quarry Rd - Nov. 2018 survey (3% + project) - PM Peak Hour

#### Volume and Timing Input
- Lane 1: LT Th RT LT Th RT LT Th RT LT Th RT
- Volume: 1,250
- Green Time: 45
- Cycle Time: 60
- Arrivals: 2016
- Analysis Year: 2017

#### Volume Adjustment
- Lane 1: LT Th RT LT Th RT LT Th RT LT Th RT
- Volume: 1,250
- Green Time: 45
- Cycle Time: 60
- Arrivals: 2016
- Analysis Year: 2017

### VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

#### General Information
- Jurisdiction: 
- Agency: 
- Date: May 26, 2017
- Analysis Year: 2017
- Project Description: Malapua Saddle Rd & Kapolei Quarry Rd - Nov. 2018 survey (3% + project) - PM Peak Hour

#### Volume Input
- Lane 1: LT Th RT LT Th RT LT Th RT LT Th RT
- Volume: 1,250
- Green Time: 45
- Cycle Time: 60
- Arrivals: 2016
- Analysis Year: 2017

#### Volume Adjustment
- Lane 1: LT Th RT LT Th RT LT Th RT LT Th RT
- Volume: 1,250
- Green Time: 45
- Cycle Time: 60
- Arrivals: 2016
- Analysis Year: 2017

### Notes
- Adjusted saturation flow rate for lane group
- Critical flow rate to capacity ratio, k_c
- k_c = 0.922

#### Critical Flow Rate
- Lane Group Capacity, Initial Delay, and LOS Determination

#### LOS Calculation
- L = 0.1
- Capacity Reduction Factor, F
- Capacity Reduction Factor, F
- LOS Calculation

#### Input Worksheet Notes
- Includes Left & Right Turn Lanes
- GB = 0.5
- SC = 0.5

---

### Table Note
1. For permissive bell turn, the minimum capacity is 1,200 veh/2hr.
2. Primary and secondary phase parameters are computed from lane-group parameters.
3. L = 0.5 for protected or raised-signal islands, L = 1.0 otherwise. Refer to Exhibit 16-7.
4. T = analysis duration (s), typically T = 0.1, which is for the analysis duration of 30 min.
5. \( k_c \) is the capacity ratio, which is for the analysis duration of 30 min.
### CAPACITY AND LOS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Information</td>
<td>Alahaina-Waikiki Hwy / Kapiolani Blvd - Nov 2016 counts (5% + project) - PM Peak Hour</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Capacity Analysis

<table>
<thead>
<tr>
<th>Phase Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase Type</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Lane Groups</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
</tbody>
</table>

#### Traffic Volume

- Vehicle V (veh/h): 71,500 100,736 83,136 22,106 68,297 138,646
- Pedestrian (P) (ped/h): A P A P A P
- Headway: 0.96 0.96 0.96 0.96 0.96 0.96
- Peak hour flow (veh/h): 18.2 20.2 16.2 5.7 32.0 7.6
- Cycle length, C: 130.0 130.0 130.0 130.0 130.0 130.0

#### VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Information</td>
<td>Alahaina-Waikiki Hwy / Kapiolani Blvd - Nov 2016 counts (5% + project) - PM Peak Hour</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Volume Analysis

- V (veh/h): 71,500 100,736 83,136 22,106 68,297 138,646
- Peak hour flow (veh/h): 18.2 20.2 16.2 5.7 32.0 7.6

#### Saturation Flow Rate (see Exhibit 10-7 to determine adjustment factor)

<table>
<thead>
<tr>
<th>Non-saturated flow, f_s (veh/h)</th>
<th>1,200</th>
<th>1,200</th>
<th>1,200</th>
<th>1,200</th>
<th>1,200</th>
<th>1,200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of lanes, N</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Approach width, W (ft)</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Lane width, W (ft)</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Heavy veh. adjust. factor, f_HV</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Traffic adjust. factor, f_T</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Parking adjust. factor, f_P</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Bus adjust. factor, f_B</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Light rail adjust. factor, f_L</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Right-turn adjust. factor, f_RT</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Left-turn adjust. factor, f_LT</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Ped/bike adjustment factor, f_PB</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
</tbody>
</table>

