U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT, Nationwide Permit Verification for DLNR-Division of Forestry and Wildlife, Low-Water Crossing, North Fork Wailua River, Wailua, Island of Kauai, Hawaii; Department of the Army File No. POH-2023-00115

1. Permit Application
2. Permit Verification
3. Enclosure 1 -Plans
4. Enclosure 2- Blanket Water Quality Certification (WQC) WQC10921 General Conditions
5. Solid Waste Disclosure Form
6. Enclosure 3 – Compliance Certification
7. NWP No. 14 and its associated Regional and General Conditions

1. Permit Application

Honolulu District
U.S. Army Corps of Engineers

Nationwide Permit Pre-Construction Notification (PCN)

This PCN template integrates requirements of the U.S. Army Corps of Engineers (Corps) Nationwide Permit (NWP) Program with the Honolulu District (POH) NWP Regional Conditions. Boxes 1-10 should be completed to include all information required by NWP General Condition 32. Boxes 11 and 12 (or other sufficient information to show compliance with all NWP General and POH Regional Conditions) is also recommended to be completed for proposed activities seeking verification under the NWP Program. If additional space is needed, please provide as a separate attachment. Please refer to the *Instructions for the Honolulu District Nationwide Permit Pre-Construction Notification (PCN)* (Instructions) for instructions on completing the PCN.

To be completed by the Corps – do not fill-in

Application Number:	Date Received:	Date Complete:

1. Prospective Permittee and Agent Contact Information (see Instructions)

a. Prospective Permittee

First - David Middle - G Last - Smith

Company - DLNR, Division of Forestry and Wildlife Email Address - david.g.smith@hawaii.gov

Address - 1151 Punchbowl St., Room 325 City - Honolulu State/Territory - HI Zip - 96813

Phone (Residence/Mobile) - Phone (Business) - (808) 587-0166

b. Agent (if applicable)

First - Janice Middle - Last - Marsters

Company - Haley & Aldrich, Inc. Email Address - jmarsters@haleyaldrich.com

Address - 500 Ala Moana Blvd., Suite 6-250 City - Honolulu State/Territory - HI Zip - 96813

Phone (Residence/Mobile) - 808.371.8504 Phone (Business) - 808.587.7747

c. Statement of Authorization: I hereby authorize Janice Marsters, to act on my behalf as my agent for the proposed activity. (Optional, see instructions)

JMarsters

Signature of Applicant

May 2, 2023

Date

2. Name and Location of the Proposed Activity (see Instructions)

☐ The proposed work would involve multiple-single and complete projects. See attachment for the information required in Boxes 2 through 12, as applicable.

a. Project Name or Title:	b. City, County, Island, State/Territory:
Līhuʻe-Kōloa Forest Reserve Queensland Low-Water Crossing	Wailua, Kauaʻi County, Kauaʻi Island, Hawaiʻi

c. Name of Impacted Waterbody(ies):
Wailua River North Fork

d. Coordinates (in decimal format):
☐ Unknown (please provide other location descriptions below)

Latitude - 22.065614 Longitude - -159.420708

e. Other Location Description (optional, see instructions):

The Proposed Activity occurs in TMKs 439001004, 442001002, and 439002001. The Queensland Low-Water Crossing is part of Wailua Forest Management Road within the Wailua section of Līhuʻe-Kōloa Forest Reserve.

f. Directions to the site (optional, see instructions):

The Wailua section of the Līhuʻe-Kōloa Forest Reserve is accessed from Highway 580 (Kuamoʻo Road), which runs mauka from Wailua town to the Keāhua Arboretum. From there, 4WD vehicles may proceed southbound into the Reserve along the Wailua Forest Management Road and continue approximately 0.75 mile until reaching the Queensland Low-Water Crossing. See Attachment A, Figure 1.

3. Specific NWP(s) you want to use to authorize the proposed activity (see Instructions)

NWP 3 – Maintenance

4. Description of the Proposed Activity (see Instructions)

a. Complete description of the Proposed Activity:

The Līhuʻe-Kōloa Forest Reserve (Reserve) is managed by the Department of Land and Natural Resources (DLNR). Access to the Wailua section of the Reserve is via the Wailua Forest Management Road. During historic 2018 and 2020 flood events, the Reserve low-water crossings and other locations along the Wailua Forest Management Road were severely damaged, limiting public access to the Reserve. Approximately 80% of the 90-year-old concrete Queensland Low-Water Crossing (115 to 120 feet in length) on the Wailua River North Fork was washed away.

The proposed project involves the repair of the Queensland Low-Water Crossing. The proposed design includes removing remaining portions of the damaged crossing and replacing them with a new low-water crossing consisting of reinforced concrete boxes (RCB) spanning the stream and structurally tied together through a reinforced concrete slab poured on top of the RCBs. The RCBs will be anchored into a competent substrate to mitigate washout/sliding of the low-water crossing when high-velocity flows and/or large debris movement occurs. It is not anticipated that construction excavation will exceed 4 feet in depth. The crossing will include five-foot-wide concrete aprons upstream and downstream with a debris catcher on the upstream apron. The crossing will also include wingwalls along both banks upstream and downstream to prevent future scour of the crossing and roadway.

The project will also include construction of a new retaining wall, extending 108 feet south of the Crossing along the west side of the access road, to manage flood water from an upstream breach of the river that occurred in 2018. During high flow, water breached the channel and flowed through this area, further damaging the crossing and the roadway. The retaining wall is located outside of the ordinary high water mark (OHWM) and is intended to protect the access road from further damage during future flood events. The project also includes improvements to the access road north and south of the stream, and placement of grouted riprap along the roadsides and on the west side of the retaining wall. A small section of the grouted riprap extends into the OHWM to protect the wingwall on the south downstream side of the crossing, amounting to approximately 70 square feet, or 12 linear feet along the bank. Construction on the south side (outside of the OHWM) will also include grading along both sides of the road to direct stormwater runoff toward the stream and around the retaining wall.

b. Purpose of the Proposed Activity:

The purpose of the Proposed Activity is to repair the Queensland Low-Water Crossing, restoring access to the reserve via its main road.

c. Direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure:

The Proposed Activity will not affect any wetlands or special aquatic sites.

Direct adverse impacts could occur during demolition of remaining portions of the damaged crossing structure, and construction of the new crossing structure. Without appropriate measures, work within the stream could cause sedimentation in the water, which could impact in-stream species and could also travel downstream to the ocean. Work within the stream will be conducted "in the dry" in two phases by using sandbag berms to divert the stream around one-half the crossing at a time. A curtain wall will also be installed around the sandbag diversion. These best management practices will prevent direct adverse impacts.

An indirect adverse effect could occur if seabirds are damaged if work on the project during the night work requiring lights. Night work is not anticipated; however, if it is required, appropriate precautions will be taken.

No other direct or indirect adverse environmental effects are anticipated.

The project will restore the low-water crossing over the Wailua River North Fork. The constructed project is anticipated to provide beneficial direct impacts by providing a competent stream crossing so that vehicles are not driving through the stream at low water (likely occurring since the crossing was damaged). Indirect positive benefits would include the jobs and benefits to the community through purchasing materials and products during construction.

d. Description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity:

In-water work will occur during demolition of the remaining crossing components and construction of the new crossing. The in-stream work will be conducted in two phases to allow stream flow around the work area during construction. A full depth sandbag berm and curtain wall (providing double protection) will be used to isolate the work area from stream flow (see Drawing Nos. C-07 and C-08 in Attachment B). The sandbag berm will be stacked a minimum of four feet high and wrapped in geotextile fabric. The full-length curtain wall will be situated on the stream side of the sandbag berm. The curtain wall will be inspected regularly to verify that there are no tears and that the fabric is securely attached to the anchor ballast (see Drawing No. C-01, Water Pollution and Erosion Control Notes Item 3 in Attachment B).

Although night work is not anticipated, if unexpected conditions require night work during the autumn seabird fall season (September 15 through December 15), use of lighting shall be restricted between 9:00 PM to 4:30 AM so as to not attract seabirds that may fly over the site. If lighting of the work area is required during the seabird fall season, all lights shall be shielded and directed downwards to the maximum extent practicable. The contractor shall train all employees working at night how to rescue and handle downed birds and shall have appropriate equipment as approved by Save Our Shearwaters (SOS) on site to hold and transport any retrieved birds to an SOS facility. See Attachment B, Drawing No. C-01, Notes for General Construction.

e. Any other NWP(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed activity or any related activity including other separate and distant crossings for linear projects that require Department of the Army authorization:

No other NWPs or Individual Permits are intended for the Proposed Activity.

f. Have sketches been provided containing sufficient detail to show that the activity complies with the terms of the NWP and provide an illustrative description of the proposed activity? ■ Yes, Attached ☐ No

See Attachment B - Civil Engineering Drawings.

5. Aquatic Resource Delineation (see Instructions)

a. Has a delineation of aquatic resources(wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams) been conducted in accordance with the current method required by the Corps? ☒ Yes ☐ No

See Attachment C - Jurisdictional Determination Report

If yes, please attach a copy of the delineation

Note: If no, your PCN is not complete. In accordance with General Condition 32, you may request the Corps delineate the special aquatic sites and other waters on the project site, but there may be a delay. In addition, the PCN will not be considered complete until the delineation has either been submitted to or completed by the Corps, as appropriate.

b. If a delineation has been submitted, would you like the Corps to conduct a jurisdictional determination (preliminary or approved)? ☐ Yes ☒ No

If yes, please complete, sign and return the attached *Appendix 1 – Request for Corps Jurisdictional Determination (JD)* sheet or provide a separate attachment with the information identified in Appendix 1.

6. Compensatory Mitigation (see Instructions)

a. Will the proposed activity result in the loss of greater than 1/10-acre of wetlands? ☐ Yes ☒ No

If yes, describe how you propose to compensate for the loss of each type of wetland:

Note: For the loss of less than 1/10 acre of wetlands, or if no compensatory mitigation is proposed, the Corps may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in no more than minimal adverse environmental effects.

b. Will the proposed activity result in the loss of streams or other open waters of the U.S.? ☐ Yes ☒ No

If yes, provide a description of any proposed compensatory mitigation for the loss of each type of stream or other open water:

Note: If no compensatory mitigation is proposed, the Corps may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in no more than minimal adverse environmental effects.

7. Endangered Species Act (ESA) Compliance (see Instructions)

a. For non-Federal permittees (if Federal permittee, check N/A and skip to 7(b))**:** ☐ N/A

(1) Is there any Federally-listed endangered or threatened species or designated critical habitat that might be affected or is in the vicinity of the activity? ☐ Yes ■ No ☐ Unknown See Attachment D, Biological Survey Report.

(2) Is the activity located in designated critical habitat for Federally-listed endangered or threatened species? ☐ Yes ☒ No

If yes to either (1) or (2), include the name(s) of those endangered or threatened species that might be affected by the proposed activity or might utilize the designated critical habitat that might be affected by the proposed activity:

1. 2.

3. 4.

5. 6.

7. 8.

9. 10.

If no to both (1) and (2), proceed to Box 8.
Note: If yes to either (1) or (2), note per General Condition 18(c), you shall not begin work on the activity until notified by the Corps that the requirements of the ESA have been satisfied and that the activity is authorized.

b. For Federal permittees, you must provide documentation demonstrating compliance with ESA as a separate attachment. ☐ Documentation provided, see attached.

8. Historic Properties (see Instructions)

a. For non-Federal permittees (if Federal permittee, check N/A and skip to 7(d))**:** ☐ N/A

(1) Is there a known historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places that your proposed activity may have the potential to affect? ☐ Yes ☒ No

If yes to (1), state which historic property may have the potential to be affected by the proposed activity:

1. 2.

3. 4.

5. 6.

OR

☐ A vicinity map indicating the location of the historic property is enclosed

(2) If no to (1), describe the potential for the proposed work to affect a previously unidentified historic property:

The low-water crossing repair will occur within the same footprint as the existing structure and the proposed retaining wall construction will occur in an area previously disturbed by construction of the access road. An archaeological survey was conducted on June 29, 2021, in which no previously undocumented historic properties were found. The study indicated that, given the nature, location and scope of work proposed, it is highly unlikely that any historic properties will be identified and/or negatively impacted or disturbed during the proposed work on this property. See Attachment E.

Note: If yes to (1), note per General Condition 20(c), you shall not begin the activity until notified by the Corps that the activity has no potential to cause effects or that consultation under Section 106 of the National Historic Preservation Act (NHPA) has been completed.

b. For Federal permittees, you must provide documentation demonstrating compliance with NHPA in a separate attachment. ☐ Documentation provided, see attached.

9. National Wild and Scenic Rivers (see Instructions)

a. Will the proposed activity occur in a component of the National Wild and Scenic River System or a river officially designated by Congress as a "Study River" for possible inclusion in the system while the river is in an official study status? ☐ Yes, in a component of a National Wild and Scenic River System; ☐ Yes, in a "study" river ■ No

If yes, identify the Wild and Scenic River or the "study river":

Note: Per General Condition 16(b), you shall not begin the NWP activity until notified by the Corps that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status. If you have received written notification from the Federal agency, please attach the correspondence.

10. Section 408 Permissions (see Instructions)

a. Will the proposed activity also require permissions from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a Corps federally authorized Civil Works project? ☐ Yes ■ No

If yes, have you received Section 408 permission to alter, occupy, or use the Corps project? ☐ Yes ☐ No

If yes, please attach the Section 408 permission

Note: If yes, note per General Condition 31, an activity that requires Section 408 permission is not authorized by NWP until the Corps issues the Section 408 permission to alter, occupy, or use the Corps project, and the Corps issues a written NWP verification.

11. Compliance with NWP General Conditions (see Instructions)

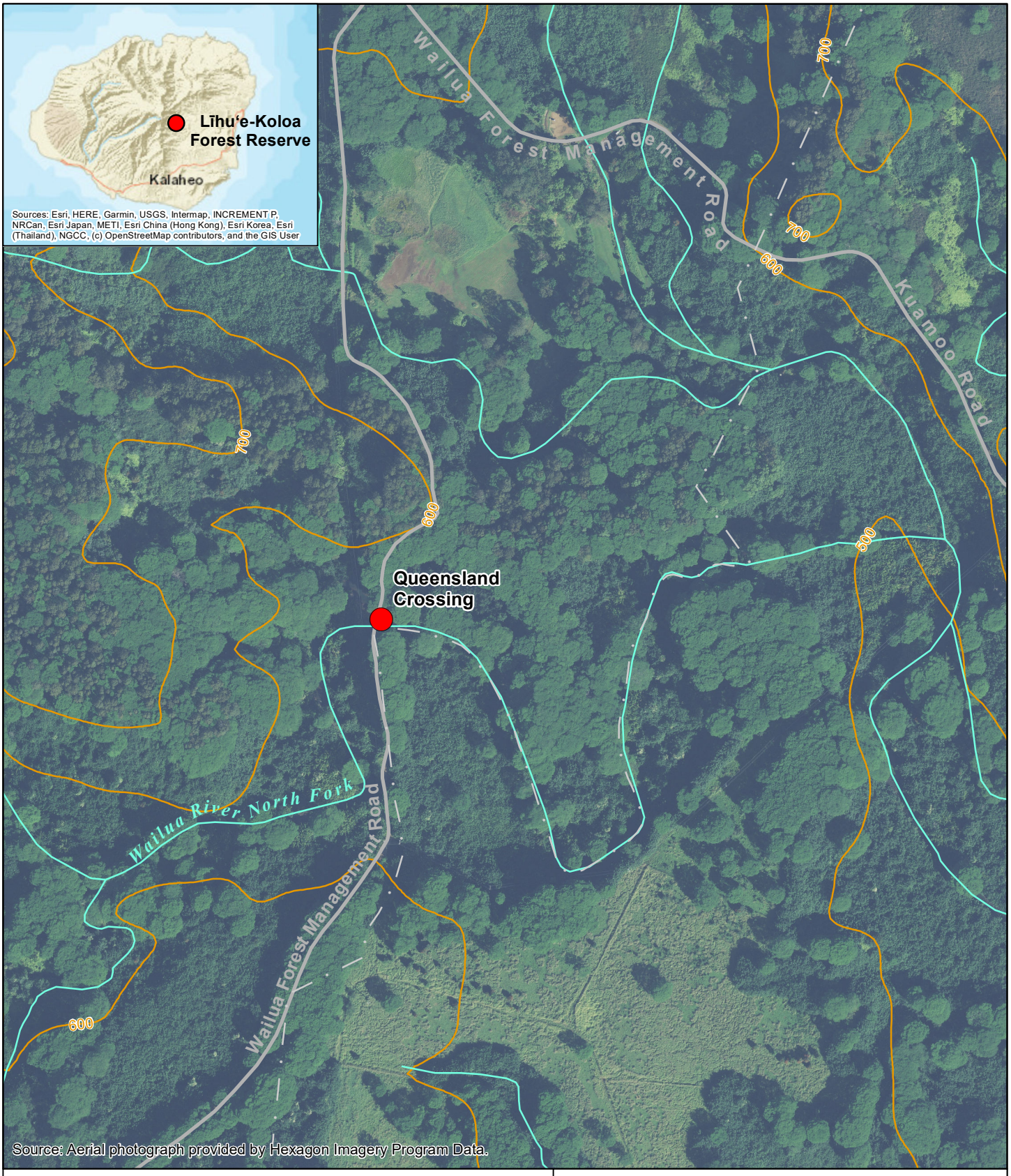
Check	General Condition	Rationale for Compliance with General Condition
☑	1. Navigation	The Proposed Activity will not have any affect on navigation. The project is the repair of an existing low-water crossing.
☑	2. Aquatic Life Movements	The Proposed Activity will not restrict access or movements of aquatic life. Stream diversion BMPs will be implemented in phases to prevent aquatic life from entering the project area while allowing passage of aquatic life around the project area.
☑	3. Spawning Areas	The Proposed Activity site is not known to be a site with significant spawning activities and will not prevent upstream migration of aquatic organisms.
☑	4. Migratory Bird Breeding Areas	The Proposed Activity site is not a migratory bird breeding area.
☑	5. Shellfish Beds	The Proposed Activity site does not contain a concentrated shellfish population.
☑	6. Suitable Material	No deleterious materials will be used in construction of the low-water crossing, retaining wall, or grouted riprap.
☑	7. Water Supply Intakes	The Proposed Activity is not located near public water supply intakes.
☑	8. Adverse Effects from Impoundments	The Proposed Activity does not create impoundments of water, accelerate the passage of water, or restrict the flow of water.
☑	9. Management of Water Flows	The Proposed Activity will not affect the passage of normal or high flows. The activity will also not alter the pre-construction course, condition, capacity or location of the affected water body.
☑	10. Fills Within 100-Year Floodplains	The Proposed Activity is not located within a FEMA-designated 100-year floodplain. It is in FEMA flood Zone X (unshaded) - area determined to be outside the 500-year flood.

☑	11. Equipment	No heavy equipment will be working in wetlands. Best management practices (BMPs) will be used to minimize soil disturbance where heavy equipment is used.
☑	12. Soil Erosion and Sediment Controls	Soil erosion and sediment control BMPs will be used and maintained. See Section 4(d).
☑	13. Removal of Temporary Fills	The Proposed Activity involves the removal of temporary sandbag stream diversions after use is discontinued.
☑	14. Proper Maintenance	The repaired low-water crossing will undergo maintenance, as needed, to ensure public safety and compliance with NWP conditions.
☑	15. Single and Complete Project	The Proposed Activity is a single and complete project.
☑	16. Wild and Scenic Rivers	No waters of the National Wild and Scenic Rivers System are located within the vicinity of the project.
☑	17. Tribal Rights	Tribal rights, protected tribal resources, or tribal lands do not occur within vicinity of the project.
☑	18. Endangered Species	A biological field investigation did not identify threatened or endangered species, nor is the site identified as essential habitat.
☑	19. Migratory Bird and Bald and Golden Eagle Permits	The Proposed Activity does not require migratory bird or golden eagle permits.
☑	20. Historic Properties	A literature review and field investigation found no historic properties that would be affected by the project.
☑	21. Discovery of Previously Unknown Remains and Artifacts	In the event historic remains, such as artifacts, burials, or concentrations of shell or charcoal are encountered during construction activities, work shall immediately cease in the vicinity of the encounter and the State Historic Preservation Division (808) 692-8015 will be called to access the encounter and provide recommendations on mitigation measures.
☑	22. Designated Critical Resource Waters	The Proposed Activity will not affect Critical Resource Waters.
☑	23. Mitigation	See Section 4(d) and Section 6 on pages 3 and 4.
☑	24. Safety of Impoundment Structures	The Proposed Activity does not include impoundment structures.
☑	25. Water Quality	The Proposed Activity will conform with the applicable provisions of the water quality and water pollution control standards contained in HAR, Title 11, Chapters 54 and 55. The project qualifies for Hawaii's Blanket 401 permit with NWP #3 verification.
☑	26. Coastal Zone Management	If the Army Corps verifies coverage under NWP#3, blanket coverage for CZM is assumed.

☑	27. Regional and Case-by-Case Conditions	The Proposed Activity will comply with Regional Conditions.
☑	28. Use of Multiple Nationwide Permits	Only one NWP is requested.
☑	29. Transfer of Nationwide Permit Verifications	The Proposed Activity will not involve the transfer of property.
☑	30. Compliance Certification	The Army Corps will provide a certification document with the NWP that must be signed by the permittee attesting compliance with the permit. The permittee will provide the certification document as requested within 30 days of completion of the project.
☑	31. Activities Affecting Structures or Works Built by the United States	The Proposed Activity does not affect structures or works built by the United States.
☑	32. Pre-Construction Notification	This PCN has been prepared and submitted to the USACE as required.

12. Compliance with NWP Regional Conditions (see Instructions)

Check	Regional Condition	Rationale for Compliance with Regional Condition
☑	1. Revoked Permits	Revoked permits are not applicable to the Proposed Activity.
☑	2. Limited Use Areas	Approximately half of the project footprint is located within the Conservation Use District. The project qualifies for DLNR's Site Plan Approval and CDU permitting will be processed internally.
☑	3. Acreage Limitation	The Proposed Activity does not result in permanent loss to wetlands, other special aquatic sites, or other waters.
☑	4. Stream Channelization and Impoundment Restriction	The Proposed Activity does not include stream channelization or the construction of dams that impound wetlands, other special aquatic sites, or other waters.
☑	5. NWP Verification	No project activity will occur without written NWP verification from the USACE.
☑	6. Pre-Construction Notification	We have provided a written PCN to the USACE that meets NWP General Condition #32.
☑	7. Additional PCN Information	Additional information is provided in Attachments A - E.
☑	8. Best Management Practices	See PCN Section 4(d) on page 3.
☑	9. Bank Stabilization	The project is not a bank stabilization project. Please see Additional Information, Item 12.9 in Attachment F.



Legend

- Low-Water Crossing Location
- DLNR Reserve Boundary
- Roadway
- Streams
- 100' Contours

0 300 600 1,200 Feet

Note: Feature locations are approximate.

N

Līhue-Koloa Forest Reserve
Kaua'i, HI

Vicinity Map

3160-003-001 04/22

HALEY ALDRICH

Figure 1

User Name: nrothman

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

ENGINEERING DIVISION

FOR

DIVISION OF FORESTRY AND WILDLIFE

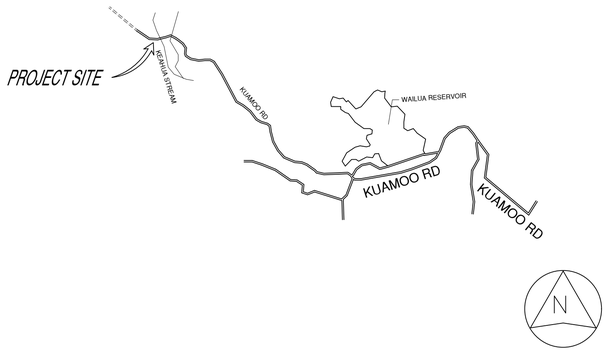
JOB NO. D00AK67B

LIHUE-KOLOA FOREST RESERVE

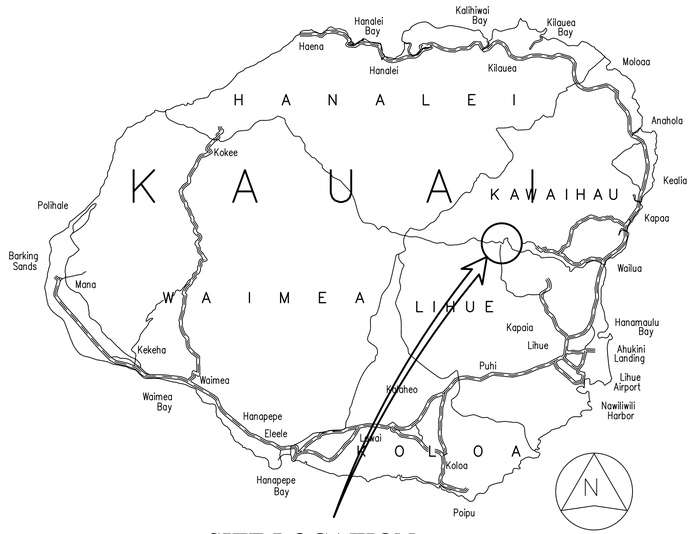
QUEENSLAND LOOP ROAD LOW WATER CROSSING

KAUAI, HAWAII

T.M.K.: 4-4-2-001-002



LOCATION MAP
NOT TO SCALE



SITE LOCATION

ISLAND OF KAUAI
NOT TO SCALE

I N D E X

SCOPE OF WORK: WORK SHALL GENERALLY CONSIST OF PROVIDING CONCRETE BOX CULVERTS AND RETAINING WALLS AT THE QUEENSLAND CROSSING. THE CULVERTS AND RETAINING WALLS WILL PREVENT FUTURE WASHOUT DUE TO FLOODING.

APPROVED: DATE: _____

DAVID G. SMITH
ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE
DEPARTMENT OF LAND AND NATURAL RESOURCES

APPROVED: DATE: _____

CARTY S. CHANG, P.E.
CHIEF ENGINEER
ENGINEERING DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

T-1

JOB NO. D00AK67C LIHUE-KOLOAFOREST RESERVE, KEAHUA AND QUEENSLAND LOW WATER CROSSINGS

NOTES FOR GENERAL CONSTRUCTION

1. ALL CONSTRUCTION WORK IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE PUBLICATIONS "HAWAI'I STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005" AND ITS AMENDMENTS AND THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984", AS AMENDED, BY THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF KAUA'I, MAUI AND HAWAI'I. THE STANDARD DETAILS ARE AVAILABLE AT THE COUNTY OF KAUA'I CLERK'S OFFICE.
2. CONSTRUCTION SHALL BE DONE IN SUBSTANTIAL CONFORMANCE WITH GEOTECHNICAL ENGINEERING REPORT "LIHUE–KOLOA FOREST RESERVE QUEENSLAND CROSSING" DATED AUGUST 19, 2021 BY HART CROWSER WHERE APPLICABLE.
3. TOPOGRAPHIC INFORMATION OBTAINED FROM "TOPOGRAPHIC MAP SHOWING QUEENSLAND CROSSING" PREPARED BY ESAKI SURVEYING & MAPPING, MAY 4, 2021. THIS TOPOGRAPHIC SURVEY WAS BASED ON THE BEST AVAILABLE INFORMATION AND ACCURACY MUST BE VERIFIED PRIOR TO STARTING CONSTRUCTION.
4. ALL COORDINATES, GRIDS AND AZIMUTHS ARE REFERRED TO KEAHUA BRIDGE–KUAMOO ROAD"
5. ELEVATIONS SHOWN ON THE PLANS ARE BASED ON MEAN SEA LEVEL DATUM BENCH MARK IS SHOWN ON SHEET C–04.
6. SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, COUNTY OF KAUA'I, SEPTEMBER 1984, AND ITS AMENDMENTS.
7. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL CONTACT THE VARIOUS UTILITY AGENCIES FOR LOCATION OF EXISTING UTILITIES WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THE PLANS. ANY COSTS INCURRED BY DAMAGES TO EXISTING UTILITIES WILL BE BORNE BY THE CONTRACTOR.
8. ALL EXISTING UTILITIES, WHETHER OR NOT SHOWN ON THE PLANS, SHALL BE PROTECTED AT ALL TIMES BY THE CONTRACTOR UNLESS SPECIFIED ON THE PLANS TO BE ABANDONED.
9. WHEREVER CONNECTIONS TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES PRIOR TO EXCAVATION OF THE MAIN TRENCHES TO VERIFY THEIR LOCATION AND DEPTH.
10. ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION.
11. THE CONTRACTOR SHALL MAKE PROPER ARRANGEMENTS FOR THE USE OF UTILITIES SUCH AS ELECTRICITY, WATER, ETC. AND SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS RESULTING FROM SUCH USAGE.
12. SURVEYS SHALL BE DONE UNDER THE SUPERVISION OF A LAND SURVEYOR LICENSED IN THE STATE OF HAWAI'I.
13. THE CONTRACTOR SHALL CONTACT THE DEPARTMENT OF LAND AND NATURAL RESOURCES, ENGINEERING DIVISION, INSPECTION SECTION AT LEAST FIVE (5) WORKING DAYS BEFORE COMMENCING ANY WORK ON THE PROJECT. THE CONTRACTOR SHALL HOLD A PRECONSTRUCTION MEETING WITH THE CONSTRUCTION SECTION OF DLNR BEFORE COMMENCING ANY WORK.
14. CONTRACTOR SHALL SUBMIT 'AS–BUILT' PLANS WITHIN 14 DAYS AFTER FINAL INSPECTION, INCLUDING STREET MONUMENT DATA (ELEVATIONS & LOCATION) DONE BY A LICENSED SURVEYOR, REGISTERED IN THE STATE OF HAWAI'I.
15. IF SYSTEM CONDITIONS REQUIRE NON–EMERGENCY NIGHT TIME WORK DURING THE AUTUMN SEABIRD FALL SEASON (SEPTEMBER 15 THROUGH DECEMBER 15), USE OF LIGHTING SHALL BE RESTRICTED BETWEEN 9:00 PM TO 4:30 AM. IF LIGHTING OF THE WORK AREA IS REQUIRED IN SUCH SITUATION, ALL LIGHTS SHALL BE SHIELDED (MINIMUM LIGHT SPILL TOWARDS THE SKY) AND DIRECTED DOWNWARDS TO THE MAXIMUM EXTENT PRACTICABLE. MINIMUM REQUIREMENTS FOR LIGHTING BY HIOSH AND OSHA SHALL BE PROVIDED AND ASSURED BY THE CONTRACTOR. THE CONTRACTOR SHALL TRAIN ALL EMPLOYEES WORKING AT NIGHT (RECORDS RETAINED BY THE CONTRACTOR) IN HOW TO HANDLE ANY RETRIEVED DOWNED BIRDS AND SHALL HAVE APPROPRIATE EQUIPMENT AS APPROVED BY SAVE OUR SHEARWATERS (SOS) ON SITE TO HOLD AND TRANSPORT ANY RETRIEVED BIRDS TO A SOS FACILITY. THIS REQUIREMENT DOES NOT ALLOW LIGHTING AS MAY BE RESTRICTED BY OTHER GOVERNMENT AGENCIES.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OVERTIME AND/OR NIGHT WORK PAYMENTS FOR COUNTY'S STAFF INSPECTION PERSONNEL INCLUDING CONSULTANTS WHEN THE CONTRACT REQUIRES OVERTIME OR NIGHT WORK TO BE PERFORMED, OR DIRECTS THE CONTRACTOR TO WORK ADDITIONAL SHIFTS OR OVERTIME FOR COUNTY'S CONVENIENCE.
17. ALL GRADING, GRUBBING AND STOCKPILING WORK SHALL BE PERFORMED IN ACCORDANCE WITH COUNTY OF KAUA'I ORDINANCE NO. 808.
18. AFTER EACH RAINFALL EVENT, THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS, AND OTHER AREAS. THE COST INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE COUNTY ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.
19. DURING CLEANING OPERATIONS, THE CONTRACTOR SHALL SUPPLY A WATER TRUCK FOR DUST CONTROL PURPOSES UNTIL THE VEGETATION HAS RE–ESTABLISHED ITSELF. EXCESS WATER, INCLUDING SILT AND DIRT, SHALL NOT BE ALLOWED TO RUN–OFF THE PROPERTY.
20. BENCHMARKS THAT ARE DISTURBED OR DESTROYED SHALL BE RESTORED UNDER A LICENSED LAND SURVEYOR'S DIRECTION. COPIES OF FIELD NOTES, DESCRIPTIONS AND NEW VALUES OF THE NEW BENCHMARK SHALL BE SENT TO THE DEPARTMENT OF PUBLIC WORKS SURVEY SECTION FOR REVIEW AND APPROVAL PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.
21. BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE EMPLOYED AT ALL TIMES TO THE MAXIMUM EXTENT PRACTICABLE TO PREVENT DAMAGE BY SEDIMENTATION, EROSION OR DUST TO STREAMS, WATERCOURSES, NATURAL AREAS AND THE PROPERTY OF OTHERS.
22. DLNR WILL DELEGATE THE CONTRACTOR AS THE AUTHORIZED REPRESENTATIVE TO SUBMIT ALL NECESSARY DOCUMENTS AND REPORTS AS REQUIRED BY THE COUNTY AND DOH DIRECTLY TO THEIR OFFICES AT NO COSTS TO THE STATE.
23. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DIRECTION.
24. AT ALL TIMES DURING PERFORMANCE OF THIS CONTRACT, ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SITE SAFETY CONDITIONS FOR ALL PERSONS AND PROPERTY.
25. HARD BOULDERS AND MEDIUM HARD TO HARD BASALT ROCK MAY BE ENCOUNTERED NEAR OR AT THE SITE. APPROPRIATE EQUIPMENT FOR EXCAVATING THE MEDIUM HARD TO HARD BASALT ROCK SHALL BE REQUIRED.
26. NO BLASTING SHALL BE ALLOWED ON THIS PROJECT.
27. CONSTRUCT TEMPORARY BARRICADES DURING CONSTRUCTION, FOR THE PROTECTION OF LIFE, SAFETY, AND PROPERTY.
28. THE LIHUE–KOLOA FOREST RESERVE SHALL REMAIN OPEN DURING THE CONSTRUCTION PERIOD. PROVIDE TEMPORARY BARRICADES AND WARNING SIGNS TO PROTECT THE PUBLIC DURING THE CONSTRUCTION PERIOD. PROVIDE AND MAINTAIN FOR SAFE PEDESTRIAN ACCESS AND VEHICLE ACCESS TO THE FACILITY THROUGHOUT THE CONSTRUCTION PERIOD.
29. PROVIDE AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND TAKE NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.
30. EXISTING PEDESTRIAN WALKWAYS SHALL BE MAINTAINED IN A PASSABLE CONDITION OR PROVIDE FOR ALTERNATE/TEMPORARY ACCESSIBLE PEDESTRIAN ACCESS ROUTES AND FACILITIES PER THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN CHAPTER 2 AND ADAAG 201.3 AND ADAAG 206.1.
31. NO PERFORMANCE OF ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATER COURSES. SHOULD SUCH VIOLATIONS OCCUR, THE COSTS INCURRED FOR ANY REMEDIAL ACTION SHALL BE PAYABLE BY THE CONTRACTOR.
32. COORDINATE CONSTRUCTION ACTIVITIES WITH ANY ADJACENT OR RELATED CONSTRUCTION ACTIVITIES ON ANOTHER CONSTRUCTION SITE. AVOID DELAY OR HINDRANCE IN THE PERFORMANCE OF THEIR RESPECTIVE CONTRACTS.
33. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. ALL DAMAGED PORTIONS SHALL BE REPLACED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE AFFECTED UTILITY COMPANY AND SHALL BE THE CONTRACTORS RESPONSIBILITY. PERSONAL INJURY RESULTING FROM CONTACT WITH EXISTING UTILITIES SHALL BE THE CONTRACTORS RESPONSIBILITY.
34. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTION POINT TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR NEW LINES.
35. NOTIFY ALL AGENCIES AND UTILITY COMPANIES TO VERIFY THE ACTUAL LOCATION OF ALL SITE UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATION.
36. NOTIFY AND COORDINATE ALL SITE WORK WITH THE ONE CALL CENTER AT (866) 423–7287 AT LEAST 5 WORKING DAYS PRIOR TO THE START OF EXCAVATION OR TRENCHING.
37. IF WATER, SEWAGE, OR ELECTRICAL SERVICES ARE PLANNED TO BE INTERRUPTED FOR MORE THAN 1 HOUR, PROVIDE TEMPORARY WATER, SEWAGE, AND ELECTRICAL SERVICES DURING THE INTERRUPTION AT NO ADDITIONAL COST TO THE STATE.
38. ADJUST MANHOLE AND/OR VALVE BOX FRAMES AND COVERS AS REQUIRED BY THE UTILITY COMPANIES.
39. CONFORM WITH THE APPLICABLE PROVISIONS OF CHAPTER 54, WATER QUALITY STANDARDS, AND CHAPTER 55, WATER POLLUTION CONTROL, OF TITLE 11, HAWAII ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH.
40. OBTAIN AND PAY FOR ALL REQUIRED PERMITS FROM THE APPROPRIATE GOVERNMENT AGENCIES.
41. RESTORE ALL AREAS DISTURBED AS A RESULT OF ALL CONSTRUCTION ACTIVITIES, TO EQUAL OR BETTER CONDITION(S), INCLUDING BUT NOT LIMITED TO VEGETATION, PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALKWAYS, FENCES, ETC. UNLESS SPECIFICALLY NOTED OTHERWISE.
42. IF ONE (1) OR MORE ACRE OF LAND IS DISTURBED, DO NOT START GROUND DISTURBANCE UNTIL A NPDES PERMIT IS OBTAINED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ALL OTHER APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. ALSO, FOR COUNTY PROJECTS, PROVIDE A WRITTEN COPY OF THE NPDES PERMIT TO THE APPROPRIATE COUNTY OR GOVERNMENTAL AGENCY PER THEIR REQUIREMENTS.
43. ALL STRIPING SHALL BE A THERMOPLASTIC TYPE.
44. PROVIDE THEFT–RESISTANT FASTENERS FOR ALL ACCESSORY MOUNTINGS. ALL FASTENERS SHALL BE STAINLESS STEEL WITH THEFT–RESISTANT TYPE HEADS OR NUTS.
45. PROVIDE ALL INCIDENTAL AND NECESSARY WORK TO COMPLETE THE PROJECT.
46. THE JOB SITE SHALL BE LEFT IN A SAFE, SECURE CONDITION AT THE END OF EACH CONSTRUCTION WORKDAY. CLEAN UP AND REMOVE, FROM THE JOB SITE, ALL RUBBISH AND MAINTAIN THE PREMISES IN A CLEAN ORDERLY CONDITION AT ALL TIMES.
47. UPON COMPLETION OF CONSTRUCTION THE ENTIRE JOB SITE SHALL BE CLEANED OF ALL RUBBISH AND DEBRIS.

HISTORICAL PRESERVATION NOTES

1. SHOULD HISTORIC REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL CORDON OFF THE AREA AND IMMEDIATELY NOTIFY THE PLANNING DEPARTMENT AT (808) 241–4050 AND THE STATE HISTORIC PRESERVATION DIVISION AT (808) 692–8015, WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND THE APPROPRIATE MITIGATION MEASURES, IF NECESSARY. IN ADDITION, IF HUMAN BURIALS ARE FOUND, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE COUNTY OF KAUA'I POLICE DEPARTMENT.

WATER POLLUTION AND EROSION CONTROL NOTES

1. GENERAL:
   - A. THE CONTRACTOR IS REMINDED OF THE REQUIREMENTS OF SECTION 209–WATER POLLUTION AND EROSION CONTROL AND SECTION 620–DUST CONTROL, IN THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005" AND ITS AMENDMENTS. SECTION 209 DESCRIBES BUT IS NOT LIMITED TO: SUBMITTAL REQUIREMENTS; SCHEDULING OF A WATER POLLUTION AND EROSION CONTROL CONFERENCE WITH THE COUNTY; CONSTRUCTION REQUIREMENTS; METHOD OF MEASUREMENT; AND BASIS OF PAYMENT. NO WORK SHALL COMMENCE WITHOUT A BMP PLAN APPROVED BY THE DEPARTMENT OF HEALTH.
   - B. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE "INTERIM BEST MANAGEMENT PRACTICES MANUAL FOR CONSTRUCTION SITES FOR COUNTY OF KAUA'I" IN DEVELOPING, INSTALLING AND MAINTAINING THE BEST MANAGEMENT PRACTICES (BMPS) FOR THE PROJECT. THE CONTRACTOR MAY SUBMIT ALTERNATE METHODS TO THE COUNTY FOR ACCEPTANCE.
   - C. THE CONTRACTOR SHALL KEEP A COPY OF THE APPROVED BMP PLAN, NOI, ETC. ON THE PROJECT SITE. THE BMP PLAN SHALL BE UPDATED TO REFLECT ANY CHANGES MADE DURING THE COURSE OF CONSTRUCTION FOR THE DURATION OF THE PROJECT.
   - D. THE DLNR MAY ASSESS LIQUIDATED DAMAGES OF UP TO $27,500 FOR NONCOMPLIANCE OF EACH BMP REQUIREMENT AND EACH REQUIREMENT STATED IN SECTION 209, FOR EVERYDAY OF NONCOMPLIANCE. THERE IS NO MAXIMUM LIMIT ON THE AMOUNT ASSESSED PER DAY.
   - E. THE DLNR MAY DEDUCT THE COST FROM THE PROGRESS PAYMENT FOR ALL CITATIONS RECEIVED BY THE DEPARTMENT FOR NON–COMPLIANCE, OR THE CONTRACTOR/OWNER SHALL REIMBURSE THE STATE AND/OR COUNTY FOR THE FULL AMOUNT OF THE OUTSTANDING COST INCURRED BY THE STATE AND/OR COUNTY.
2. WASTE DISPOSAL:
   - A. WASTE MATERIALS: ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER THAT DOES NOT LEAK. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER SHALL BE EMPTIED A MINIMUM OF TWICE PER WEEK OR AS OFTEN AS IS DEEMED NECESSARY. NO CONSTRUCTION WASTE MATERIAL SHALL BE BURIED ONSITE. THE CONTRACTOR'S SUPERVISORY PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES SHALL BE POSTED IN THE OFFICE TRAILER AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.
   - B. HAZARDOUS WASTE: ALL HAZARDOUS WASTE MATERIAL SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATIONS OR BY THE MANUFACTURER. THE CONTRACTOR'S SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES AND SHALL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES FOR FOLLOWED.
   - C. SANITARY WASTE: ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK, OR AS REQUIRED.
3. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:
   - A. ALL CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EACH WEEK AND WITHIN 24 HOURS FOLLOWING ANY RAINFALL EVENT OF 0.5 INCHES OR GREATER.
   - B. ALL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. IF REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS AFTER THE INSPECTION.
   - C. BUILT UP SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE–THIRD THE HEIGHT OF THE FENCE.
   - D. SILT SCREEN OF FENCE SHALL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, TO VERY THAT THE FABRIC FENCE IS SECURELY ATTACHED TO THE FENCE POST OR CONCRETE SLAB AND TO VERIFY THAT THE FENCE POST ARE FIRMLY IN THE GROUND
   - E. TEMPORARY AND PERMANENT SEEDING AND PLANTING SHALL BE INSPECTED FOR BARE SPOTS, WASH OUTS AND HEALTHY GROWTH.
   - F. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A MAINTENANCE INSPECTION REPORT PROMPTLY AFTER EACH WEEKLY INSPECTION.
   - G. THE CONTRACTOR SHALL SELECT A MINIMUM OF THREE PERSONNEL WHO SHALL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.
   - H. PERSONNEL SELECTED FOR THE INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE TRAINING FROM THE CONTRACTOR. THEY SHALL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER.
   - I. ALL SLOPES AND EXPOSED AREAS SHALL BE GRASSED AS FINAL GRADES HAVE BEEN ESTABLISHED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA IN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED OR EXPOSED FOR MORE THAN 15 DAYS SHALL BE GRASSED IN ORDER TO PREVENT DUST EMISSION, EROSION AND SILT RUNOFF. AREAS WITH IMPORTED SOILS SHALL BE GRASSED NOT MORE THAN 5 WORKING DAYS AFTER THE FINAL GRADES HAVE BEEN ESTABLISHED.
   - J. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN–PLACE AND ESTABLISHED.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

CONSTRUCTION NOTES 01

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

APPROVED: _____ CHIEF ENGINEER _____ DATE

DRAWING NO. C-01

JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – CONSTRUCTION NOTES 01.DWG
BEDNI: 2-Aug-21

PM: CLJ
CURRENT OPER: GMG 8/2/2021 2:10 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 11:54 AM

WATER POLLUTION AND EROSION CONTROL NOTES (CON'T)

4. GOOD HOUSE KEEPING BEST MANAGEMENT PRACTICES:

A. MATERIALS POLLUTION PREVENTION PLAN.

a. APPLICABLE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION. OTHER MATERIALS AND SUBSTANCES NOT LISTED BELOW SHALL BE ADDED TO THE INVENTORY OF THE CONSTRUCTION CONTRACTOR'S SITE–SPECIFIC BMP PLAN.

CONCRETE	FERTILIZERS
DETERGENTS	PETROLEUM BASED PRODUCTS
PAINTS (ENAMEL & LATEX)	CLEANING SOLVENTS
METAL STUDS	WOOD
TAR	MASONRY BLOCK

b. MATERIAL MANAGEMENT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT AS IS REQUIRED TO DO THE JOB.

c. ALL MATERIALS STORED ONSITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE UNDER A ROOF OR OTHER ENCLOSURE.

d. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURE'S LABEL.

e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

f. A PRODUCT SHALL BE USED UP COMPLETELY BEFORE DISPOSING OF THE CONTAINER.

g. MANUFACTURER'S RECOMMENDATION FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED.

h. THE CONTRACTOR SHALL CONDUCT A DAILY INSPECTION TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.

B. HAZARDOUS MATERIAL POLLUTION PREVENTION PLAN:

a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.

b. ORIGINAL LABELS AND MATERIALS SAFETY DATA SHEETS MSDS SHALL BE RETAINED AND MADE AVAILABLE TO THE COUNTY ENGINEER UPON REQUEST.

c. SURPLUS PRODUCTS SHALL BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR LOCAL AND STATE RECOMMENDED REGULATIONS.

C. ONSITE AND OFFSITE PRODUCTS SPECIFIC PLANS:

THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ONSITE:

a. PETROLEUM BASED PRODUCTS: ALL ONSITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ONSITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

b. FERTILIZERS: APPLY FERTILIZED USED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, WORK FERTILIZER INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE SHALL BE IN A COVERED SHED.

c. PAINTS: SEAL AND STORE ALL CONTAINER WHEN NOT REQUIRED FOR USE. DO NOT DISCHARGE EXCESS PAINT TO THE ROADWAY DRAINAGE SYSTEM. DISPOSE PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTION OR STATE AND LOCAL REGULATIONS.

d. CONCRETE TRUCKS: WASH OUT OR DISCHARGE CONCRETE TRUCK DRUM WASH WATER ONLY AT A DESIGNATED SITE. DO NOT DISCHARGE WATER IN ROADWAY DRAINAGE SYSTEM OR WATERS OF THE UNITED STATES. CONTACT DRINKING WATER BRANCH, DEPARTMENT OF HEALTH AT (808) 586–4258 TO RECEIVE PERMISSION TO DESIGNATE A DISPOSAL SITE. CLEAN DISPOSAL SITE AS REQUIRED OR AS REQUESTED BY THE OWNER'S REPRESENTATIVE.

D. SPILL CONTROL PLAN:

a. POST A SPILL PREVENTION PLAN TO INCLUDE MEASURES TO PREVENT AND CLEAN UP EACH SPILLWAY.

b. THE CONTRACTOR SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. DESIGNATE AT LEAST THREE SITE PERSONNEL WHO SHALL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS SHALL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. POST THE NAMES OF RESPONSIBLE SPILL PERSONAL IN THE MATERIAL STORAGE AREA AND IN THE OFFICE TRAILER ONSITE.

c. CLEARLY POST MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP. MAKE SITE PERSONNEL AWARE OF THE PROCEDURES AND THE LOCATION OF INFORMATION AND CLEANUP SUPPLIES.

d. KEEP MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP IN THE MATERIAL STORAGE AREA ONSITE.
CLEAN UP ALL SPILL IMMEDIATELY AFTER DISCOVERY.

e. KEEP THE SPILL AREA WELL VENTILATED. PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH HAZARDOUS SUBSTANCE.

f. REPORT SPILLS OF TOXIC HAZARDOUS MATERIAL TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.

PAVEMENT AND TRENCH RESTORATION NOTES

1. PAVEMENT RESURFACING WORK SHALL INCLUDE 2–INCH THICKNESS OF EXISTING A.C. TO BE COLD PLANED AND CONSTRUCTION OF A MINIMUM OF 2–INCH OF NEW A.C. (STATE MIX IV) LAYER.

2. ALL EXISTING PAVEMENT STRIPING DISTURBED BY THIS PROJECT SHALL BE RESTORED. THE STRIPING MATERIALS SHALL BE THERMOPLASTIC TAPE OR THERMOPLASTIC EXTRUSION. PAINTING IS NOT ACCEPTABLE.