#### Notes

1. *P* = 1,000 for exclusive left turns on lane, and *P* = 1,000 for exclusive right turns. Otherwise, they are equal to the proportions of turning volumes in the lane group.
## CAPACITY AND LOS WORKSHEET

### General Information
- Project Information: Radnor-Lafayette, Radnor AVE & CBD (From 1st St. - New 2016 counts (1% + project) - PM Peak Hour
- Agency/Organization: Walnut St. / CBD (From 1st St. - New 2016 counts (1% + project) - PM Peak Hour
- Date Performed: October 10, 2017
- Analysis Time Period: PM Peak Hour
- Analysis Year: 2016
- New Volumes (veh/h) (Note: 2016 counts (1% + project)

### Capacity Analysis
- **Lane Group:**
  - All through traffic in the form of through and right turning vehicles
  - Controls:
    - 1.000
  - **Adjustment Factors:**
    - Flp = 1.000
    - Tp = 1.000
    - Fp = 1.000
    - Fp = 1.000

### Saturation Flow Rate (veh/h)
- **Saturation Flow Rate (veh/h):**
  - Flp = 1.000
  - Fp = 1.000
  - **Saturation Flow Rate:**
    - Lane Group 1.000
    - Lane Group 2.000
    - Lane Group 3.000
    - Lane Group 4.000

### Delay
- **Delay:**
  - Lane Group 1.000
  - Lane Group 2.000
  - Lane Group 3.000
  - Lane Group 4.000

### Loss
- **Loss:**
  - Lane Group 1.000
  - Lane Group 2.000
  - Lane Group 3.000
  - Lane Group 4.000

### Lost Time per Car (s)
- **Lost Time per Car (s):**
  - 1.000

### Critical Flow Rate (ft/s)
- **Critical Flow Rate (ft/s):**
  - 0.062

### Lane Group Capacity, Control Flow, and LOS Determination
- **Lane Group Capacity:**
  - Control Flow:
    - Lane Group 1.000
    - Lane Group 2.000
    - Lane Group 3.000
    - Lane Group 4.000

### Input Worksheet
- **Input Worksheet:**
  - Lane Group 1.000
  - Lane Group 2.000
  - Lane Group 3.000
  - Lane Group 4.000

### Volume and Timing Input
- **Volume and Timing Input:**
  - Lane Group 1.000
  - Lane Group 2.000
  - Lane Group 3.000
  - Lane Group 4.000

### Volume Adjustment and Saturation Flow Rate Worksheet
- **Volume Adjustment and Saturation Flow Rate Worksheet:**
  - Lane Group 1.000
  - Lane Group 2.000
  - Lane Group 3.000
  - Lane Group 4.000

### Notes
- **Notes:**
  - 1. All volumes, ed, exclusive FWM
  - 2. Approach selection volume and/or volumes are those that conflict with right-turns from the subject approach
  - 3. Refer to Equation 16.2

### Determination of Effective Green Time
- **Effective Green Time:**
  - Lane Group 1.000
  - Lane Group 2.000
  - Lane Group 3.000
  - Lane Group 4.000
### General Information

**Project Location:** Kailua Rd, Hualua St, & Kaneohe Rd - Nov 2010 counts (+ 5% growth) - PM Peak Hour

<table>
<thead>
<tr>
<th>Input</th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle length (s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 3-phase green - LT lane groups, g (s)</td>
<td>5.00</td>
<td>5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective 3-phase green - LT lane groups, g (s)</td>
<td>5.00</td>
<td>5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective green time, g (s)</td>
<td>5.00</td>
<td>5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of lanes in LT lane groups, N</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adjusted 3-phase green - LT lane groups, g (s)</td>
<td>1.25</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjustment factor for opposing approach, N</td>
<td>0.95</td>
<td>0.95</td>
<td>0.95</td>
<td>0.95</td>
</tr>
<tr>
<td>Opposing phase green - LT lane groups, N</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Computed Data