ADDITIONAL DOFAW NOTES

1. TAKE ALL MEASURES TO MINIMIZE DISTRUBING OR DAMAGING EXISING NAVTIVE PLANT SPECIES DURING CONSTRUCTION. DOFAW WILL CONDUCT BIOLOGICAL SURVEY OF ENTIRE PROJECT AREA (STAGING AND CONSTRUCTION) PRIOR TO CONTRACTOR STARTING WORK.

2. PRIOR TO ENTERING THE JOB SITE, ALL EQUIPMENT AND FOOTWEAR SHALL BE WASHED WITH POTABLE WATER AND SPRAYED WITH 70% ALCOHOL OR FRESH 10% CLOROX SOLUTION TO PREVENT EXOTIC PLANTS AND SEEDS FROM BEING INTRODUCED TO THE JOB SITE/AREA.

3. HAWAIIAN HOARY BATS OR ʻŌPEʻAPEʻA (LASIURUS CINEREUS SEMOTUS) IS KNOWN TO RESIDE IN THE VICINITY OF THE PROJECT AREA AND MAY ROOST IN NEARBY TREES. IF ANY SITE CLEARING IS REQUIRED THIS SHOULD BE TIMED TO AVOID DISTURBING THE BAT'S BIRTHING AND PUP REARING SEASON (JUNE 1 THROUGH SEPTEMBER 15). IF THIS CANNOT BE AVOIDED, WOODY PLANTS GREATER THAN 15 FEET (4.6 METERS) IN HEIGHT SHOULD NOT BE DISTURBED, REMOVED, OR TRIMMED WITHOUT CONSULTING DOFAW AND STATE'S CONSTRUCTION REPRESENTATIVE. BARBED WIRE IS NOT ALLOWED BECAUSE BAT MORTALITIES HAVE BEEN DOCUMENTED BY ENSNAREMENT DURING FLIGHT.

4. NIGHT WORK THAT REQUIRES OUTDOOR LIGHTING SHOULD BE AVOIDED DURING THE SEABIRD FLEDGING SEASON FROM SEPTEMBER 15 THROUGH DECEMBER 15. THIS IS THE PERIOD WHEN YOUNG SEABIRDS TAKE THEIR MAIDEN VOYAGE TO THE OPEN SEA. ARTIFICIAL LIGHTING CAN ADVERSELY IMPACT SEABIRDS BY CAUSING DISORIENTATION. THIS DISORIENTATION CAN RESULT IN COLLISION WITH MANMADE ARTIFACTS OR GROUNDING OF BIRDS. FOR NIGHT LIGHTING THAT MIGHT BE REQUIRED, DOFAW RECOMMENDS THAT ALL LIGHTS BE FULLY SHIELDED TO MINIMIZE IMPACTS.

5. THE ACTIVITIES ARE OCCURRING IN A STATE FOREST RESERVE AND THEREFORE ARE SUBJECT TO AND EXPECTED TO FOLLOW ALL PERTINENT CHAPTER 104 DOFAW–HAR THAT HAVE BEEN UPDATED IN JANUARY 2021.
http: //dlnr.hawaii.gov/dofaw/files/2013/09/HARChapter13–104.pdf

6. STATE LANDS UNDER THE JURISDICTION OF DOFAW ARE OPEN TO PUBLIC HUNTING THROUGHOUT THE YEAR. PLEASE VIEW THE HUNTING RULES AND DAYS ON OUR AGENCY WEBSITE. BLAZE ORANGE SHALL BE WORN ON ALL LEGAL HUNTING DAYS.
http: //dlnr.hawaii.gov/recreation/hunting/kauai/

7. IN THE EVENT ANY ARCHAEOLOGICAL SITES OR REMAINS SUCH AS BONES OR CHARCOAL DEPOSITS, HUMAN BURIALS, ROCK OR CORAL ALIGNMENTS, ROCK WALLS ARE ENCOUNTERED, CONTRACTOR SHALL STOP ALL ACTIVITIY AND CONTACT STATE HISTORIC PRESERVATION DIVISION IN KAPOLEI (808) 692–8015 OR SHERI MANN (808) 729–0714 IMMEDIATELY.

8. REPORTING OF INAPPROPRIATE ACTIVITIES TO DOFAW AND/OR DOCARE IS ENCOURAGED. DOCARE HOTLINE (808) 643–DLNR

ADDITIONAL NOTES RELATING HAWAII EXPERIMENTAL TROPICAL FOREST (H.E.T.F. BIOSECURITY MEASURES (SUCH AS RAPID OHIA DEATH, (VERIFY WTIH DOFAW ON APPLICABILILTY))

WITH REFERENCE TO THE H.E.T.F. BIOSECURITY HANDOUT, (WHICH IS AVAILABLE FROM D.O.F.A.W. STAFF) COMPLY WITH THE FOLLOWING PARAPHRASED INSTRUCTIONS TO PREVENT THE INTRODUCTION AND SPREAD OF HARMFUL ORGANISMS INCLUDING, BUT NOT LIMITED TO WEEDS, INSECTS, AND INFECTED PLANTS.

1. INSPECT AND CLEAN ALL EQUIPMENT, GEAR, AND VEHICLES (PERSONAL AND PROJECT) THAT ENTER AND EXIT THE JOB SITE.

2. ENSURE THAT ALL GEAR EQUIPMENT AND VEHICLES ARE FREE OF ANY PLANT, ANIMAL, OR EARTHEN MATERIALS. ALL EQUIPMENT, GEAR, AND VEHICLES SHALL BE INSPECTED, CLEANED AND SANITIZED WITH 70% ALCOHOL OR 10% CLOROX SOLUTION BEFORE ENTERING THE JOB SITE, AND BEFORE LEAVING ANY WEED INFECTED/CONTAMINATED AREA TO PREVENT TRACKING IN HARMFUL ORGANISMS (E.G.: WEEDS, INSECTS, PESTS) AND PREVENT SPREAD TO PRISTINE AND HEALTHY FOREST AREAS. EQUIPMENT TO INSPECT AND CLEAN INCLUDE BUT IS NOT LIMITED TO:

   a. CINDER ARE CLOTHES & FOOTWEAR (TREADS, LACES, BOOT TONGUES), SOCKS, PANT LEGS, POCKETS, JACKETS, RAIN GEAR (POCKETS AND CUFFS).

   b. EQUIPMENT & SUPPLIES–TOOLS, TOOL BAGS, BACPACKS & BAGS (FOLDS, POCKETS, VELCRO), WOOD AND BUILDING MATERIALS, FENCING MATERIALS, BOTTOMS OF PLASTIC BUCKETS, CARDBOARD BOXES (ROACHES & ANTS), OPEN FOOD AND WATER CONTAINERS, TENTS, HAMMOCKS, TARPS, HELICOPTER SLING NETS, CHAINSAW BLADES.

   c. VEHICLES – THE INSIDE OF THE VEHICLES SHOULD BE VACUUMED AND THE TRUCK BEDS SWEPT OUT REGULARLY, ESPECIALLY IF USED OFF–ROAD. CLEAN PLACES SUCH AS THE INSIDE LIP OF BUMPERS, SEATS, FLOORS, DASHBOARDS, DOOR JAMBS, TIRES (ESPECIALLY TIRE TREADS), AND THE UNDERCARRIAGE.

   d. HEAVY EQUIPMENT, TRUCKS, ALL TYPES OF EARTHMOVING CONSTRUCTION EQUIPMENT AND GENERAL CONSTRUCTION EQUIPMENT AND SUPPLIES.

   e. OTHER– ENSURE SOIL AND STERILE AND FREE OF INSECTS, WEEDS, AND PATHOGENS. ANYTHING SUSPICIOUS SHOULD NOT BE TAKEN ONTO THE JOB SITE.

3. ON A DAILY BASIS, PACK AND REMOVE ALL TRASH, INCLUDING ANY DISCARDED FOOD, FROM THE JOB SITE TO PREVENT NEGATIVELY AFFECTING THE FLORA AND FAUNA AT THE FIELD SITE. (*DISCARDED FOOD MAY CONTAIN UNSEEN INSECTS, FUNGUS, BACTERIA, AND PARASITES; AND IS AN ATTRACTANT FOR INVASIVE INSECTS).

4. FOLLOW METHODS OF CLEANING SPECIFIED IN H.E.T.F. BIOSECURITY HANDOUT. SPECIFIED METHODS OF CLEANING INCLUDE:

   a. WATER & HOSE, BRUSH, TWEEZERS, CLEAN RAG, KNIFE EDGE, BLEACH RINSE AND/OR INSECTICIDE.

   b. CLEANING SHALL BE PERFORMED AWAY FROM THE FOREST WITH A NEARBY RECEPTACLE FOR DISPOSAL.

   c. LAUNDERING OF WASHABLE ITEMS SHALL BE PERFORMED AFTER EACH TRIP.

   d. IF ITEMS CANNOT BE CLEANED, THEY CANNOT BROUGHT INTO THE FOREST.

   e. IF CONTAMINATED SUPPLIES ARE DISCOVERED, THEY MUST BE IMMEDIATELY REMOVED AND PROPERLY DISPOSED, AWAY FROM THE H.E.T.F.

5. CLEAN AND DISINFECT EQUIPMENT PRIOR TO MOBILIZATION TO JOB SITE.

6. IN THE EVENT THAT INFECTED OHIA TREES ARE FOUND AT THE FIELD SITE, THE CONTRACTOR SHALL BE INFORMED AND AT THE DIRECTION OF DOFAW TAKE MEASURES TO PREVENT THE SPREAD OF THE CERATOCYSTIS INFECTION OF OHIA TREES.

   a. MEASURES INCLUDE AND ARE NOT LIMITED TO:

      i. CONTACTING MAPUANA O'SULLIVAN 808–346–2338 OR SHERI MANN 808–729–0714 REGARDING THE LOCATION OF THE INFECTED OHIA TREES AND INCLUDING DIGITAL PICTURES OF THE CROWN OF THE SUSPECTED INFECTED TREE AND PLACES ON THE WOOD WITH CHARACTERISTIC STAINING OF THE INFECTION

      ii. DO NOT TRANSPORT ANY OHIA WOOD.

      iii. FOLLOW THE REQUIRED H.E.T.F. BIOSECURITY MEASURES (AS NOTED IN THE ABOVE ITEMS 1–5)

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

CONSTRUCTION NOTES 02

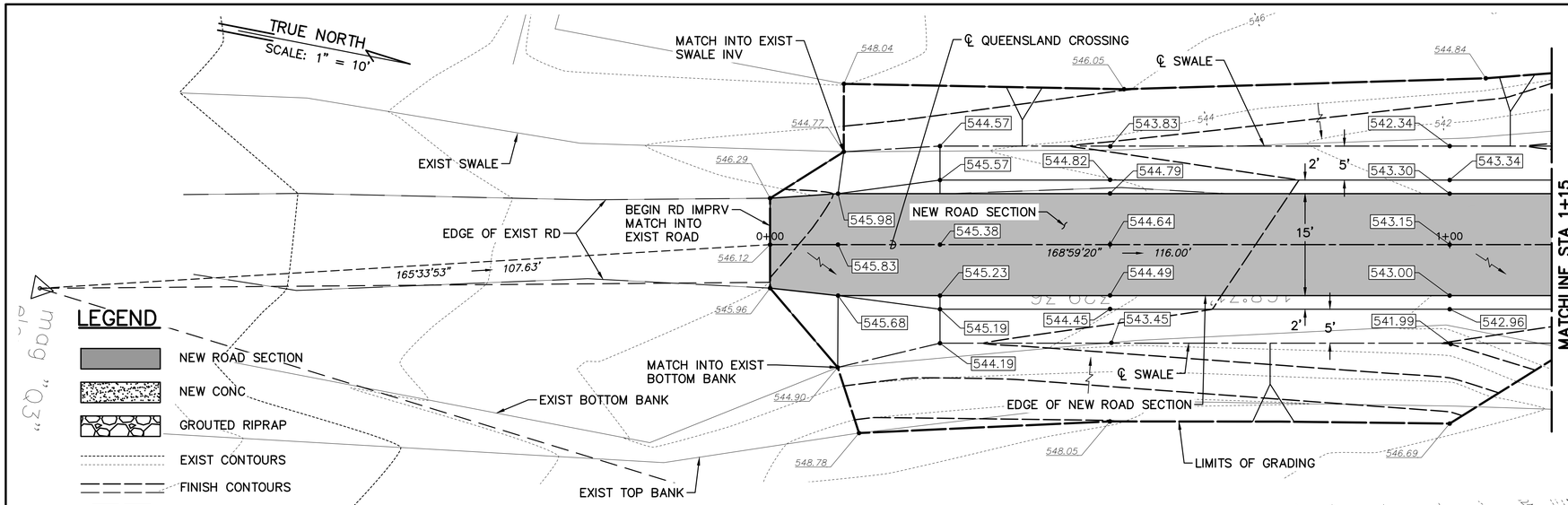
DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

APPROVED: _____ CHIEF ENGINEER _____ DATE

DRAWING NO. C-02

JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: C:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – CONSTRUCTION NOTES 02.DWG
BEGIN: 28-Dec-21
PM: CLJ
CURRENT OPER: GMG 12/28/2021 9:34 AM
LAST SAVED BY: MLEUNG REVISED: 4/14/2022 5:19 PM



NOTES:

1. ALL WORK DAMAGED OR CAUSED TO BE DEFECTIVE BY THE CONSTRUCTION OPERATIONS AND WHICH IS NOT INDICATED TO BE REPLACED OR INCLUDED WITH NEW CONSTRUCTION SHALL BE COMPLETELY REPAIRED OR FILLED IN AS REQUIRED TO MATCH THE ADJACENT EXISTING SURFACE.
2. ALL TREES SHALL REMAIN UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A ARBORIST FOR ALL WORK NEAR EXISTING TREES. THE CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING TREES FROM DAMAGE TO FOLIAGE, BRANCHES, TRUNKS OR ROOTS. ARBORIST SHALL BE CERTIFIED BY INTERNATIONAL SOCIETY OF ARBORICULTURE.
3. THE CONTRACTOR SHALL REMOVE VEGETATION BEFORE THE PLACING OF FILLS ON A NATURAL GROUND SURFACE.

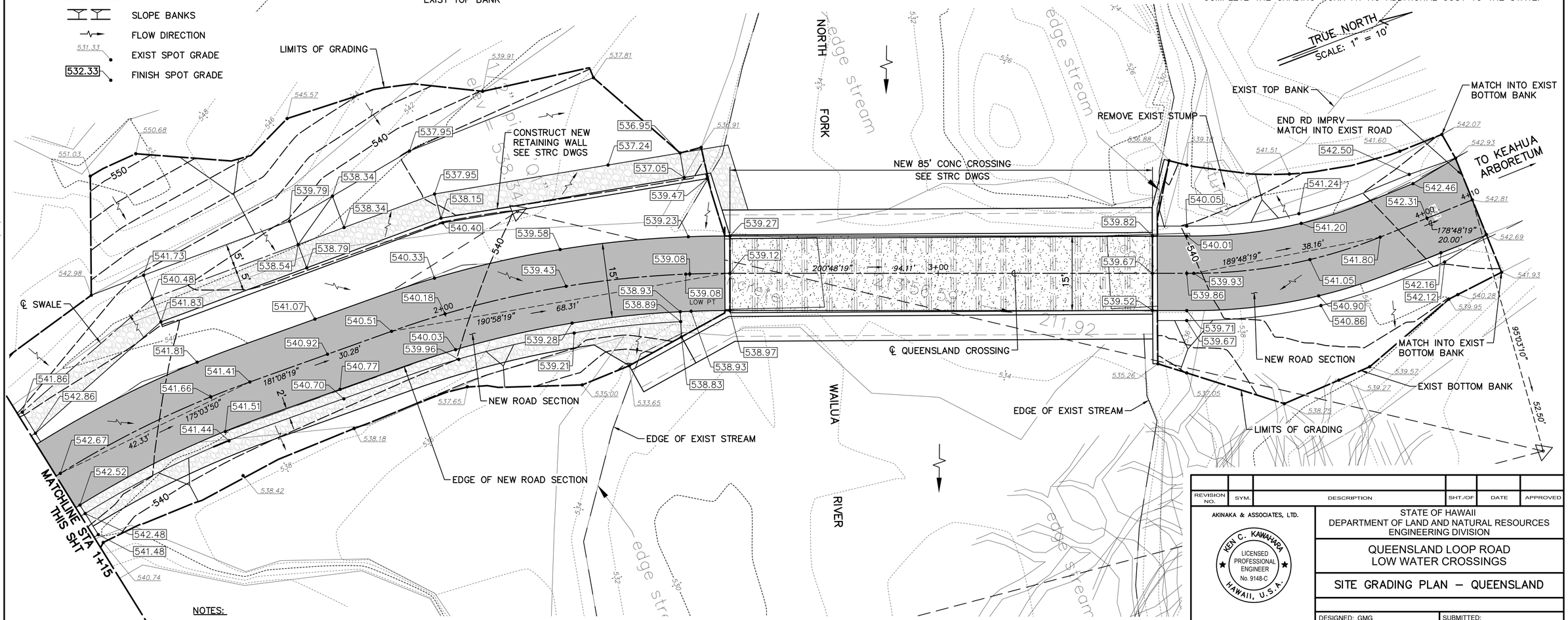
ESTIMATED EARTHWORK QUANTITIES
TOTAL RAW CUT = 145.0 CY
TOTAL RAW FILL = 480.0 CY
TOTAL AREA TO BE GRADED/DISTURBED = 0.38 AC

A. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE THE EXACT QUANTITIES FOR BIDDING PURPOSES.

B. NO ADJUSTMENT FACTOR IS APPLIED TO THE RAW CUT/FILL QUANTITIES.

C. EARTHWORK QUANTITIES SHOWN WERE TAKEN FROM EXISTING GROUND TO FINISH GRADE. QUANTITY DOES NOT REFLECT THE EXCAVATION OF PAVEMENT OR CONCRETE FOUNDATION.

D. CONTRACTOR/PROPOSER SHALL NOT USE THE EARTHWORK QUANTITIES SHOWN ABOVE FOR PROPOSING PURPOSES. REGARDLESS OF THE CUT AND FILL EARTHWORK QUANTITIES SHOWN ABOVE, THE CONTRACTOR IS RESPONSIBLE TO IMPORT OR EXPORT ALL NECESSARY MATERIALS TO COMPLETE THE GRADING WORK AT NO ADDITIONAL COST TO THE STATE.



NOTES:

1. FOR ROAD SECTIONS, SEE SHT C-05
2. FOR AC PAVEMENT SECTIONS, SEE SHT C-06
3. GRADES AT INTERVALS ARE EVERY 25 FT ALONG ROAD ℄ BEGINNING AT STA 0+00

SITE GRADING PLAN – QUEENSLAND

SCALE: 1" = 10'

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

SITE GRADING PLAN – QUEENSLAND

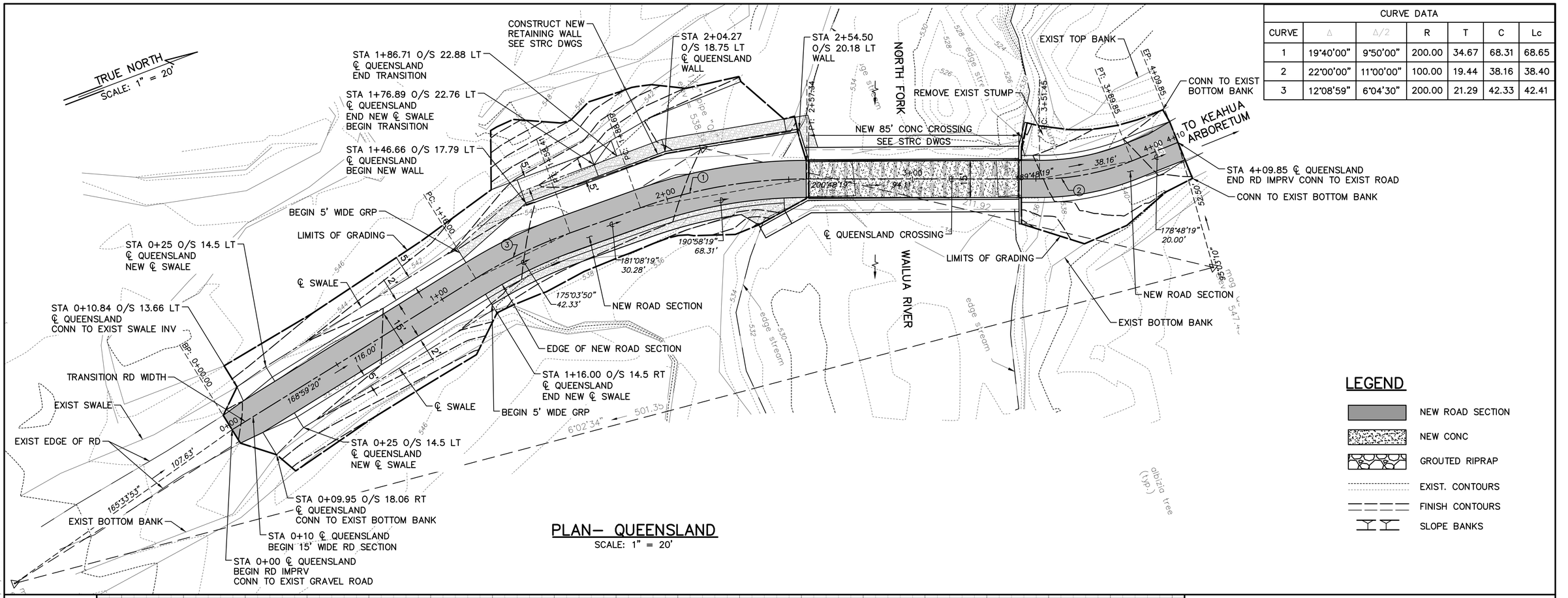
DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

APPROVED: _____ CHIEF ENGINEER _____ DATE

DRAWING NO. C-03

JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – GRADING PLAN 03 (QUEENSLAND).DWG
BEGIN: 30-Dec-21
PM: CLJ
CURRENT OPER: GMG 12/30/2021 9:37 AM
LAST SAVED BY: GMG REVISED: 4/26/2022 7:07 AM



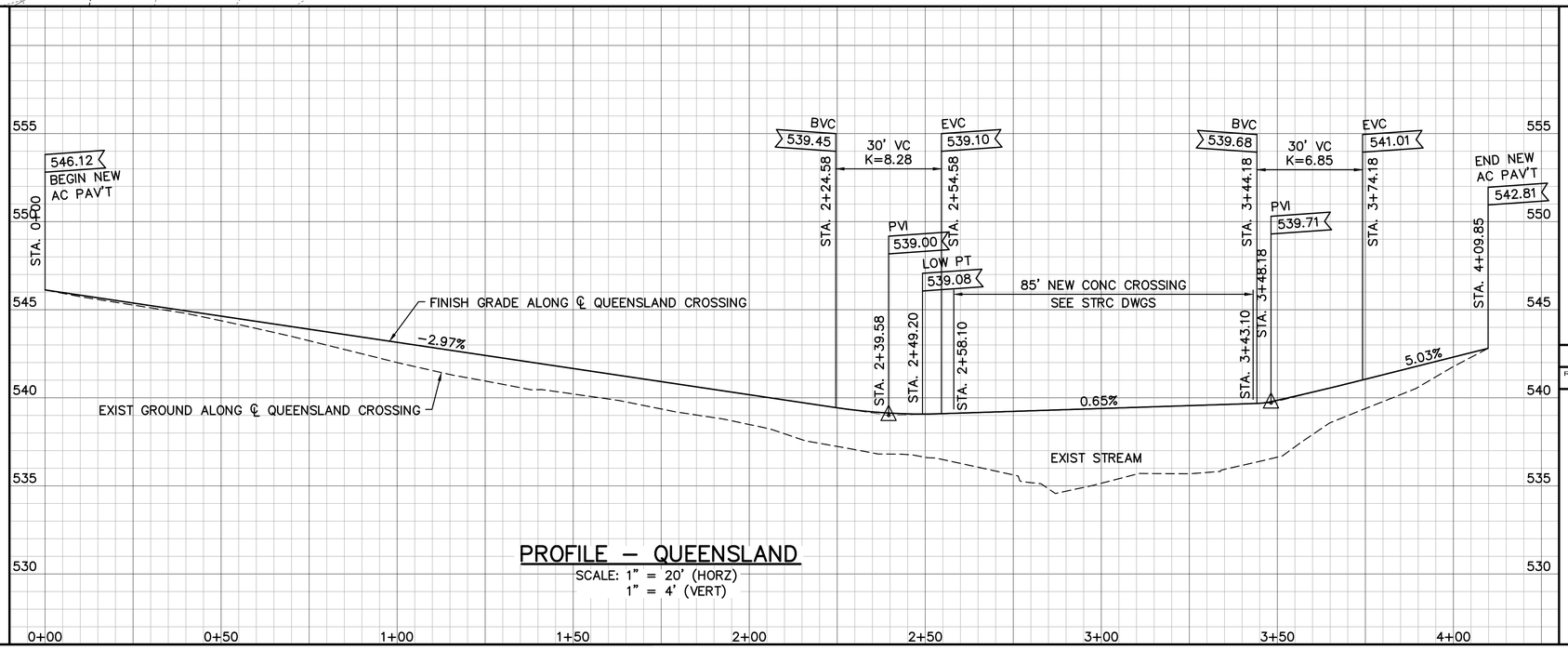
PLAN– QUEENSLAND

SCALE: 1" = 20'

CURVE DATA						
CURVE	Δ	Δ/2	R	T	C	Lc
1	19°40'00"	9°50'00"	200.00	34.67	68.31	68.65
2	22°00'00"	11°00'00"	100.00	19.44	38.16	38.40
3	12°08'59"	6°04'30"	200.00	21.29	42.33	42.41

LEGEND

- NEW ROAD SECTION
- NEW CONC
- GROUTED RIPRAP
- EXIST. CONTOURS
- FINISH CONTOURS
- SLOPE BANKS



PROFILE – QUEENSLAND

SCALE: 1" = 20' (HORZ)
1" = 4' (VERT)

20' 0 20' 40'
SCALE: 1" = 20'–0"

4' 0 4' 8'
SCALE: 1" = 4'–0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

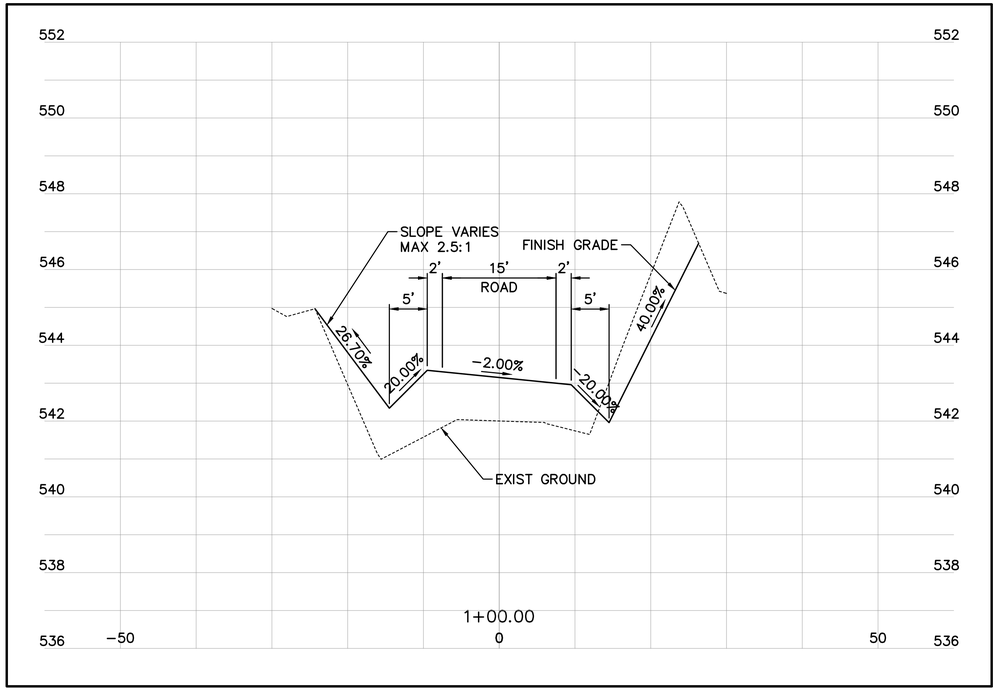
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

PLAN AND PROFILE – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-04
CHIEF ENGINEER	DATE

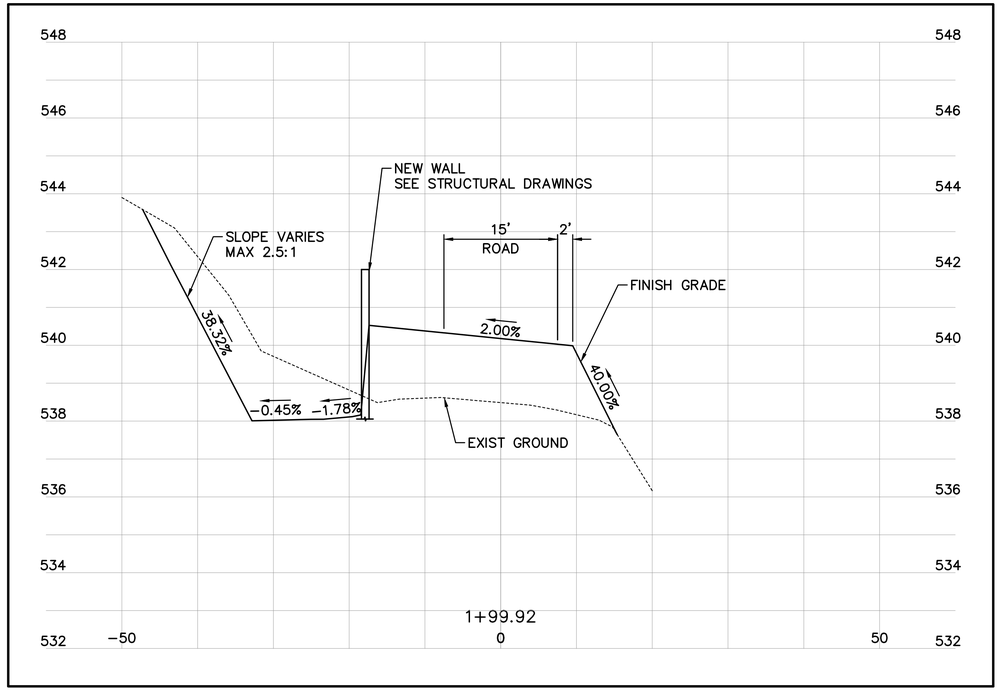
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – SITE PLAN 03 (QUEENSLAND).DWG
BEGIN: 2-Aug-21
PM: CLJ
CURRENT OPER: GMG 8/2/2021 3:48 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 3:10 PM



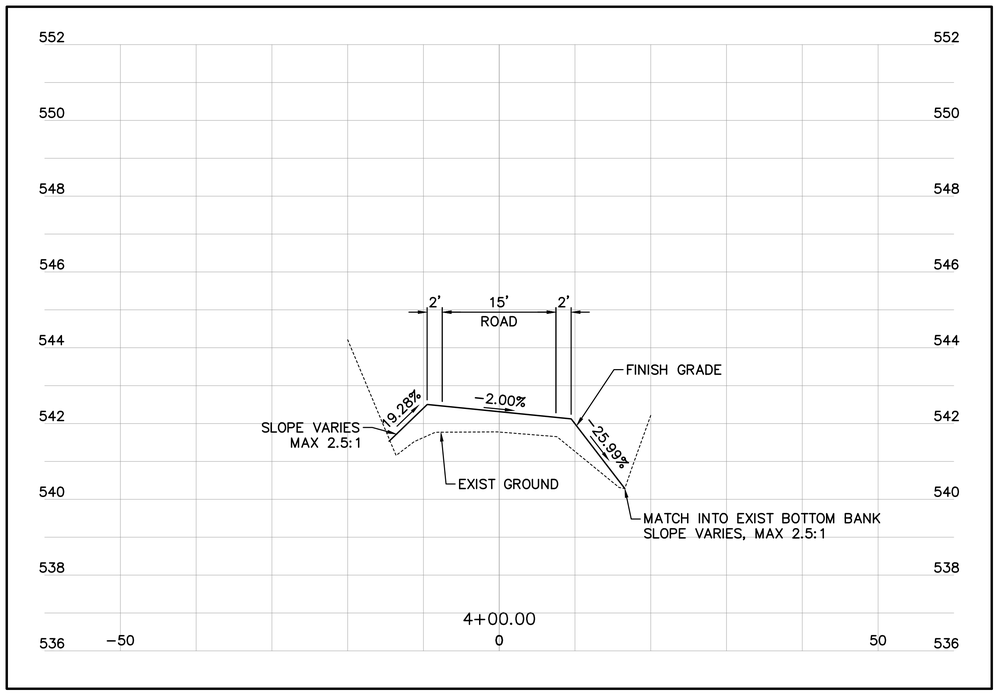
STA. 0+00

SCALE: 1" = 10' HORIZ.
SCALE: 1" = 2' VERT.



STA. 1+99.92

SCALE: 1" = 10' HORIZ.
SCALE: 1" = 2' VERT.



STA. 4+00

SCALE: 1" = 10' HORIZ.
SCALE: 1" = 2' VERT.

NOTES:

FOR AC PAVEMENT SECTIONS, SEE SHT C-06

10' 0 10' 20'
SCALE: 1" = 10'-0"

2' 0 2' 4'
SCALE: 1" = 2'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA
LICENSED PROFESSIONAL ENGINEER
No. 9148-C
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

ROADWAY SECTIONS 01 - QUEENSLAND

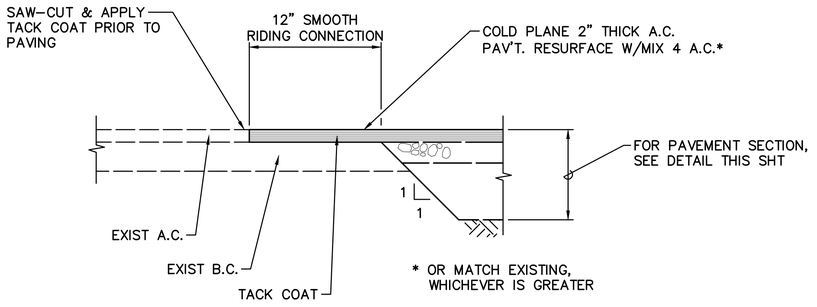
DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

APPROVED: _____ _____
CHIEF ENGINEER DATE

DRAWING NO. C-05

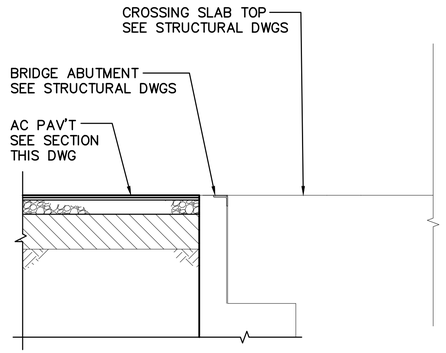
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 - ROADWAY SECTIONS 01.DWG
BEGIN: 7-Jan-22
PM: CLJ
CURRENT OPER: GMG 1/7/2022 2:26 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 12:52 PM



1 / C-06 **SMOOTH RIDING CONNECTION DETAIL**

NOT TO SCALE

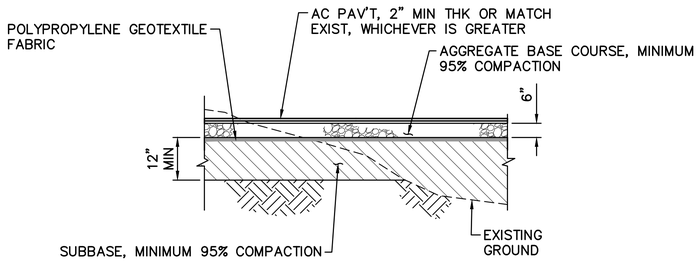


AT STA. 2+11.47

NOT TO SCALE

2 / C-06 **BRIDGE PAVEMENT TRANSITION DETAILS**

SCALE AS SHOWN



3 / C-06 **TYPICAL PAVEMENT SECTION**

NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

ROADWAY DETAILS 01 – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

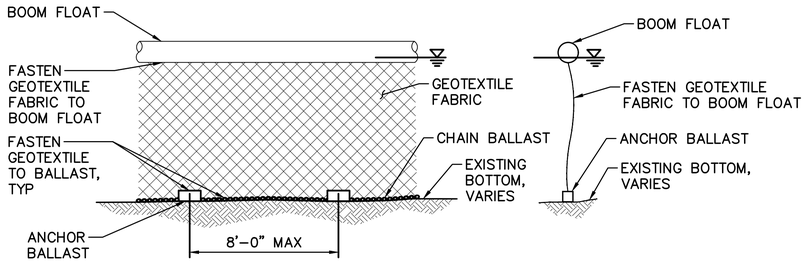
APPROVED: _____ CHIEF ENGINEER _____ DATE

DRAWING NO. C-06

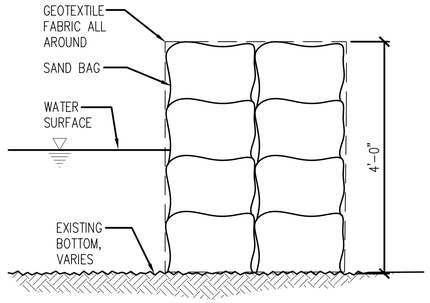
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 - ROADWAY DETAILS 01.DWG
BEGIN: 7-Jan-22

PM: CLJ
CURRENT OPER: GMG 1/7/2022 2:42 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 2:44 PM



ELEVATION SECTION



NOTES:
1. IMPLEMENTATION OF BEST MANAGEMENT PRACTICES (BMPs) INCLUDES CONSTRUCTION OF WORK SCAFFOLDING/PLATFORMS THAT WILL PROTECT STREAM BELOW FROM FALLING DEBRIS DURING CONSTRUCTION. COST OF MAINTENANCE OF BMPs AND OTHER ASSOCIATED WORK SHALL BE INCLUDED IN THE ENVIRONMENTAL POLLUTION CONTROL BID ITEM.
2. ANY REMOVAL OF ROCK OR MATERIAL TO FACILITATE THE PLACEMENT OF SANDBAGS SHALL BE COMPLETELY REMOVED FROM WAILUA RIVER.

LEGEND

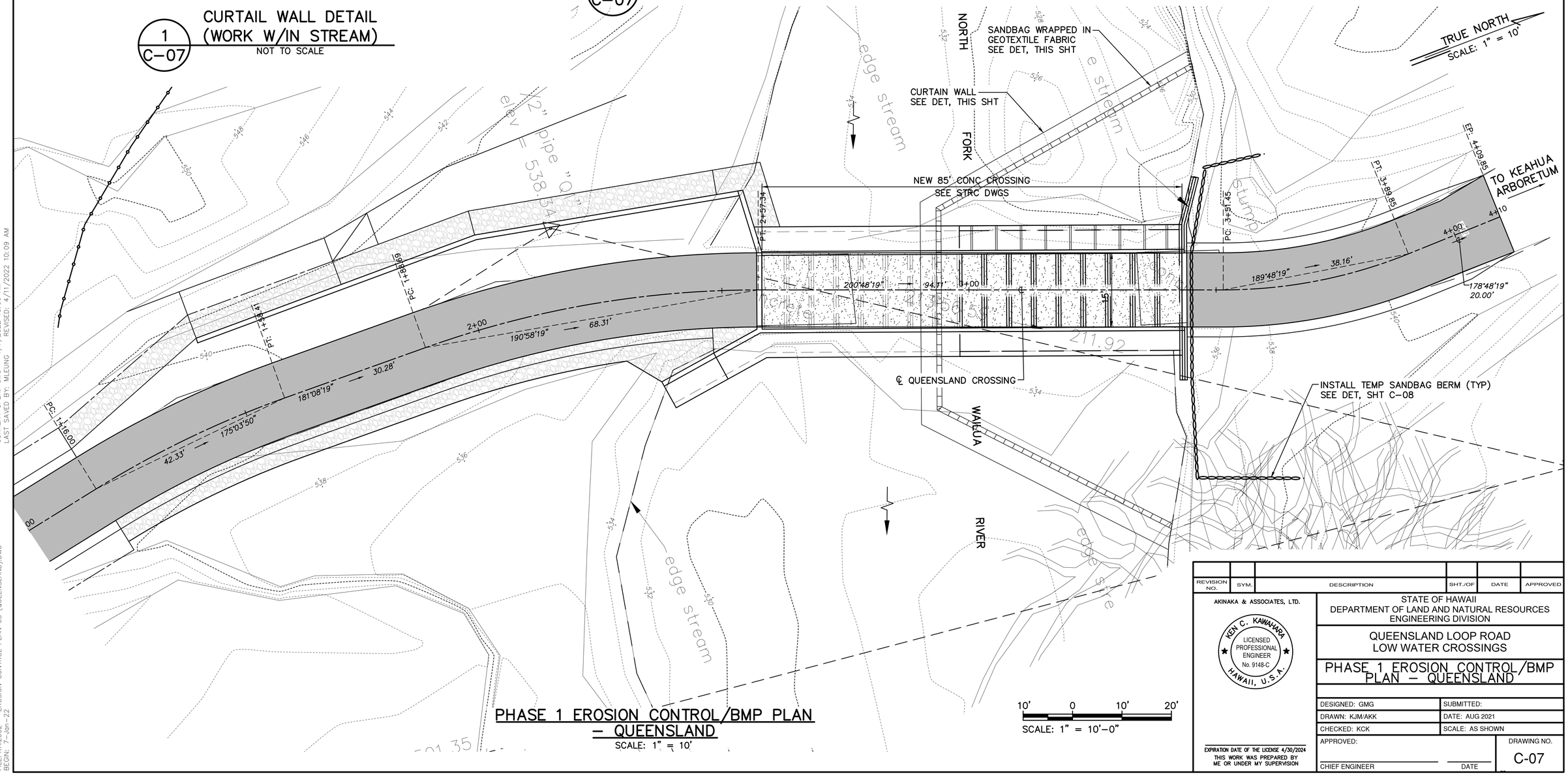
- NEW ROAD SECTION
- NEW CONC
- GROUTED RIPRAP
- EXIST. CONTOURS
- FINISH CONTOURS
- SLOPE BANKS
- SILT FENCE
- SANDBAG BERM

1 / C-07 CURTAIL WALL DETAIL (WORK W/IN STREAM)

NOT TO SCALE

2 / C-07 SANDBAG WRAPPING IN GEOTEXTILE FABRIC DETAIL (WORK W/IN STREAM)

NOT TO SCALE



PHASE 1 EROSION CONTROL/BMP PLAN — QUEENSLAND

SCALE: 1" = 10'

10' 0 10' 20'

SCALE: 1" = 10'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

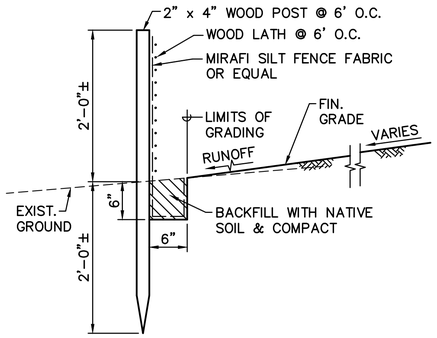
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

PHASE 1 EROSION CONTROL/BMP PLAN — QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-07
CHIEF ENGINEER / DATE	

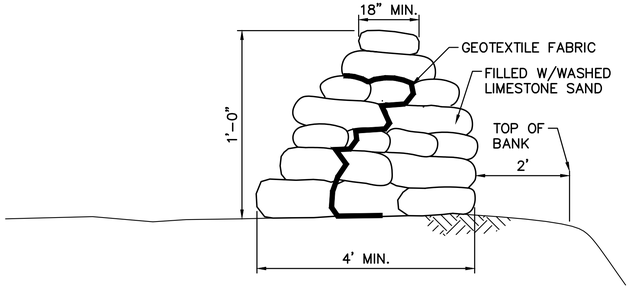
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – EROSION CONTROL PLAN 03 (QUEENSLAND).DWG
BEGIN: 7-Jan-22
PM: CLJ
CURRENT OPER: GMG 1/7/2022 10:06 AM
LAST SAVED BY: MLEUNG REVISED: 4/11/2022 10:09 AM



1 C-08 TYPICAL SILT FENCE INSTALLATION

NOT TO SCALE



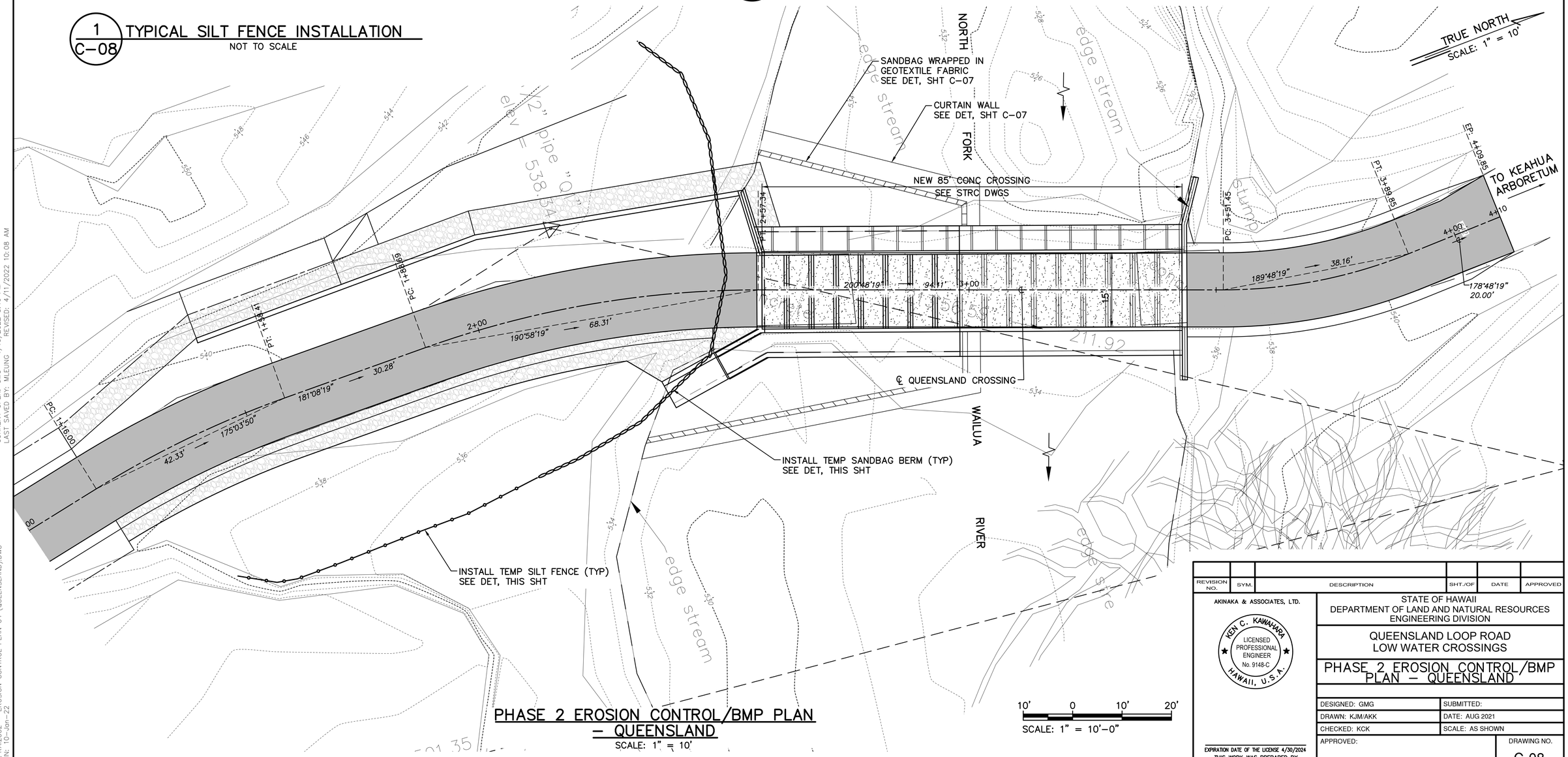
TYPICAL DIMENSIONS PER SANDBAG
WIDTH: 16" TO 18"
LENGTH: 24" TO 30"
THICKNESS: 6" TO 8"
WEIGHT: 90 TO 125 POUNDS

2 C-08 TEMPORARY SANDBAG BERM

NOT TO SCALE

LEGEND

- NEW ROAD SECTION
- NEW CONC
- GROUTED RIPRAP
- EXIST. CONTOURS
- FINISH CONTOURS
- SLOPE BANKS
- SILT FENCE
- SANDBAG BERM



PHASE 2 EROSION CONTROL/BMP PLAN – QUEENSLAND

SCALE: 1" = 10'

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

PHASE 2 EROSION CONTROL/BMP PLAN – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-08
CHIEF ENGINEER	DATE

JOB NO. D00AK67B SHEET NO. OF SHEETS

PM: CLJ
CURRENT OPER: GMG 1/10/2022 3:16 PM
LAST SAVED BY: MEUNG REVISED: 4/11/2022 10:08 AM

PATH: G:\KA\2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KA12002 – EROSION CONTROL PLAN 04 (QUEENSLAND).DWG
BEGIN: 10-Jan-22

GENERAL:

A. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION, 9TH EDITION, 2020 INCLUDING ITS SUBSEQUENT INTERIM SPECIFICATIONS, AND THE HAWAII STANDARD SPECIFICATIONS FOR BRIDGE AND ROAD CONSTRUCTION, 2005 AS MODIFIED BY THE STATE OF HAWAII DEPARTMENT OF TRANSPORTATION.