| LT volume per phase, Vc (veh/h) | 310 | 310 | 0 | 0 |
| Opposing lane utilization factor, λ | 0.30 | 0.30 |    |    |
| Opposing phase green - LT lane groups, N | 4 | 4 | 0 | 0 |
| Effective green time, g (s) | 5.00 | 5.00 |    |    |
| Opposing phase green, g < 1000 |    |    |    |    |
| Opposing phase green - LT lane groups, N | 4 | 4 | 0 | 0 |
| Effective 3-phase green - LT lane groups, g (s) | 5.00 | 5.00 |    |    |
| Effective phase green, g < 1000 |    |    |    |    |

### Right-Hand Turn

1. Refer to Exhibit F, HCNH 5 C-6, 5 C-7. and Exhibit G for one way parameters and adjustment factors.
2. For exclusive left turn lanes, it is equal to the number of exclusive left turn lanes. For shared left turn lanes, it is equal to the number of exclusive left turn lanes plus the number of through left turns that exist beyond the approach.
3. For exclusive left turn lane, g = 0, and for the next step, t-turn, t-turn, t-turn may not be applicable for protected permitted case.
4. For exclusive left turn lane, g = 0, and for all other phases, time, t-turn, t-turn, t-turn, may not be applicable for protected permitted case.
5. For a multilane approach, Phase 2 for all left turn share lanes, then assume it to be a discrete exclusive left turn lane and redo the calculation.
6. For permitted left turns with multiple exclusive left turn lanes, t-turn, t-turn, t-turn, t-turn, t-turn, t-turn.
capacity and los worksheet

General Information

Project Description:

Kailua Rd., Hamakua Dr., & Keokea St. - Nov 2016

counts (s/veh; grouped) - PM Peak Hour

Capacity Analysis

Water number: 1, 2, 3, 4

Phase type: P

Lane Group

Adjusted Direction: 0.909

Intersection Flow: 3600/veh

Tank Volume (ft): 5, 6, 7, 8, 9

Effect of green time: g, 0.5, g, 0.1, v, v

Green time, PC: 0.9415, 0.9415, 0.2758, 0.2758

Lane group capacity, C = (veh/ct) (veh/c)

v/c, X = 0.957

Width, C = 0.030

V/C ratio, 0.030

Critical lane group (veh/c)

Total flow rates for critical lane groups, Y

V/C ratio = 0.2, 3, 4, or 5 (veh/c)

Initial flow rate per cycle, X

Critical flow rate for capacity ratio, K

0.9346

Lane Group Capacity, Delay, and LOS Determination

C

W

N

B

Adjusted flow rate, q = (veh/c)

Lane Group Capacity, C = (veh/c)

X = (veh/h)

Capacity, C = (veh/h)

Total capacity, C = (veh/h)

Uniform diversion rate, d = 0.5, X, Y, Z

Incremental capacity, d = (veh/h)

Incremental delay, d = v/0.5, Y, Z

Initial queue delay, Q = (veh/c)

Effective capacity, X = (veh/h)


d = (veh/h)

Effective capacity, X = (veh/h)

Initial queue delay, Q = (veh/c)

Effective capacity, X = (veh/h)


Notes:

1. No lane permitted to turn, the minimum capacity (C) = (veh/h)

2. Primary and secondary phase parameters are summed to obtain lane group parameters.

3. For the plan of intersections signals, X = 0.5. Otherwise, refer to Exhibit 15-15.

4. T = analysis duration (s), typically, T = 0.25, which is the analysis duration of 15 min.

5. I = uniform filtering maintaining adjustment factor; I = 1 for isolated intersections.

Worksheet for Intersection (C1, 15-20-2)

Intersection of Service (C15-16-2)