B. THE CONTRACTOR SHALL COMPARE THE CIVIL AND STRUCTURAL DRAWINGS WITH EACH OTHER AND REPORT IN WRITING TO THE ENGINEER, INCONSISTENCIES OR OMISSIONS.

C. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND VERIFY FIELD CONDITIONS AND SHALL COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS WITH THE DRAWINGS BEFORE COMMENCING THE WORK. REPORT IN WRITING TO THE ENGINEER ALL INCONSISTENCIES OR OMISSIONS.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP AND JOB SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED FOR STABILITY OF STRUCTURAL MEMBERS AND SYSTEMS.

E. DETAILS NOTED AS TYPICAL ON STRUCTURAL DRAWINGS SHALL APPLY IN ALL CONDITIONS UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE.

F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE ADJACENT PROPERTIES, STRUCTURES, STREETS, AND UTILITIES DURING THE CONSTRUCTION PERIOD. ANY DAMAGE OR DETERIORATED PROPERTY SHALL BE RESTORED TO THE SAME OR BETTER CONDITION AT NO COST TO THE STATE.

DESIGN CRITERIA:

A. DEAD LOAD
   WEIGHT OF ALL COMPONENTS OF THE STRUCTURES, APPURTENANCES ATTACHED THERETO, AND EARTH COVERS.
B. LIVE LOAD
   HL-93 TRUCK
C. STATIC LATERAL EARTH PRESSURE
   ACTIVE CONDITION, ABOVE GROUNDWATER ---------- = 35 PCF

FOUNDATION:

A. FOUNDATION DESIGN IS BASED UPON GEOTECHNICAL INVESTIGATIONS BY HART CROWSER AND DATED AUGUST 19, 2021.
B. CONTRACTOR SHALL PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEETING, AND SHORING NECESSARY FOR PERSONNEL SAFETY AND TO PRESERVE EXCAVATIONS AND EARTH BANKS, AND ADJACENT STRUCTURES AND PROPERTY FOR DAMAGE.
C. EXCAVATION BOUNDARIES AND GRADE ELEVATIONS FOR FOOTING SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACING THE CONCRETE AND REINFORCING.
D. BACKFILL BEHIND THE RETAINING STRUCTURES (ABOVE THE GROUNDWATER LEVEL) MAY CONSIST OF THE ON-SITE SOILS OR SELECT GRANULAR FILLS (TYPE A STRUCTURE BACKFILL). BACKFILL SHALL BE PLACED IN UNIFORM LIFTS OF NO MORE THAN 8 INCHES IN LOOSE THICKNESS AND UNIFORMLY COMPACTED TO AT LEAST 95 PERCENT RELATIVE COMPACTION. BECAUSE SHALLOW GROUNDWATER CONDITIONS ARE ANTICIPATED, BACKFILL MATERIALS BELOW THE GROUNDWATER LEVEL SHOULD CONSIST OF FREE-DRAINING GRANULAR MATERIALS, SUCH AS AASHTO M43, NO 67 GRADATION (ASTM C33, NO 67 GRADATION), WRAPPED ON ALL SIDES WITH NON-WOVEN FILTER FABRIC (MIRAFI 180N OR EQUIVALENT). THE FREE-DRAINING GRANULAR MATERIALS SHOULD BE USED UP TO A LEVEL OF ABOUT 12 INCHES ABOVE THE GROUNDWATER LEVEL TO FACILITATE COMPACTION OF THE BACKFILL MATERIALS.

CONCRETE:

A. CONCRETE SHALL BE NORMAL WEIGHT HARD ROCK CONCRETE AND SHALL HAVE 4000 PSI MINIMUM 28-DAY COMPRESSIVE STRENGTHS.
   ALL CONCRETE SHALL HAVE MAXIMUM W/C RATIO OF 0.45 EXCEPT FOR CLASS "A" WHICH SHALL BE AS SPECIFIED IN THE STANDARD SPECIFICATIONS.
B. TETRAGUARD AS20 SHRINKAGE REDUCING ADMIXTURE, ECLIPSE PLUS SHRINKAGE REDUCING ADMIXTURE, OR AN APPROVED EQUAL, SHALL BE INCLUDED IN THE CONCRETE MIX FOR THE CONCRETE TOPPING AND BRIDGE RAILING. THE REQUIRED DOSAGE SHALL BE 128 OUNCES PER CUBIC YARD OF CONCRETE OR AS RECOMMENDED BY THE MANUFACTURER. ADDITION OF SHRINKAGE REDUCING ADMIXTURE SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
C. A CORROSION INHIBITING ADMIXTURE SHALL BE INCLUDED IN THE CONCRETE MIX FOR ALL CONCRETE. THE CORROSION INHIBITING ADMIXTURE SHALL CONTAIN A MINIMUM OF 30% CALCIUM NITRATE BY MASS AND SHALL BE ADDED AT A DOSAGE RATE OF 4.0 GALLONS PER CUBIC YARD OF CONCRETE OR AS RECOMMENDED BY THE MANUFACTURER. THE ADMIXTURE SHALL BE RHEOCRETE CNI CALCIUM NITRATE-BASED CORROSION INHIBITOR, DCI S CORROSION INHIBITOR OR AN APPROVED EQUAL. ADDITION OF CORROSION INHIBITING ADMIXTURE SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
D. ALL INSERTS, ANCHOR BOLTS, PLATES, ETC. EMBEDDED IN CONCRETE SHALL BE HOT-DIP GALVANIZED UNLESS OTHERWISE NOTED.
E. CONSTRUCTION JOINTS MAY BE RELOCATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. CONSTRUCTION JOINTS SHALL BE MADE AND RELOCATED AS NOT TO IMPAIR THE STRENGTH OF THE STRUCTURE AND TO MINIMIZE SHRINKAGE STRESSES. ALL CONSTRUCTION JOINTS SHALL BE CLEANED, LAITANCE REMOVED AND WETTED. SEE TYPICAL DETAILS FOR SPECIFIC REQUIREMENTS.
F. UNLESS OTHERWISE NOTED, CHAMFER ALL CONCRETE EDGES 3/4".
G. CONCRETE DELIVERY TICKETS SHALL RECORD ALL FREE WATER IN THE MIX: AT BATCHING BY PLANT, FOR CONSISTENCY BY DRIVER, AND ANY ADDITIONAL REQUEST BY CONTRACTOR IF PERMITTED BY THE MIX DESIGN.
H. REINFORCING BARS, ANCHOR BOLTS, INSERTS AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.

REINFORCING STEEL:

A. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60 UNLESS OTHERWISE NOTED.
B. CLEAR CONCRETE COVERAGE FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
   a. FOOTING CAST AGAINST EARTH ---------- 3"
   b. FOOTING FORMED AND EXPOSED TO EARTH ---------- 2"
   c. WALL FACES EXPOSED TO EARTH OR WEATHER ---------- 2"

C. STAINLESS STEEL REINFORCING BARS SHALL BE TYPE 316 GRADE CONFORMING TO ASTM A955 GRADE 60.

D. SPLICES:
   a. REINFORCING STEEL SHALL BE SPLICED ONLY WHERE INDICATED ON PLANS.

FIBERGLASS REINFORCED STRUCTURAL MEMBERS:

A. FIBERGLASS-REINFORCED PLASTIC STRUCTURAL SHAPES SHALL BE MANUFACTURED BY THE PULTRUDED METHOD FROM A NON-FLAME RETARDANT ISOPHTHALIC POLYESTER RESIN SYSTEM. THE MEMBERS SHALL HAVE A MINIMUM TENSILE AND COMPRESSIVE STRESS IN THE LENGTHWISE DIRECTION OF 30 KSI (ASTM D638), A MINIMUM FLEXURAL STRESS LENGTHWISE OF 30 KSI (ASTM D790) AND A MODULUS OF ELASTICITY OF 2,800 KSI.

B. ALL BOLTED CONNECTIONS FOR FRP MEMBERS SHALL BE WITH STAINLESS STEEL BOLTS IN CONFORMANCE WITH ASTM F593.

C. ALL BOLTS SHALL BE 316 STAINLESS STEEL.

D. INSTALL BEAMS WITH ANY CROWN IN MEMBER ORIENTED UPWARD.

E. STAINLESS STEEL WEDGE ANCHORS SHALL HAVE A CURRENT ICC ES REPORT. ANCHORS SHALL BE INSTALLED PER PRODUCTS ICC ES REPORT.

F. MEMBERS SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW THEM TO BE REMOVED IN THE FUTURE BY REMOVING BOLTS, AND NO EXTRAORDINARY EFFORT.

STRUCTURAL STEEL:

A. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL OF STEEL CONSTRUCTION, FIFTEENTH EDITION.

B. ALL STRUCTURAL STEEL SHALL BE 316 STAINLESS AND CONFORM TO ASTM F593.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

STRUCTURAL NOTES

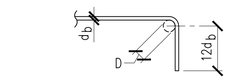
DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ _____
CHIEF ENGINEER DATE

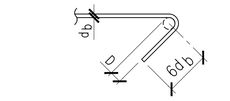
DRAWING NO. S-1

JOB NO. D00AK67B SHEET NO. 10 OF 17 SHEETS

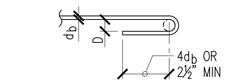
MINIMUM SPLICE AND EMBEDMENT LENGTHS					
CONCRETE STRENGTH = 4,000 PSI					
BAR SIZE	LAP SPLICE		DEVELOPMENT		
	TOP BARS	OTHER BARS	STRAIGHT		WITH STANDARD HOOK
			OTHER BARS	TOP BARS	
#3	29"	21"	12"	17"	10"
#4	29"	21"	12"	17"	10"
#5	36"	26"	15"	21"	12"
#6	43"	31"	18"	26"	16"
#7	54"	39"	23"	32"	18"
#8	71"	51"	30"	42"	20"
#9	90"	64"	38"	53"	22"
#10	114"	81"	48"	67"	26"
#11	140"	100"	59"	82"	28"



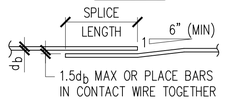
90° BEND



135° BEND



180° BEND

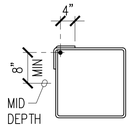


BAR LAP

D = $6d_b$ FOR #8 AND SMALLER
D = $8d_b$ FOR #9 TO #11

1 S-2 TYPICAL REBAR SPLICE AND DEVELOPMENT LENGTH SCHEDULE

NOT TO SCALE

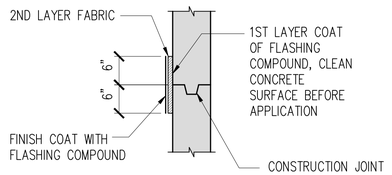


AT BEAMS

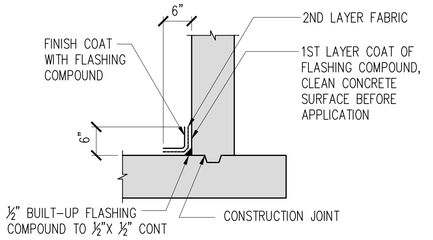
NOTE:
1. THESE DETAILS SHALL APPLY TO #3, #4, AND #5 BARS – GRADE 40 AND GRADE 60.
2. ALL BARS SHALL BE BENT COLD.

2 S-2 TYPICAL TIE AND STIRRUPS DETAIL

NOT TO SCALE



WALL JOINT

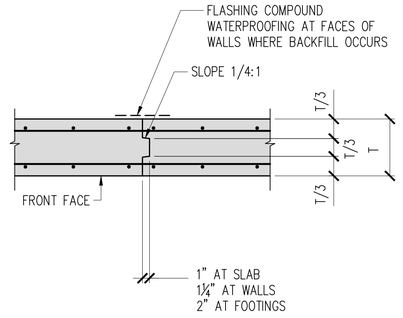


WALL FOOTING JOINT

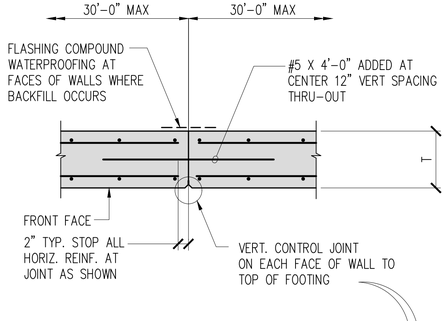
NOTE: TYPICAL EACH FACE UNLESS NOTED OTHERWISE

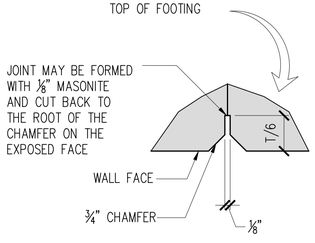
3 S-2 TYPICAL WATERPROOFING DETAIL

NOT TO SCALE

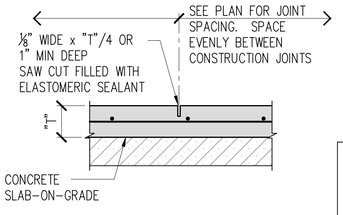


RETAINING WALL CONSTRUCTION JOINT





RETAINING WALL CONTROL JOINT

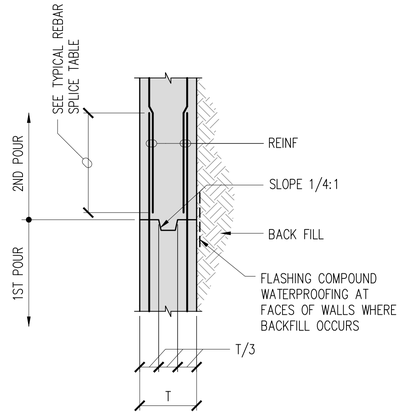


SLAB CONSTRUCTION JOINT

NOTES:
1. SAW CUTTING SHALL OCCUR AS SOON AS CONCRETE SURFACE IS FIRM ENOUGH TO NOT BE TORN BY CUTTING BLADE AND BEFORE SHRINKAGE CRACKING OCCURS, BUT NO LATER THAN 12 HOURS AFTER CONCRETE HAS BEEN POURED.
2. UNLESS NOTED OTHERWISE SUBMIT JOINTING PLANS FOR REVIEW.

4 S-2 TYPICAL JOINT DETAILS

NOT TO SCALE



5 S-2 TYPICAL REBAR LAP DETAILS AT JOINT

NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

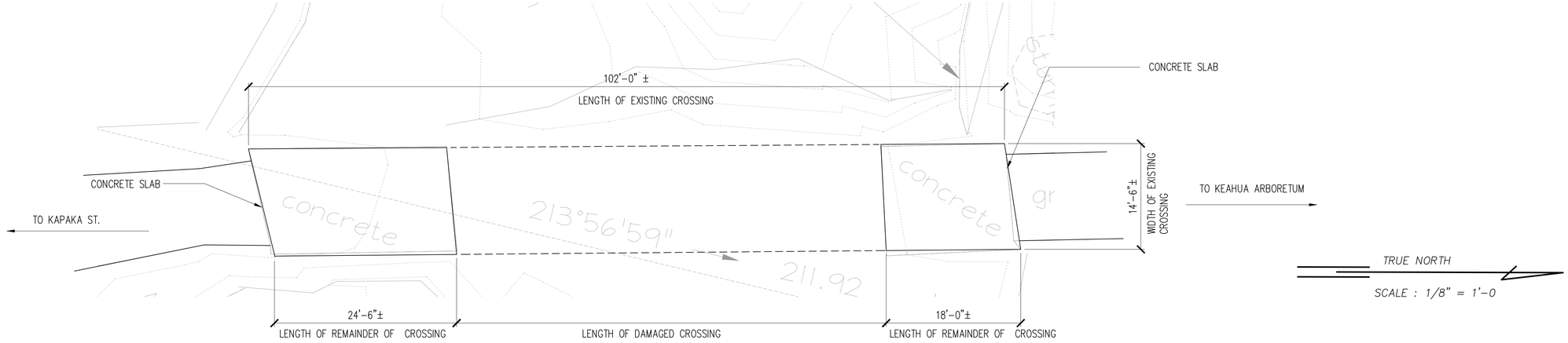
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

TYPICAL DETAILS

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-2

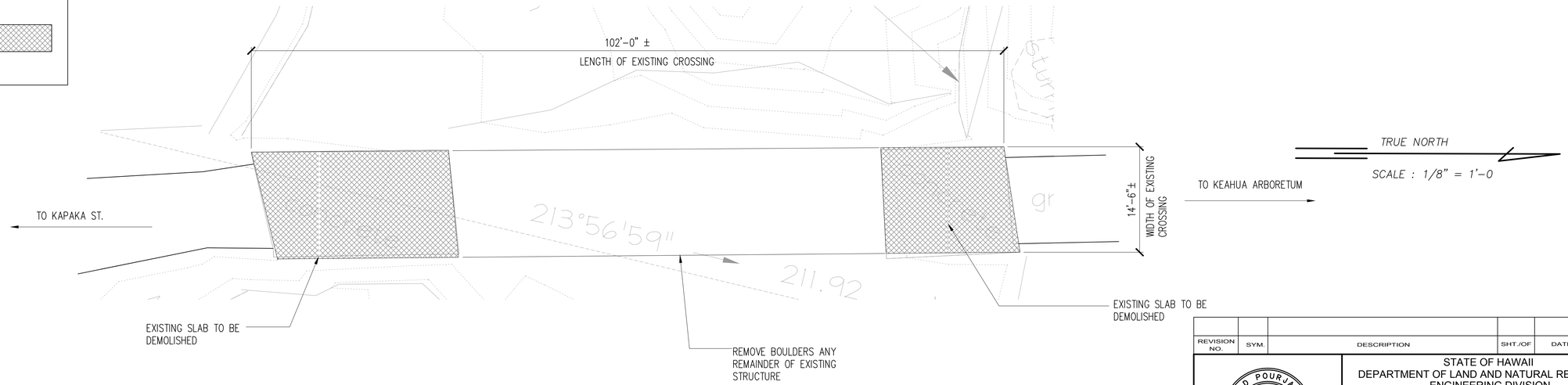


1 / S-3 EXISTING QUEENSLAND CROSSING- PLAN VIEW

SCALE: 1/8" = 1'-0"

LEGEND:

DENOTES DEMOLITION AREA



NOTE:

SEE CIVIL DRAWINGS FOR APPROACH ROADWAYS DEMOLITION PLAN

2 / S-3 EXISTING QUEENSLAND CROSSING DEMO- PLAN VIEW

SCALE: 1/8" = 1'-0"

0' 4' 8' 16' 24'

1/8" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING DEMO PLAN

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

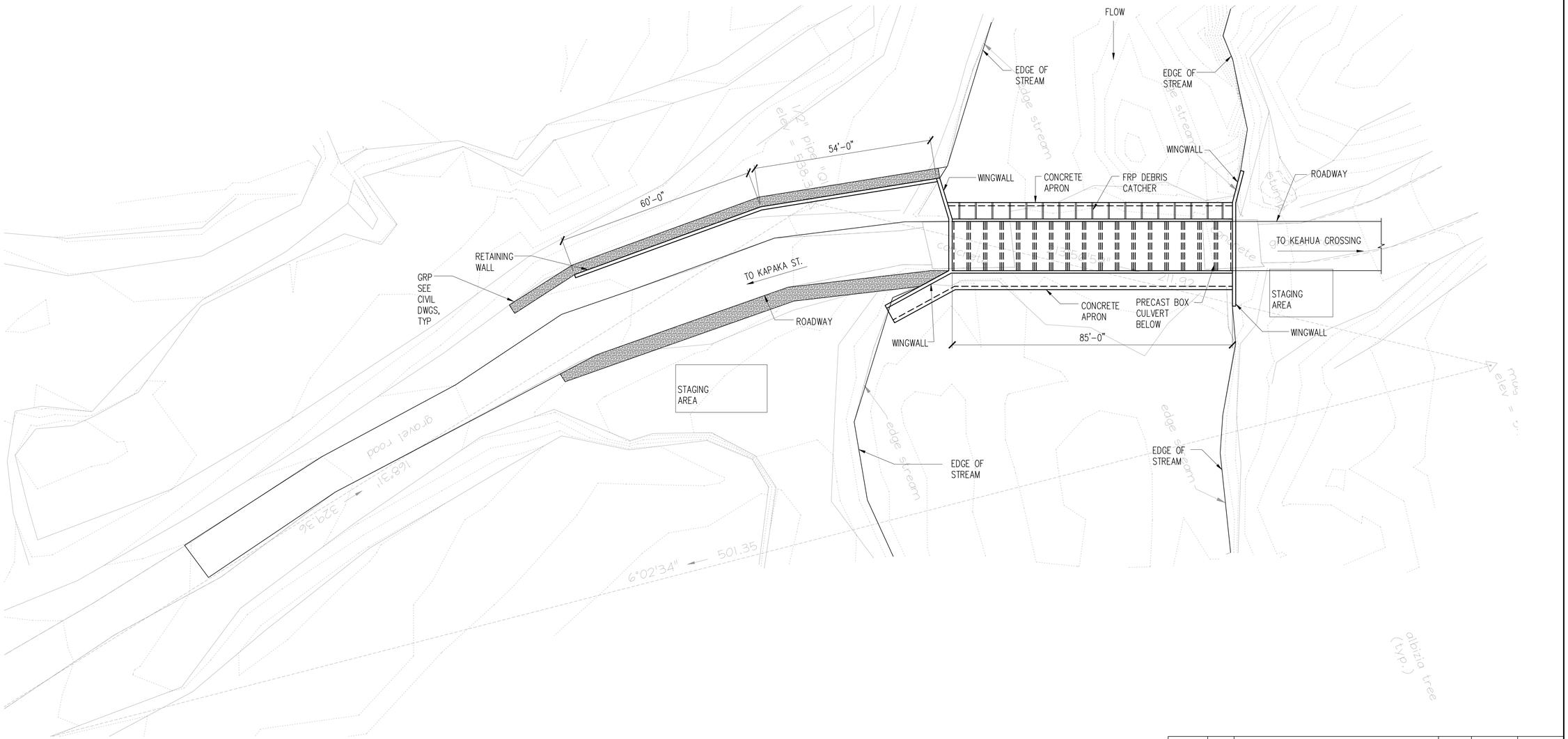
APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-3

JOB NO. D00AK67B SHEET NO. 12 OF 17 SHEETS

TRUE NORTH

SCALE : 1/16" = 1'-0



1 / S-4 QUEENSLAND CROSSING IMPROVEMENT PLAN VIEW

SCALE: 1/16" = 1'-0"

0' 8' 16' 32' 48'

1/16" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

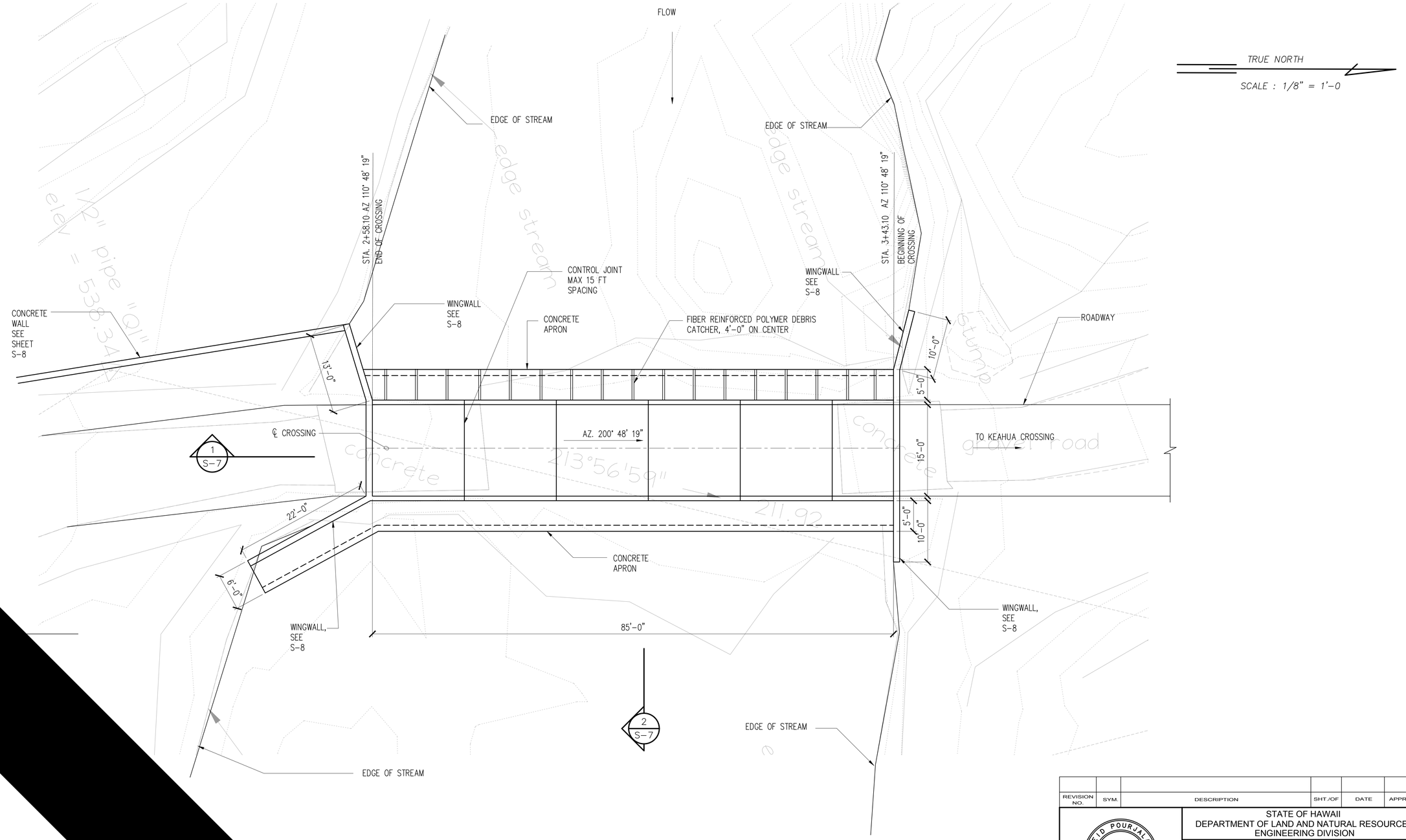
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING
IMPROVEMENT PLAN VIEW

DESIGNED: CS	SUBMITTED: XX
DRAWN: CAD	DATE: XX
CHECKED: SP	SCALE: XX

APPROVED: _____ _____
CHIEF ENGINEER DATE

DRAWING NO. S-4



1 S-5 QUEENSLAND CROSSING PLAN VIEW
SCALE: 1/8" = 1'-0"

0' 4' 8' 16' 24'
1/8" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

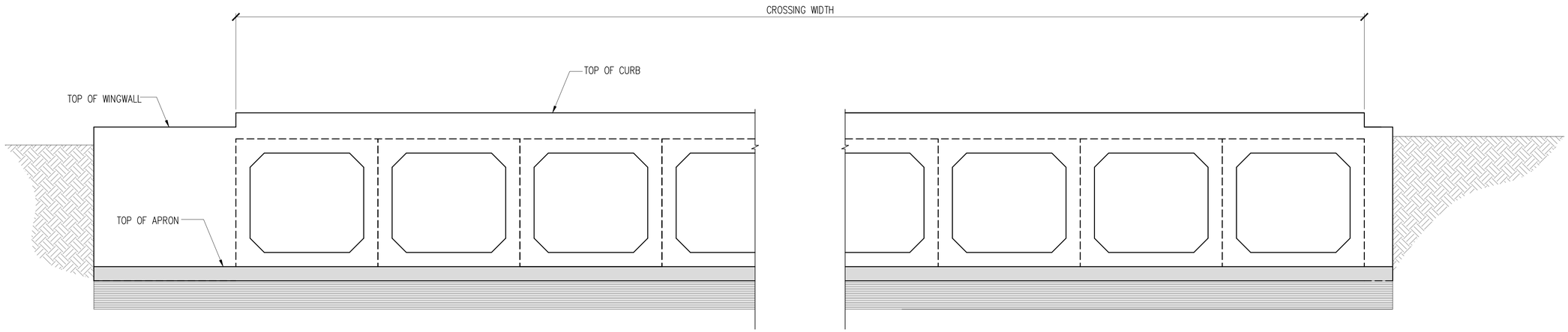
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING PLAN

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

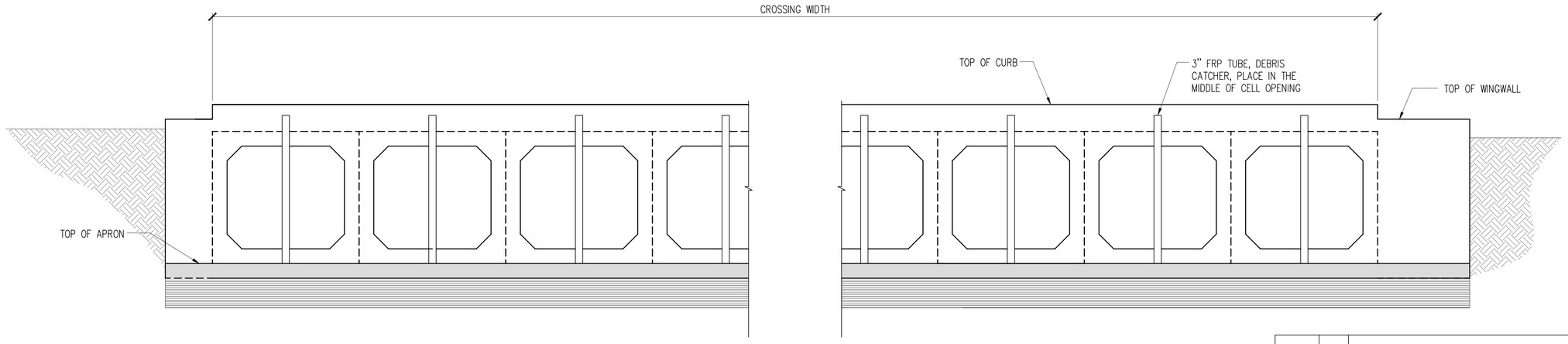
APPROVED: _____ _____
CHIEF ENGINEER DATE

DRAWING NO. S-5



1 S-6 CROSSING DOWNSTREAM ELEVATION

SCALE: 1/2" = 1'-0"



2 S-6 CROSSING UPSTREAM ELEVATION

SCALE: 1/2" = 1'-0"

0' 1' 2' 3' 4' 5' 6'

1/2" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

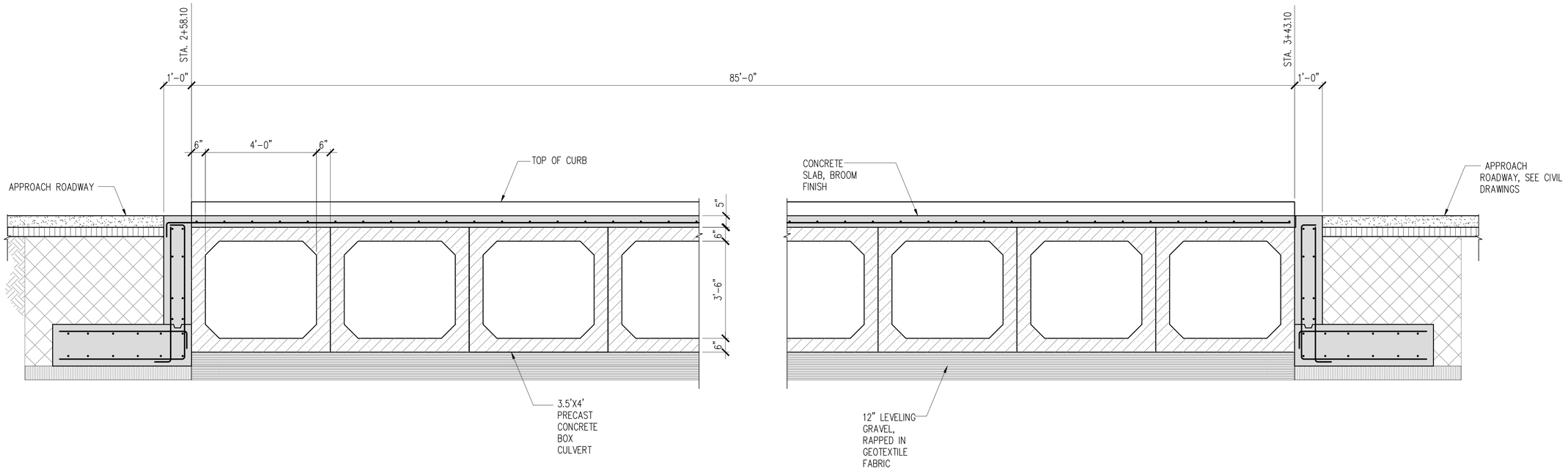
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING ELEV.

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

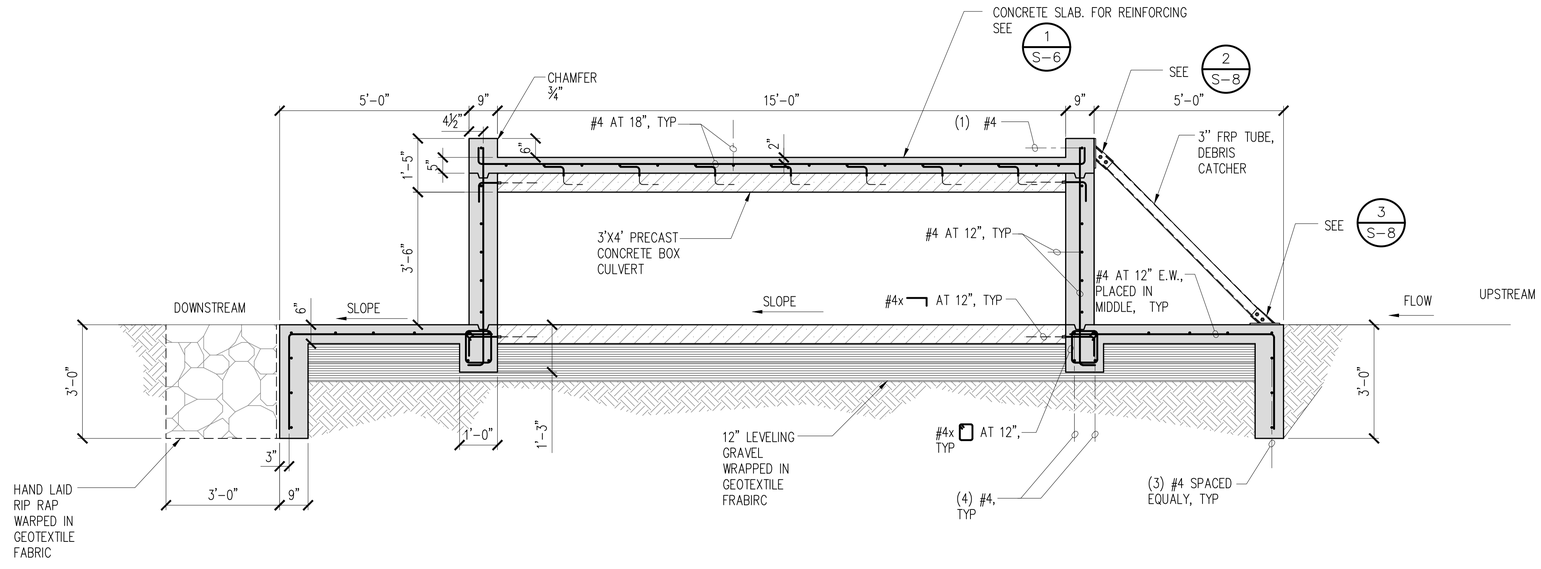
APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-6



1 / S-7 CROSSING LONG. SECTION

SCALE: 1/2" = 1'-0"



2 / S-7 CROSSING TRAN. SECTION

SCALE: 1/2" = 1'-0"

0' 1' 2' 3' 4' 5' 6'

1/2" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

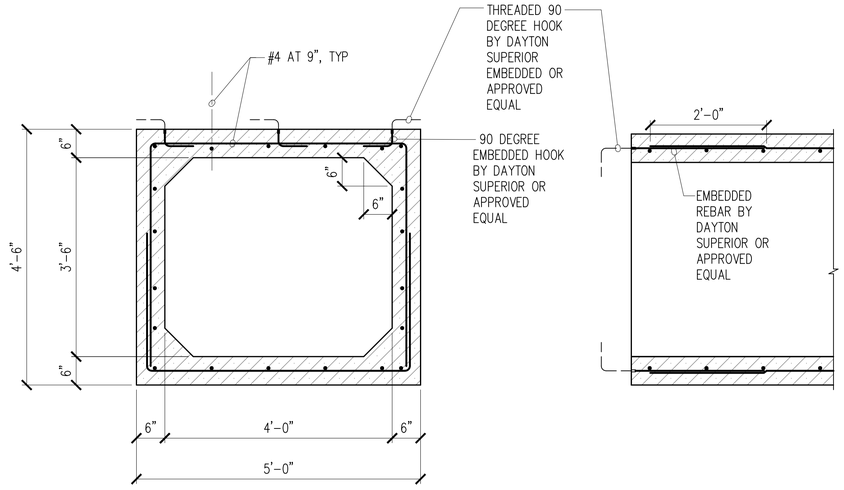
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING SECTIONS

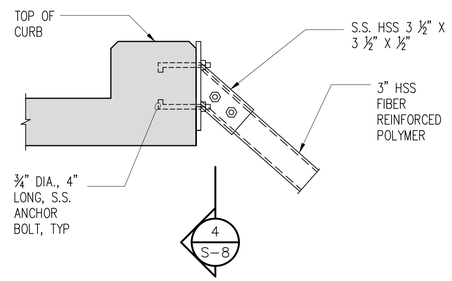
DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ DATE _____
CHIEF ENGINEER

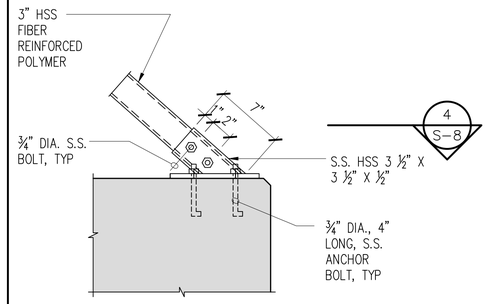
DRAWING NO. S-7



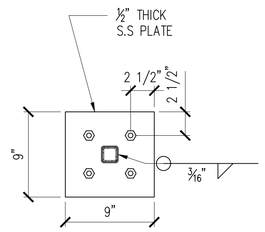
1 S-8 **PRECAST CULVERT SECTIONS**
SCALE: 3/4" = 1'-0"



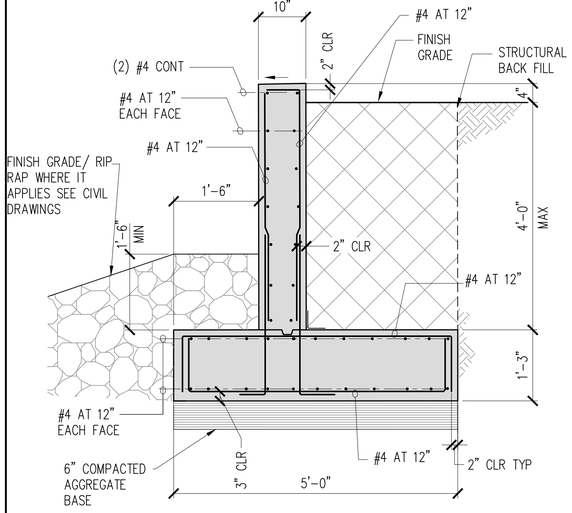
2 S-8 **DEBRIS CATCHER CONNECTION**
SCALE: 1 /2" = 1'-0"



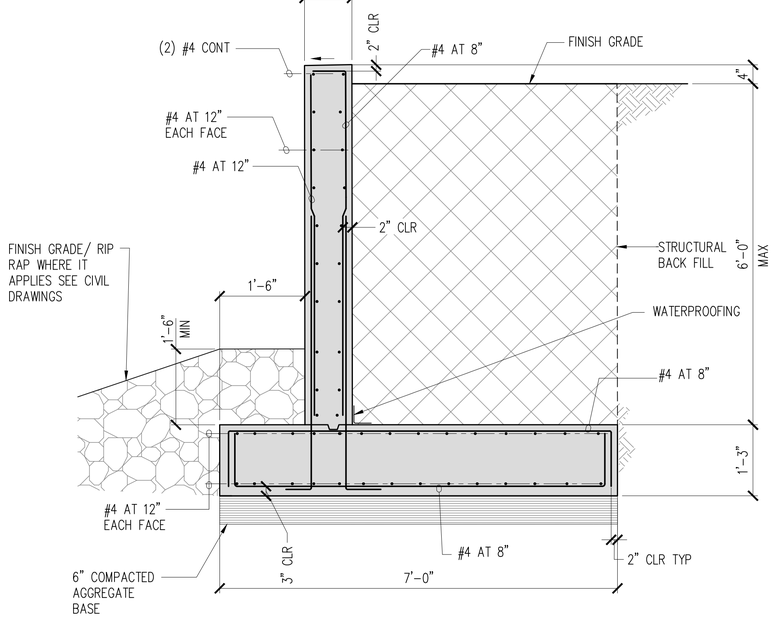
3 S-8 **DEBRIS CATCHER CONNECTION**
SCALE: 1 1/2" = 1'-0"



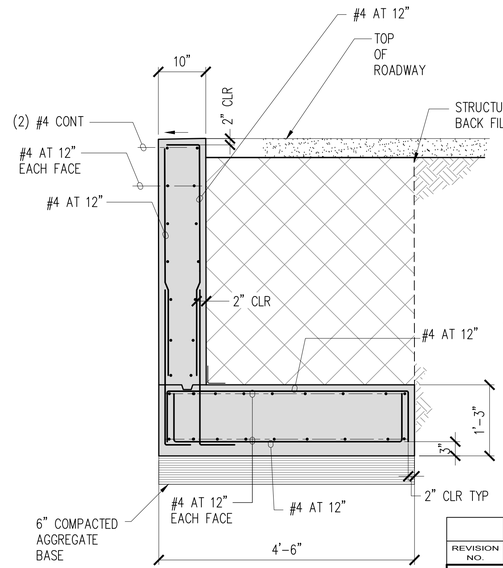
4 S-8 **SECTION**
SCALE: 1 1/2" = 1'-0"



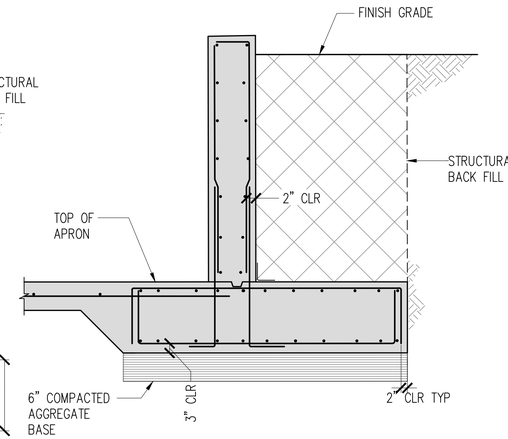
WALL LESS THAN 4'-0" HIGH



WALL LESS BETWEEN 4'-0" AND 6'-0" HIGH



WALL AT CULVERT



WALL CONNECTION AT APRON

5 S-8 **RETAINING WALL SECTIONS**
SCALE: 3/4" = 1'-0"

0' 1' 2' 3' 4'
3/4" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

WING WALL & CULVERT SECTIONS

DESIGNED: CS	SUBMITTED: XX
DRAWN: CAD	DATE: XX
CHECKED: SP	SCALE: XX

APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-8

JOB NO. D00AK67B SHEET NO. 17 OF 17 SHEETS

FINAL

Jurisdictional Report

Līhuʻe-Koloa Forest Reserve Queensland Low-Water Crossing

County of **Kauaʻi**, **Hawaiʻi**

Prepared for
KAI Hawaii, Inc.

October 10, 2022
0203309-000

FINAL Jurisdictional Report

Līhu‘e-Koloa Forest Reserve
Queensland Low-Water Crossing
County of Kaua‘i, Hawai‘i

Prepared for
KAI Hawaii, Inc.

October 10, 2022

Prepared by
Haley & Aldrich, Inc.

Lisa Bledsoe
Wetland Specialist

John Ford
Senior Natural Resources Scientist

500 Ala Moana Blvd., Suite 6-250
Honolulu, Hawaii 96813
Tel 808.587.7747

Contents

Jurisdictional Wetland Delineation Report

Līhu‘e-Koloa Forest Reserve
Queensland Low-Water Crossing
County of **Kaua‘i**, **Hawai‘i**

1.0 INTRODUCTION

Haley & Aldrich, Inc. was contracted by KAI Hawaii, Inc. to assist with environmental permitting related to proposed repairs at the Queensland Low-Water Crossing in Līhu‘e-Kōloa Forest Reserve, Wailua, Island of Kaua‘i (Appendix A, Figure 1). In addition to reviewing available hydrology, soils, and wetland data of the area, a field visit was conducted on June 29, 2021, and December 16, 2021 by the senior author to determine the ordinary high-water mark (OHWM) and presence of riparian wetlands at the Queensland Low-Water Crossing on the North Fork Wailua River.

1.1 Project Area and Description

The Līhu‘e-Kōloa Forest Reserve (Reserve) lies within the 52.6 square mile Wailua River watershed on the east central portion of the island. The Reserve is managed by the Department of Land and Natural Resources (DLNR) for multiple uses, including watershed protection, recreation (hiking, horseback riding, hunting, fishing, four-wheel driving, and commercial ecotourism), maintenance of the Keāhua Arboretum, and potential timber and/or biomass production. Access to the Wailua section of the Reserve is via the Wailua Forest Management Road. The road fords the North Fork Wailua River at Queensland Crossing located about 1/3 mile west of the confluence with Uhaui‘ole Stream at 22.065656, -159.4208.

During historic April 2018 and March 2020 flood events, low-water crossings and other locations along the Wailua Forest Management Road were severely damaged, limiting public access to the Reserve. Approximately 80% of the 50-year-old concrete Queensland Crossing (115 to 120 feet in length) on the Wailua River North Fork was washed away. Flood waters also damaged the roadbed south of the Crossing. The purpose of the proposed project is to repair the Queensland Low-Water Crossing and restore access to this area of the Reserve.

The proposed design involves replacing the damaged low-water crossing with a new low-water crossing consisting of reinforced concrete boxes (RCB) spanning the stream and structurally tied together through a reinforced concrete slab poured on top of the RCBs. The RCBs will be anchored into a competent substrate to mitigate washout/sliding of the low-water crossing when high-velocity flows and/or large debris movement occurs. It is not anticipated that construction excavation will exceed 4 feet in depth from the current ground surface. The crossing will include five-foot-wide concrete aprons and a debris catcher on the upstream apron. The crossing will also include wingwalls along both banks upstream and downstream to prevent future scour along the crossing and roadway. A new retaining wall will be built immediately south of the Crossing, extending 108 feet south along the access road’s

west side. The purpose of the retaining wall is to prevent damage to the road during future flood events. The project also includes improvements to the access road on both the north and south sides of the stream, and placement of grouted riprap along the roadsides and around the west side of the retaining wall. A small section of the grouted riprap along the south side road extends into the stream on the downstream side to protect the low water crossing wingwall, amounting to approximately 70 square feet, or 12 linear feet along the bank.

The project Area of Potential Effect (APE) includes the reconstructed river crossing, a proposed contractor staging and storage area immediately north of the river, the new retaining wall south of the river, a proposed staging and storage area south of the river in support of the revetment construction, and the additional grading area south of the retaining wall. The APE was set to include the area 10 feet around the identified project footprint and 50 feet upstream and downstream of the proposed crossing (to allow space for contractor activities and installation of best management practices). The civil design layouts are provided in Appendix A, Figures 2a and b, and the APE is shown in Appendix A, Figure 3.

1.2 Project Jurisdiction

As defined by the U.S. Army Corps of Engineers and the Environmental Protection Agency (33 CFR 328.3 and 40 CFR 120.2, respectively), Waters of the United States (WotUS) include jurisdictional lakes, rivers, streams, ponds, and adjacent wetlands (USACE and EPA 2020) which are regulated under Sections 401 and 404 of the Clean Water Act. The USACE regulates navigable waters under Section 10 of the Rivers and Harbor Act (USACE 2011), which requires a permit from the USACE to construct any structure in or over any navigable water of the United States, as well as any proposed action that would alter or disturb (such as excavation/dredging or deposition of materials) these waters. If the proposed structure or activity affects the course, location, condition, or capacity of the navigable water, even if the proposed activity is outside the boundaries of the water body, a permit from the USACE is required. Wetlands are defined as lands “that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (EPA 2019).

Our assessment indicates that activities associated with replacement of the low-water crossing occur within WotUS jurisdictional waters of a perennial waterway, the North Fork Wailua River. Our field studies found no adjacent wetlands above the Ordinary High-Water Mark (OHWM) within the APE.

1.3 Existing Conditions

A Haley & Aldrich wetland specialist conducted a web-based information review to understand existing conditions related to wetlands, soils, and hydrology.

1.3.1 Vegetation

The vegetation at the Queensland Crossing is dominated by an established alien forest composed of invasive and introduced tree species as well as shrubs, grasses, and vining plants in the understory along the stream banks.

1.3.2 Soils

Soils, specifically hydric soils, are one indicator of the presence of a wetland. The Natural Resource Conservation Service's (NRCS) Web Soil Survey was viewed to assess soil types at the Queensland Low-Water Crossing APE (Appendix A, Figure 4). The entire APE is underlain with alluvial Kolokolo Clay Loam (Kw), which does not have a hydric soil rating (NRCS 2021).

1.3.3 Hydrology

The Wailua Forest Management Road crossed over the North Fork Wailua River at the Queensland Crossing (Appendix A, Figure 5). The river at this location may be considered a continuous perennial stream as defined by Polhemus, et al. (1979). The United States Geological Survey (USGS) maintained a stream gage (16063000) some 5.7 miles upstream of the crossing near an altitude of 650 ft. between 1915 and 1985. Over the 70-year period of record for this gage, annual peak discharge ranged between 1,700 cubic feet per second (cfs) to 13,200 cfs. Annual daily mean discharge over this same period varied between 18.4 cfs and 158.4 cfs.

Numerous biological surveys of the Wailua River are summarized in Parham, et al. (2009). At the Queensland Crossing, the endemic amphidromous shrimp *Atyoida bisulcata* (opae kala'ole) may occasionally be found. However, large populations of predatory non-native introduced species in the lower reaches of the river such as small-mouth bass and large-mouth bass (*Micropterus dolomieu* and *M. salmoides*) and other predatory species prevent typical native species from inhabiting the upper reaches of streams here. Native damselflies may also be found here.

1.3.4 National Wetlands Inventory

The National Wetlands Inventory (NWI) Wetlands Mapper (USFWS 2021) identifies the stream at the Queensland Crossing as a Riverine Upper Perennial Rock Bottom Permanently Flooded (R3RBH) waterway. No other wetlands were identified within or adjacent to the APE.

2.0 METHODS

In addition to reviewing available hydrologic, wetland, and soil data of the APE, a Haley & Aldrich scientist evaluated the project APE for physical indicators, including break in slope, shelving, vegetation line, and water stains to determine the OHWM and identify adjacent wetlands. A preliminary plan provided by KAI Hawai'i indicating proposed location for laydown area and river crossing access was used to determine area of assessment. The OHWM was surveyed on June 15, 2021, with a minimum 50 feet upstream and downstream of the low-water crossing. The upstream left bank side was not safely accessible and was therefore estimated in ArcGIS using aerial imagery and photos taken on site.

The initial wetland investigation was conducted on June 29, 2021. The proposed retaining wall installation south of the crossing was added to design in December 2021, and an additional wetland investigation was conducted on December 16, 2021, to include the extended area south of the crossing.

2.1 Jurisdictional Limits

The federal regulatory jurisdiction in 33 CFR 329.11 (a)(1) which states, "The ordinary high water mark' on non-tidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas." (USACE 2011).

The OHWM was surveyed approximately 50 feet upstream and downstream of the proposed Queensland Crossing repair and replacement location and is depicted in Figure 6. The OHWM was delineated using a Trimble GPS model 3000 unit with sub-meter accuracy.

2.2 Wetland and OHWM Delineation

Wetland delineation was performed in accordance with the 1987 U.S. Army Corps of Engineers' Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the USACE's Wetlands Delineation Manual: Hawai'i and Pacific Islands Region (Version 2.0) (USACE 2012). These manuals prescribe a three-parameter approach for identifying and delineating wetlands: the presence of field indicators for hydrophytic vegetation, hydric soils, and hydrology.

To identify potential wetlands, a wetland specialist evaluated habitat conditions by walking the entire area. Please refer to photo documentation of the site in Appendix B. Hydrophytic vegetation is characterized by the ability to grow, effectively compete, reproduce, and persist in anaerobic soil conditions resulting from periodic or long-term saturation (Environmental Laboratory 1987). Plant species were identified using local guides referenced in the Biological Survey Report provided in Appendix C. The indicator status of each plant species is based on the North American Digital Flora: National Wetland Plant List, version 2.4.0 (USACE 2020) for the regional supplement. Table 1 below summarizes the plant indicator status categories.

The two most dominant tree species in the vicinity of the stream crossing area and the proposed laydown are Moluccan albizia (*Falcataria moluccana*) (FACU) and hau (*Hibiscus tiliaceus*). *H. tiliaceus* in Hawaii is listed as FAC by Puttock and Imada (2004) and Erickson and Puttock (2006). However, the species name does not appear in the current U.S. Army Corps of Engineers wetland plant list (USACE 2020) but is listed instead under the synonym *Talipariti tiliaceum* and is considered FACW. Most trees within the APE are thickly festooned with liana species dominated by golden pothos (*Epipremnum pinnatum*) (FAC) and hoi (*Dioscorea bulbifera*) (UPL). Uncommonly observed tree species included African tulip (*Spathodea campanulata*) (FACU) and satin leaf (*Chrysophyllum oliviforme*) (UPL). Common understory species in the area include Guinea grass (*Megathyrsus maximus*) (FAC), *owi* (*Stachytarpheta australis*) (FAC), *ti* (*Cordyline fruticosa*) (FAC), *'ape* (*Xanthosoma robustum*) (FAC), *laua'e* (*Phymatosorus grossus*), Chinese violet (*Asystacia gangetica*) (FACU) wedelia (*Sphagneticola trilobata*) (FAC), Job's tears (*Coix lachryma-jobi*) (FACW), Hilo paspalum (*Paspalum conjugatum*) (FAC), and fireweed (*Erechtites hieracifolia*) (UPL).

Table 1 – Plant Indicator Status Categories

Indicator Status	Indicator Symbol	Definition
Obligate wetland	OBL	Plants that occur almost always (estimated probability >99%) in wetlands under natural conditions but also occur rarely (estimated probability <1%) in upland areas.
Facultative wetland	FACW	Plants that usually occur (estimated probability >67%) in wetlands under natural conditions but also occur (estimated probability 1% to 33%) in upland areas.
Facultative	FAC	Plants with a similar likelihood (estimated probability 33 to 67%) of occurring in both wetlands and upland areas.
Facultative upland	FACU	Plants that sometimes occur (estimated probability 1 to 33%) in wetlands but occur more often (estimated probability >67 to 99%) in upland areas.
Upland	UPL	Plants that rarely occur (estimated probability <1%) in wetlands under natural conditions.
$WET \longleftarrow \longrightarrow DRY$ $OBL - FACW - FAC - FACU - UPL$		

Source: Environmental Laboratory (1987).

Of the 45 plants species identified, most species are listed as FAC (20 species) and FACU (15 species), indicating both hydrophytic and upland vegetation are present. In total, four facultative wetland (FACW) plant species were recorded within the APE: (*Commelina diffusa, Cyperus involucratis* (umbrella sedge)*, Coix lachryma-jobi, and Lindernia procumbens* (false pimpernel). A single obligate (OBL) wetland plant species was recorded here: *Ludwigia octovalvis* (primrose willow). Please refer to the Biological Survey Report provided in Appendix C for a summary of vegetation, including plant indicator status of species identified.

A hydric soil is a soil that is saturated, flooded, or inundated long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Environmental Laboratory 1987). Although both the terraced topography of the area north of the crossing, and sloped topography along the area south of the crossing did not support the presence of hydric soils, soils were spot-checked at the toe of slope of the terraced area and within the proposed retaining wall area south of the crossing for any indications of hydric conditions. Soil pits were dug by hand and soil color was evaluated using Munsell Soil Color Charts (Munsell 2009). Soil conditions were evaluated using indicators outlined in the regional supplement (USACE 2012).No listed hydric soils were found within the APE.

Wetland hydrology is indicated by site conditions that demonstrate the periodic inundation or saturation to the soil surface for a sufficient duration during the total growing season. A “sufficient duration” during the growing season is defined as 14 or more consecutive days of flooding, ponding, or presence of a water table at 12 inches or less from the soil surface (Environmental Laboratory 1987). Hydrologic indicators include the presence of surface water, standing water in the test pit at a depth of 12 inches or less, saturation in the root zone, watermarks, drift lines, sediment deposits, drainage patterns within wetlands, oxidized rhizospheres surrounding living roots, and water-stained leaves. The APE was evaluated for signs of hydrologic conditions using these indicators.

The OHWM line surveyed for the Queensland Low-Water Crossing project APE is depicted in Figure 3. No jurisdictional adjacent wetlands were identified within the project APE. Please refer to the Biological Survey Report (Appendix C) for results of the vegetative investigation, and Appendix B for photo-documentation of the area.

3.0 SUMMARY

A Haley & Aldrich wetland specialist evaluated the Queensland Low-Water Crossing project APE within the DLNR Līhu'e-Koloa Forest Reserve on Kaua'i. The project repair work will require work within the limits of the Wailua River, which is subject to Department of the Army jurisdiction under Section 404 of the CWA and will also require a Stream Channel Alteration Permit (SCAP) from the State of Hawaii Department of Land and Natural Resources Commission on Water Resources Management (CWRM). . However, no adjacent riparian wetlands were identified within the project APE.

4.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Washington D.C. Office of Biological Services, U.S. Fish and Wildlife Service, FWS/OBS-79/31.

Environmental Laboratory, 1987. Army Corps of Engineers Wetland Delineation Manual, Technical report Y-87-1. U.S. Army Engineer Waterways Experimental Station. Vicksburg, MS.

Environmental Protection Agency (EPA), 2019. "How Wetlands are Defined and Identified under CWA Section 404" [online]. Accessed August 2021. <https://www.epa.gov/cwa-404/how-wetlands-are-defined-and-identified-under-cwa-section-404>.

Erickson, T.A. and C.F. Puttock. 2006. Hawaii Wetland Field Guide. An ecological and identification guide to wetlands and wetland plants of the Hawaiian Islands. U.S. Environmental Protection Agency. Distributed by Bess Press Books, Honolulu, HI. 293p.

Munsell, 2009. Munsell Soil Color Book. Munsell Color Company. Grand Rapids, MI.

NRCS. 2021. Hawaii State Soil Data Access (SDA) Hydric Soils Rating by Map Unit. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1389479.html.

Polhemus, D.A., J. Maciolek, and J. Ford (1979). An Ecosystem Classification of Inland Waters for the Tropical Pacific Islands. Micronesica 25(2): 155-173.

Puttock, E.C. and C. Imada. 2004. Wetland Status List for Hawaiian Plants. Final Report for U.S. Fish and Wildlife Service, Honolulu.

U.S. Army Corps of Engineers (USACE), 2010. Standards and Procedures for Referencing Project Elevation Grades to National Vertical Datums EM 1110-2-6056. U.S. Army Corps of Engineers, Washington, DC.

U.S. Army Corps of Engineers (USACE), 2011. Definition of Navigable Waters of the United States. Federal Register, Title 33, Vol. 3, Part 329, July 1, 2011.

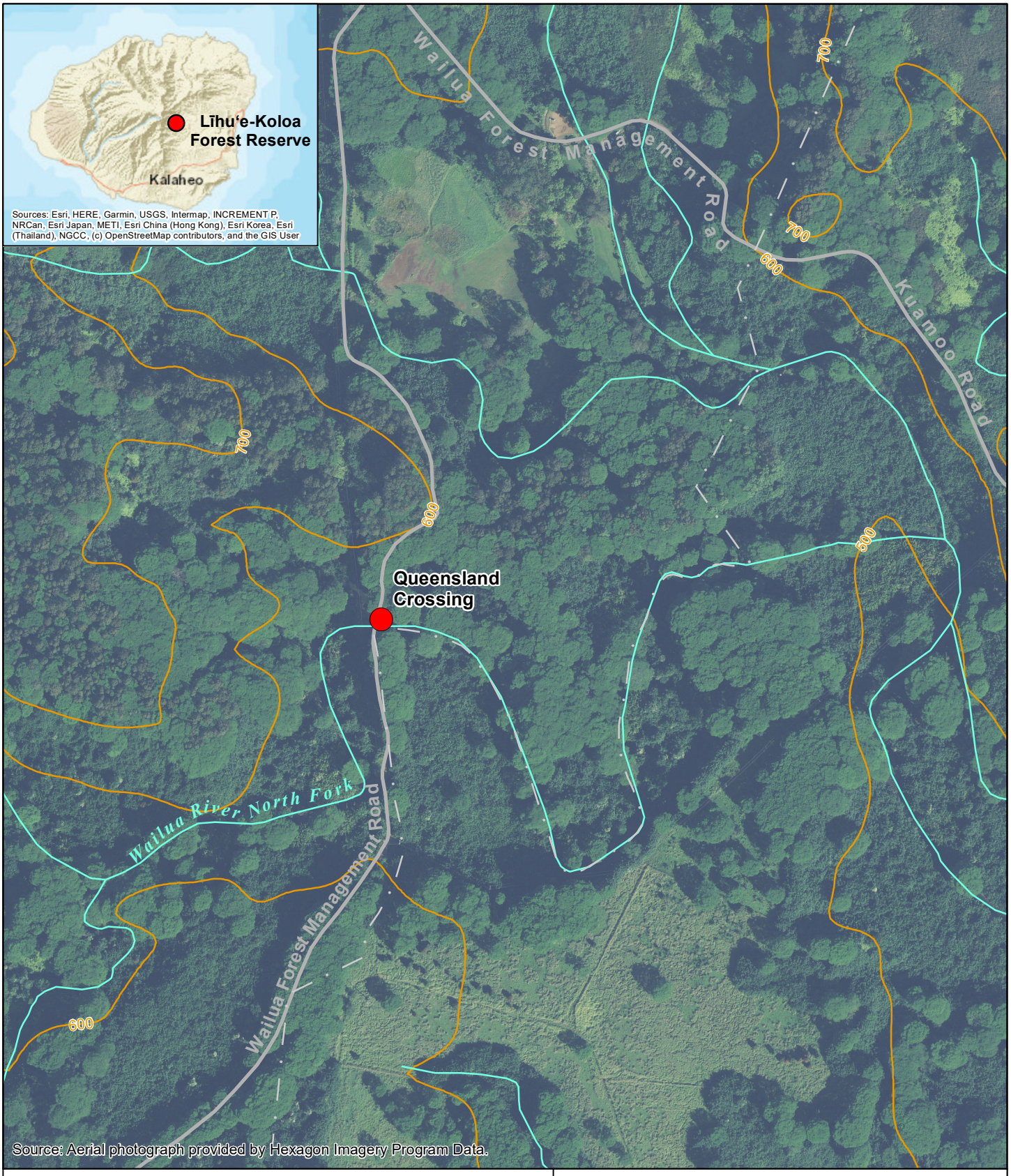
U.S. Army Corps of Engineers (USACE), 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and the Pacific Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. U.S. Army Corps of Engineers, Engineer Research and Development Center, ERDC/EL TR-12-5, Vicksburg, MS.

U.S. Army Corps of Engineers (USACE), 2020. North American Digital Flora: National Regional Plant List, version 2.4.0. Accessed June 2021. https://wetland-plants.sec.usace.army.mil/nwpl_static/data/DOC/lists_2020/Regions/pdf/reg_HI_2020v1.pdf U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.

U.S. Army Corps of Engineers and Environmental Protection Agency (USACE and EPA), 2020. The Navigable Waters Protection Rule: Definition of "Waters of the United States". National Archives and Records Administration, Federal Register, Vol. 85, Issue 77, April 21, 2020.

U.S. Fish and Wildlife Service (USFWS), 2021. National Wetlands Inventory Wetland Mapper. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

APPENDIX A
Figures



Legend

- Low-Water Crossing Location
- DLNR Reserve Boundary
- Roadway
- Streams
- 100' Contours

0 300 600 1,200 Feet

Note: Feature locations are approximate.

N

Līhue-Koloa Forest Reserve
Kaua'i, HI

Vicinity Map

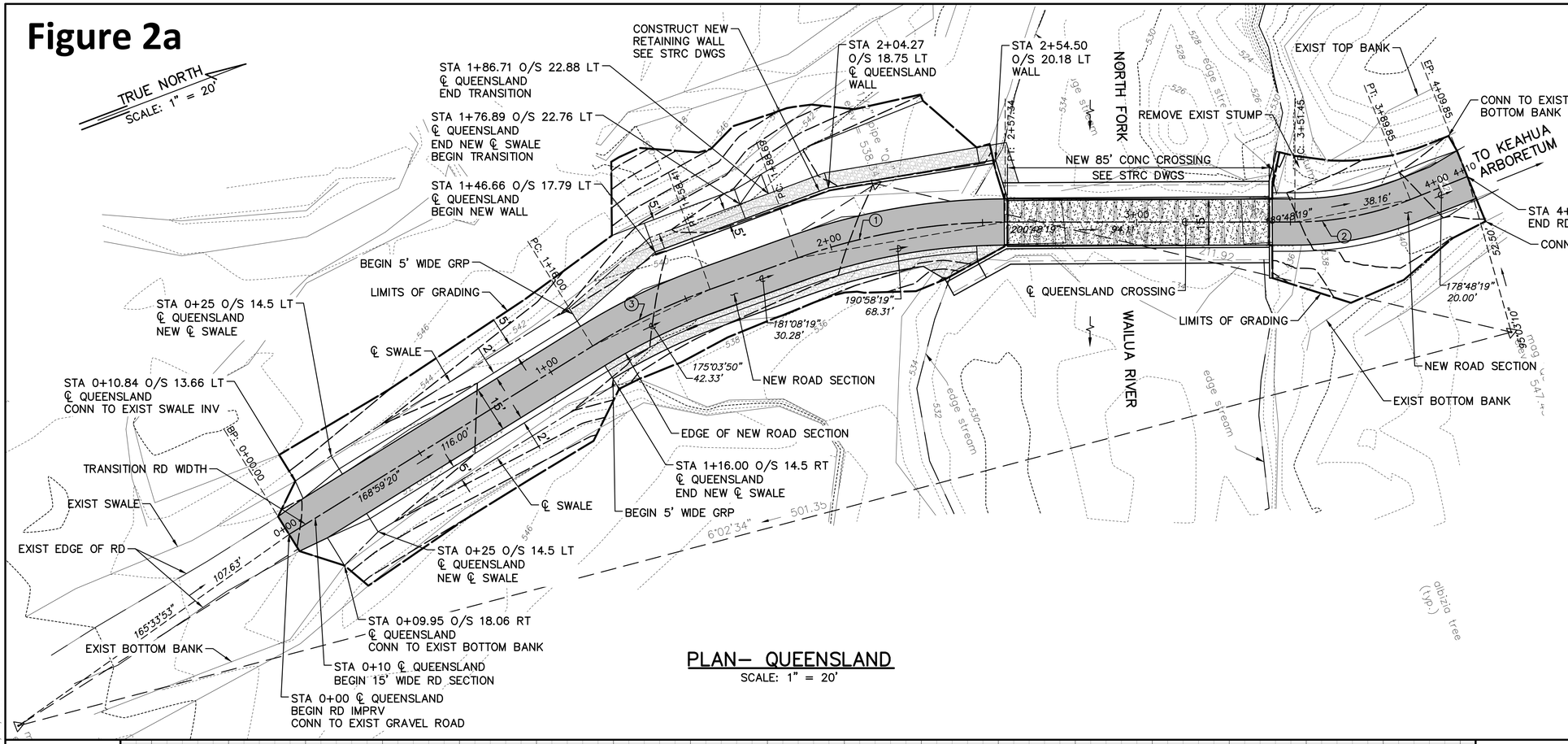
3160-003-001 04/22

HALEY ALDRICH

Figure 1

User Name: nrothman

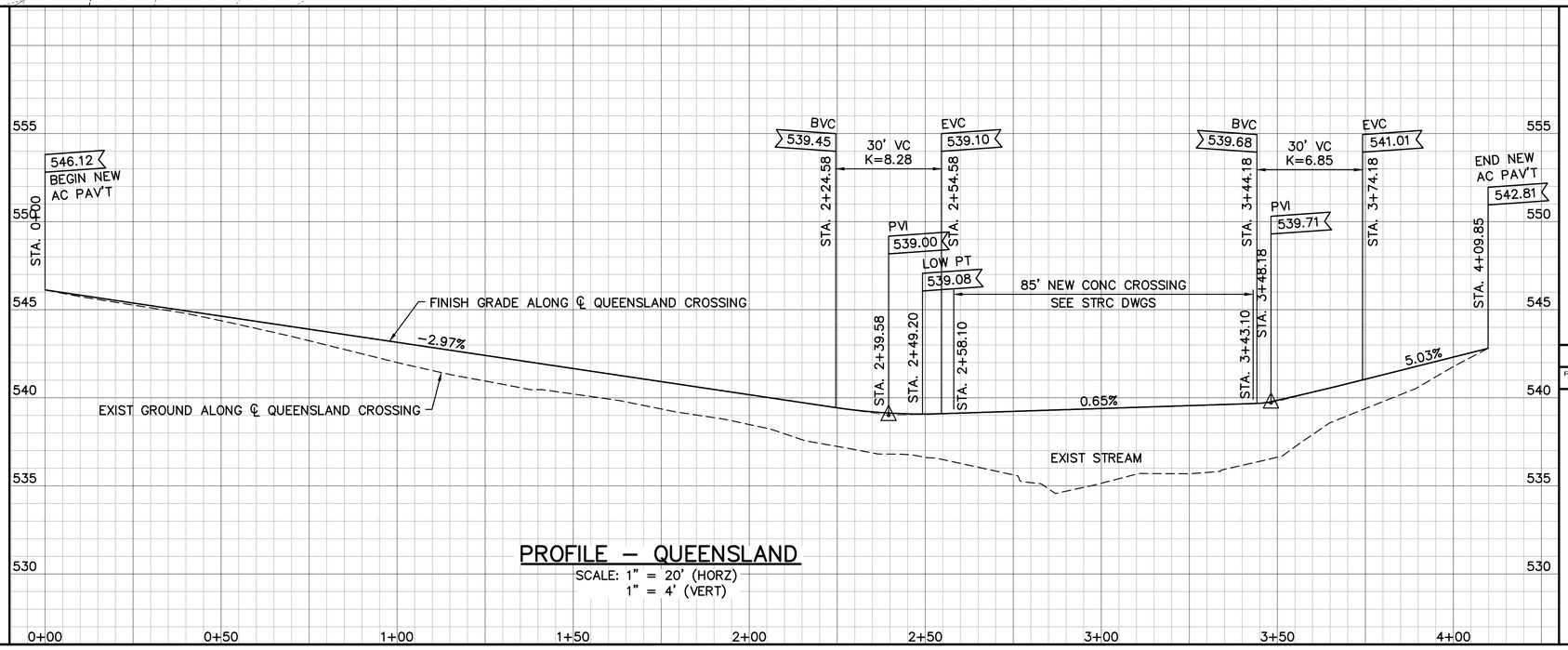
Figure 2a



CURVE DATA						
CURVE	Δ	Δ/2	R	T	C	Lc
1	19°40'00"	9°50'00"	200.00	34.67	68.31	68.65
2	22°00'00"	11°00'00"	100.00	19.44	38.16	38.40
3	12°08'59"	6°04'30"	200.00	21.29	42.33	42.41

PLAN– QUEENSLAND

SCALE: 1" = 20'



PROFILE – QUEENSLAND

SCALE: 1" = 20' (HORZ)
1" = 4' (VERT)

20' 0 20' 40'
SCALE: 1" = 20'–0"

4' 0 4' 8'
SCALE: 1" = 4'–0"

LEGEND

- NEW ROAD SECTION
- NEW CONC
- GROUTED RIPRAP
- EXIST. CONTOURS
- FINISH CONTOURS
- SLOPE BANKS

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

PLAN AND PROFILE – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-04
CHIEF ENGINEER	DATE

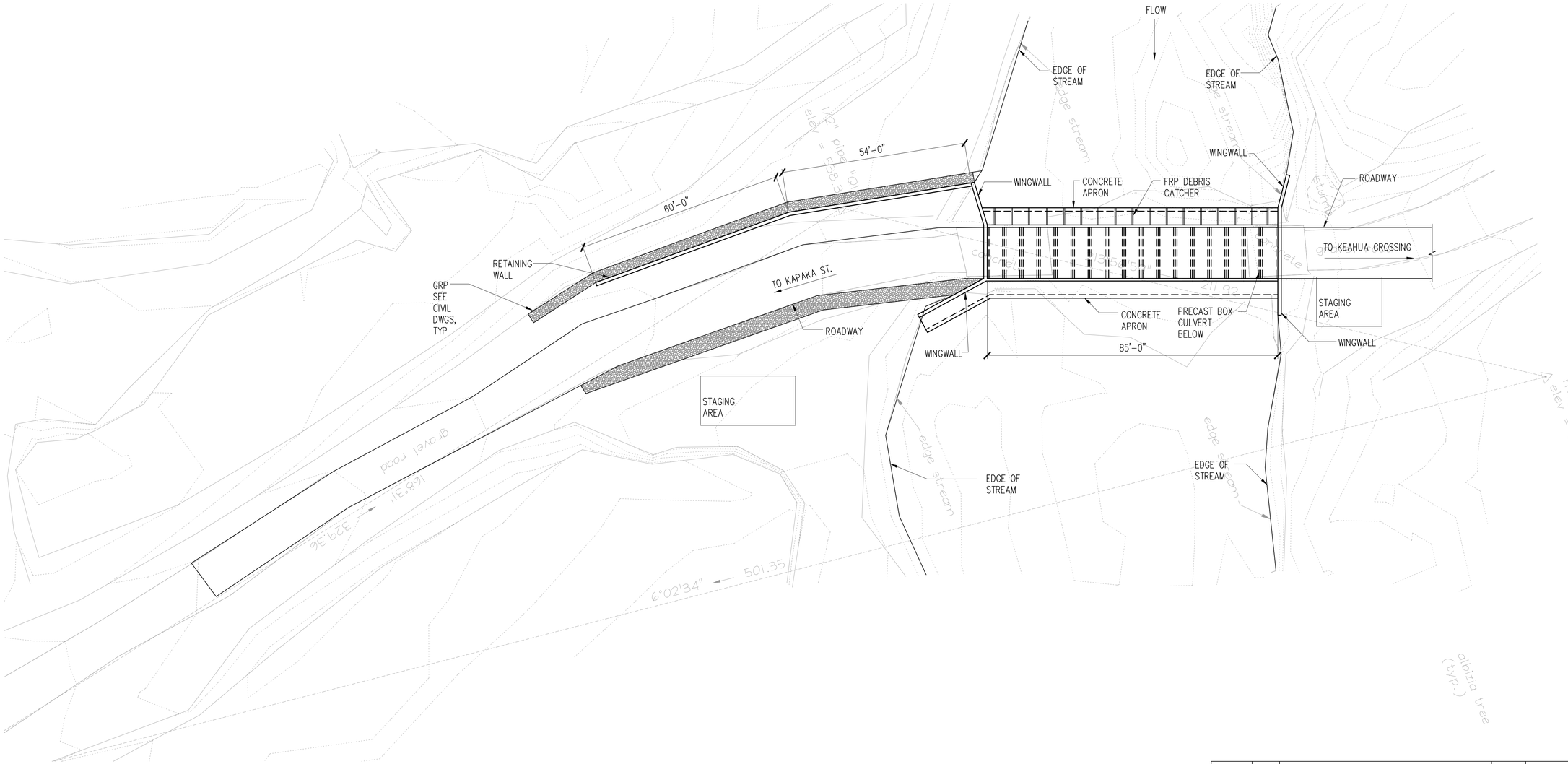
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – SITE PLAN 03 (QUEENSLAND).DWG
BEGIN: 2-Aug-21
PM: CLJ
CURRENT OPER: GMG 8/2/2021 3:48 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 3:10 PM

Figure 2b

TRUE NORTH

SCALE : 1/16" = 1'-0



1 / S-4 QUEENSLAND CROSSING IMPROVEMENT PLAN VIEW

SCALE: 1/16" = 1'-0"

0' 8' 16' 32' 48'

1/16" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

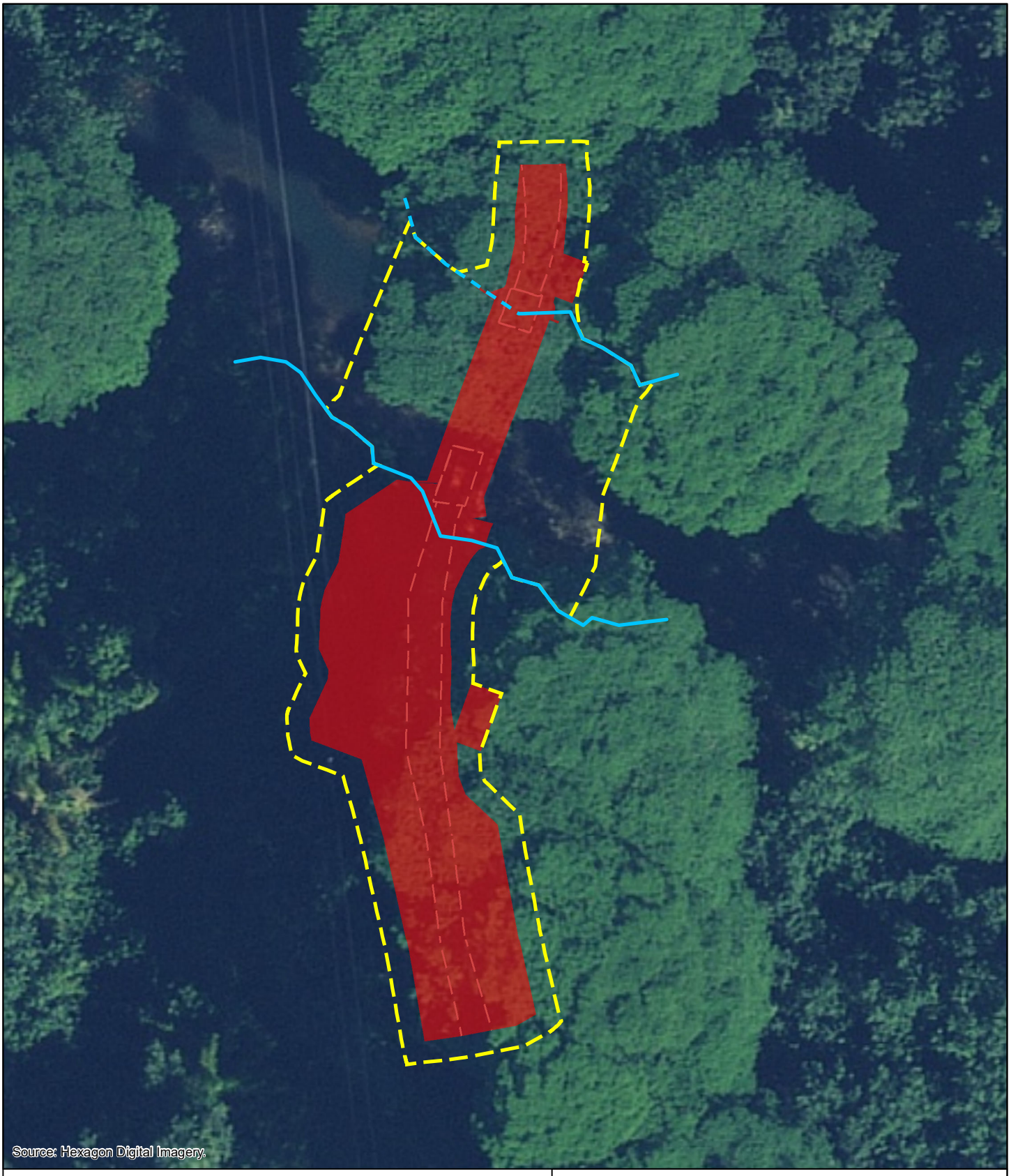
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING
IMPROVEMENT PLAN VIEW

DESIGNED: CS	SUBMITTED: XX
DRAWN: CAD	DATE: XX
CHECKED: SP	SCALE: XX

APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-4



Legend

- Area of Potential Effect (APE)
- Project Footprint
- Existing
- Ordinary High Water Mark (OHWM)
- Field (GPS)
- Estimated

0 30 60 120 Feet

Note: Feature locations are approximate.

N

Līhue-Koloa Forest Reserve
Kaua'i, HI

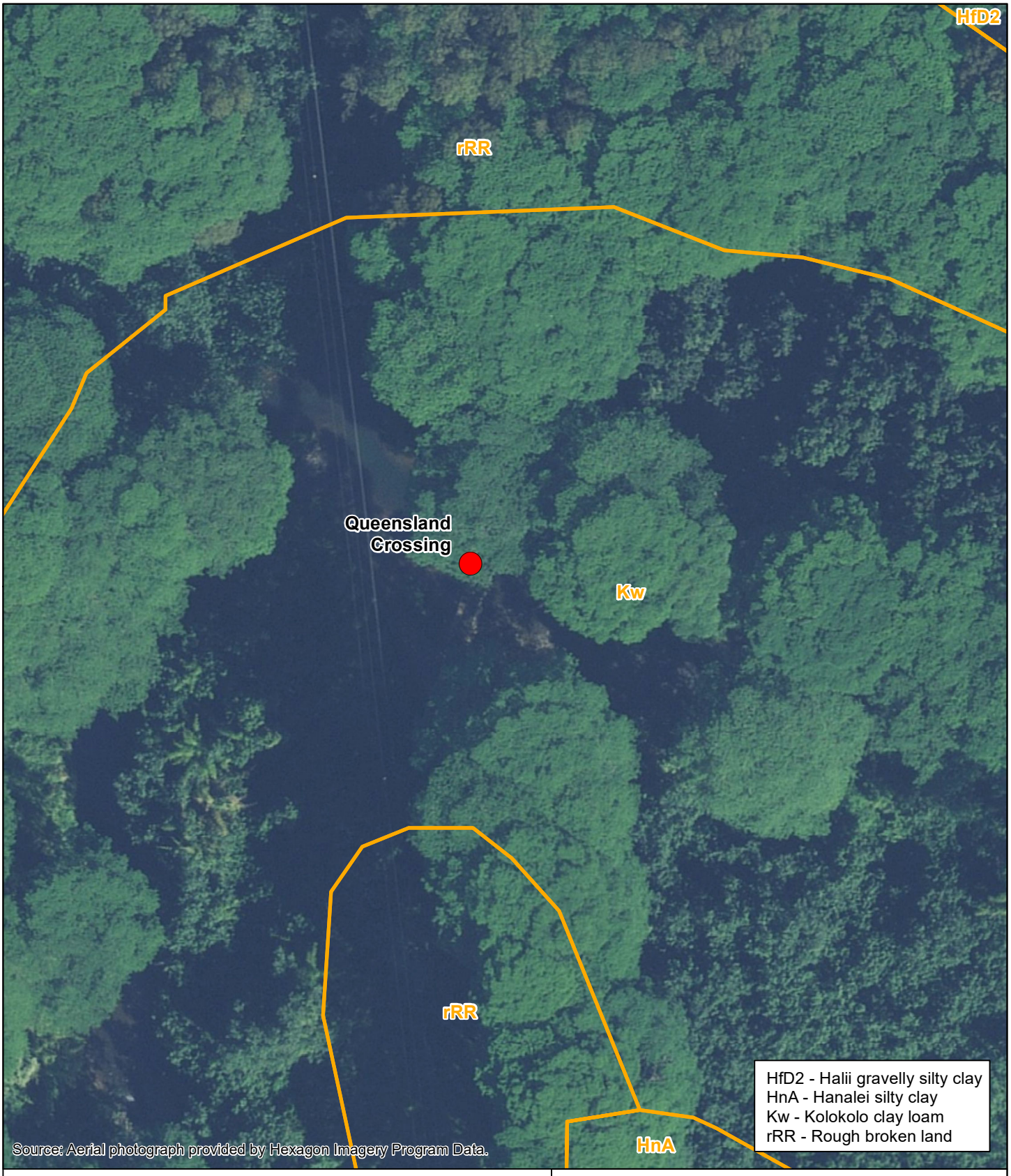
Area of Potential Effect and Ordinary High Water Mark

3160-003-001 04/22

HALEY ALDRICH

Figure 3

User Name: nrothman



Legend

Low-Water Crossing (Approximate Location)

WSS Boundary

0 50 100 200 Feet

Note: Feature locations are approximate.

N

Līhue-Koloa Forest Reserve
Kaua'i, HI

NRCS Web Soil Survey (WSS)

3160-003-001 07/21

HALEY ALDRICH

Figure 4

User Name: nrothman

Legend

- Low-Water Crossing (Approximate Location)
- Freshwater Forested/Shrub Wetland
- Riverine

0 250 500 1,000 Feet

Note: Feature locations are approximate.

N

Līhue-Koloa Forest Reserve
Kaua'i, HI

USFWS National Wetland Inventory (NWI)

3160-003-001 07/21

HALEY ALDRICH

Figure **5**

User Name: nrothman

APPENDIX B

Photo Log

APPENDIX B. PHOTO LOG

<table>
<tr>
<td> 
</td>
<td> 
</td>
</tr>
<tr>
<td>Photo 1: Photo taken from north side of Queensland low-water crossing, facing south, view of Wailua River North Fork.</td>
<td>Photo 2: Photo taken near center of Queensland low-water crossing, facing north.</td>
</tr>
<tr>
<td> 
</td>
<td> 
</td>
</tr>
<tr>
<td>Photo 3: Photo taken from north side of Queensland low-water crossing. Approximate location of proposed laydown yard visible to the left (southeast).</td>
<td>Photo 4: Photo taken from north side of Queensland low-water crossing, facing terraced upland (east) at proposed site of contractor laydown yard.</td>
</tr>
</table>

<table>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>Photo 5: Photo taken from north side of Queensland low-water crossing, facing terraced upland (northeast) at proposed site of contractor laydown yard.</td><td>Photo 6: Photo taken from Queensland low-water crossing facing south, view of proposed culvert and wingwalls area. Proposed culvert to drain west to east under existing access road, with inlet to the west and outlet to the east.</td></tr>
<tr><td>  </td><td> 
</td></tr>
<tr><td>Photo 7: Photo taken from Queensland low-water crossing, facing southeast, view of approximate location of proposed culvert outlet with wingwall. Pink pin flags from OHWM survey visible along bank.</td><td>Photo 8: Photo taken from south side of Queensland low-water crossing, facing southwest. View of OHWM survey flags along bank.</td></tr>
</table>

Photo 9: Photo taken from upstream of Queensland low-water crossing, facing north bank. OHWM was approximated along this bank due to no safe access from top of bank overhang.

Photo 10: Photo taken downstream of Queensland low-water crossing, facing north bank. View of OHWM survey along vegetation line.

Photo 11: Photo taken downstream of Queensland low-water crossing, facing north bank. View of OHWM survey along vegetation line, blue pin flags indicating OHWM (arrows marking location).

APPENDIX C
Biological Survey Report

Biological Surveys Conducted for Queensland Crossing, Līhu'e-Kōloa Forest Reserve, Wailua, Island of Kaua'i

Prepared by:
LeGrande Biological Surveys, Inc.
Maya LeGrande: maya.legrande@gmail.com

Prepared for:
Haley & Aldrich

January 2022

General Site Description

The Queensland Crossing is a low-flow water crossing on the main roadway in the Lihue-Koloa Forest Reserve. The Crossing was severely damaged by flooding that occurred in 2018. The site for the Queensland Crossing Restoration project consists of the crossing itself and the terrestrial areas on the north and south sides of the stream near the existing crossing for proposed laydown areas and installation of a new revetment along the existing access road (south of the stream). The project Area of Potential Effect is shown in Attachment 1. Site surveys for plant and animals were conducted on June 29 and December 16, 2021. The vegetation is dominated by non-native forest along the roadside with somewhat dense understory (Figure 1).

Methods and Results

Plant names follow *Hawai`i's ferns and fern allies* (Palmer, 2003) for ferns, *Manual of the Flowering Plants of Hawai'i* (Wagner et al. 1990, 1999) & *Records of the Hawaii Biological Survey, Bishop Museum Occasional Papers* (editors; Evenhuis, N.L. and L.G. Eldredge, 1999-2020) for naturalized flowering plants, *Hawaiian Naturalized Vascular Plants Checklist* (Imada, 2019), and *A Tropical Garden Flora* (Staples and Herbst, 2005) for ornamental plants. The avian phylogenetic order and nomenclature used in this report follows the AOU *Check-List of North and Middle American Birds* 2019 and the Sixtieth First Supplement to the Check-list of North American Birds (Cheeser et al., 2020). Place names follow *Place Names of Hawaii* (Pukui et al., 1976).

Botanical Survey Methods

Prior to undertaking the field study, a search was made of the pertinent literature to familiarize the botanist with other plant studies conducted in the general area (SWCA, 2019). Topographic maps and aerial satellite images were examined to determine terrain characteristics, access, boundaries, and reference points.

A pedestrian survey was carried out on June 29 and December 16, 2021, The biologist walked all boundaries, or to the extent that ground distrubance may be expected during the repair work, as well as transects throughout the project area. Notes were made on plant associations and distribution, disturbances, topography, substrate types, exposure, and drainage. Plant identifications were made in the field; plants that could not be positively identified were photo documented for comparison with the recent taxonomic literature.

Botanical Survey Results

The vast majority of the plants observed during the survey were naturalized introduced species, with the project area characterized by a non-native alien wet forest. There was a total of 45 naturalized plant species observed within the project site. 43 species are alien (introduced), of which 4 are Polynesian introductions (plants brought to the Hawaiian Islands by early Polynesian settlers previous to European

contact). The remaining 2 are indigenous (native to the Hawaiian Islands and elsewhere). An inventory of the naturalized plant taxa is presented in the plant species list (Table 1).

The vegetation is dominated by an established alien forest composed of invasive and introduced tree species as well as shrubs, grasses, and vining plants in the understory. The two most dominant tree species on the north side of the stream crossing area and the proposed laydown are Moluccan albizia (*Falcataria moluccana*) and hau (*Hibiscus tiliaceus*). Most trees are thickly festooned with liana species dominated by golden pothos (*Epipremnum pinnatum*) and hoi (*Dioscorea bulbifera*). Uncommonly observed tree species included; African tulip (*Spathodea campanulata*) and satin leaf (*Chrysophyllum oliviforme*). Common understory species in the area include Guinea grass (*Megathyrsus maximus*), *ʻōwī* (*Stachytarpheta australis*), *ti* (*Cordyline fruticosa*), *ʻape* (*Xanthosoma robustum*), *lāua'e* (*Phymatosorus grossus*), Chinese violet (*Asystacia gangetica*), wedelia (*Sphagneticola trilobata*), Job's tears (*Coix lachryma-jobi*), Hilo paspalum (*Paspalum conjugatum*), and fireweed (*Erechtites hieracifolia*).

The south side of the stream crossing is dominated by Guinea grass and lower growing schrubs and groundcovers such as sourbush (*Pluchea carolinensis*), Jobʻs tears, tarweed (*Cuphea carthagenensis*), maile honohono (*Ageratum conyzoides*), Asiatic pennywort (*Centella asiatica*), and tick trefoil (*Desmodium intortum*). Seedlings of Moluccan albizia and kukui (*Aleurites moluccana*) were observed along the roadside and in areas near the river.

Only two indigenous species were observed at the project site; *hau* and *pōpolo* (*Solanum americanum*). Ti, kukui, and hoi were introduced by early Polynesian settlers. The primrose willow (*Ludwigia octovalvis*) has questionable status, but is believed to have possibly been introduced by early Polynesian settlers to the islands rather than established by natural vectors such as birds, wind, or ocean currents, or introduced after European contact.

Figure 1. North side of stream showing existing roadway and proposed laydown area to the right of people. Vegetation consists of tall Moluccan albizia trees, hau, hoi, golden pothos, `ape, and Guinea grass.

PLANT SPECIES LIST

The following checklist is an inventory of all the **naturally occurring or established** plant species observed within the project area of effect for the proposed replacement of Queensland crossing. 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 follow Imada, 2019.

For each species, the following name/information 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.
   P=Polynesian introduction, brought by early Polynesian settlers to the Hawaiian Islands
   I=Indigenous species native to the Hawaiian Islands and also found elsewhere in the world.
4. Wetland Indicator status: the probability of occurring in freshwater, brackish and saltwater wetlands: (USACE 2021 or *Puddock and Imada 2004)
   OBL=Obligate. Occur almost always under natural conditions in wetlands.
   FACW=Facultative Wetland. Usually occur in wetlands but occasionally found in non-wetlands.
   FAC=Facultative. Equally likely to occur in wetlands and non-wetlands.
   FACU=Facultative Upland. Usually occur in non-wetlands but occasionally found in wetlands.
   UPL=Upland. Occur almost always under natural conditions in non-wetlands in the specific region.

Table 1. Plant Species List

Scientific Name	Common Name	Biogeographical Status	Wetland Indicator Status
PTERIDOPHYTES			
POLYPODIACEAE			
Phymatosorus grossus (Langsd.&Fisch.)	lāua`e, maile-scented fern	A	FACU
PTERIDACEAE			
Pityrogramma calomelanos (L.) Link	silver fern	A	FAC
THELYPTERIDACEAE			
Christella dentata (Forssk.) Brownsey & Jermy		A	FAC
Christella parasitica (L.) Lev.		A	FAC
MONOCOTS			
AGAVACEAE			
Cordyline fruticosa (L.) A.Chev.	ti, kī	P	FAC
ARACEAE			
Epipremnum pinnatum (L.) Engl.	golden pothos	A	FAC
Xanthosoma robustum Schott	`ape	A	FAC
COMMELINACEAE			
Commelina diffusa Burm.f.	honohono, dayflower	A	FACW
CYPERACEAE			
Cyperus brevifolius (Rottb.) Hassk.	*kili'o'opu*, green kyllinga	A	FAC
Cyperus involucratis Rottb.	umbrella sedge	A	FACW

Cyperus rotundus L.	nut grass	A	FACU
DIOSCOREACEAE			
Dioscorea bulbifera L.	hoi, bitter yam, air potato	P	UPL
POACEAE			
Chloris radiata (L.) Sw.	radiate fingergrass	A	FACU
Coix lachryma-jobi L.	Job's-tears	A	FACW
Megathyrsus maximus (Jacq.) B.K.Simon&S.W.L. Jacobs	Guinea grass	A	FAC
Paspalum conjugatum P.J.Bergius	Hilo grass	A	FAC
Paspalum fimbriatum Kunth	fimbriate paspalum	A	FAC
DICOTS			
ACANTHACEAE			
Asystasia gangetica (L.) T. Anderson	Chinese violet	A	FACU
APIACEAE			
Centella asiatica (L.) Urb.	asiatic pennywort	A	FAC
ASTERACEAE			
Ageratum conyzoides L.	maile honohono	A	*FAC
Calyptocarpus vialis	straggler daisy	A	FAC
Erechtites hieracifolia (L.) Raf.exDC.	fireweed	A	FAC
Erigeron karvinskianus DC.	daisy fleabane	A	FACU
Pluchea carolinensis (Jacq.) G.Don	sourbush	A	FAC
Sphagneticola trilobata (L.) Pruski	wedelia	A	FAC
Synedrella nodiflora (L.) Gaertn.	nodeweed	A	FAC
BIGNONIACEAE			
Spathodea campanulata P.Beauv.	African tulip tree	A	FACU
EUPHORBIACEAE			
Aleurites moluccana (L.) Willd.	*kukui*, candlenut tree	P	FACU
FABACEAE			
Desmodium intortum (Mill.) Urb.	tick trefoil	A	-
Desmodium triflorum (L.) DC.	tick clover	A	FAC
Falcataria moluccana (Miq.) Barneby& J.W.Grimes	Moluccan albizia	A	FACU
Mimosa pudica L. var. *unijuga* (Duchass. & Walp.) Griseb.	sleeping grass, sensitive plant	A	FACU
LINDERNIACEAE			
Lindernia procumbens (Krock.) Philcox	false pimpernel	A	FACW
LYTHRACEAE			
Cuphea carthagenensis (Jacq.) J.F.Macbr.	tarweed, Colombian cuphea	A	FAC
MALVACEAE			
Hibiscus tiliaceus L.	hau	I	*FAC
MELASTOMATACEAE			
Miconia crenata (Vahl) Michelang.	Koster's curse	A	FACU
ONAGRACEAE			
Ludwigia octovalvis (Jacq) P.H.Raven	primrose willow	P?	OBL
PLANTAGINACEAE			
Plantago major L.	broad-leaved plantain	A	FACU

POLYGALACEAE			
Polygala paniculata L.	milkwort	A	FACU
ROSACEAE			
Rubus rosifolius Sm.	thimbleberry	A	FACU
RUBIACEAE			
Richardia scabra L.		A	UPL
SAPOTACEAE			
Chrysophyllum oliviforme L.	satinleaf	A	UPL
SCROPHULARIACEAE			
Buddleja asiatica Lour.	dog tail, butterfly bush	A	FACU
SOLANACEAE			
Solanum americanum Mill.	pōpolo, glossy nightshade	I	FACU
VERBENACEAE			
Stachytarpheta australis Moldenke	ʻōwī	A	FAC

Figure 2. North bank looking down stream from existing stream crossing.

Avian Survey Methods

One avian point count station was sited on the north side of the stream crossing near the proposed construction laydown area on June 29th and another avian point count was conducted on the south side of the streamduring the December 16th site visit. 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 during morning hours, 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.

Avian Survey Results

A total of 45 individual birds of 6 species, representing 6 separate families, were recorded during point counts. All avian species recorded are common established alien or feral species (Table 2). Avian diversity and densities were in keeping with the location and the almost completely alien vegetation on the site.

Table 2 – Avian Species Detected During Point Counts – Queensland Crossing
June & December 2021

Common Name	*Scientific Name*	*ST*	*June 29 2021* *A*	*December 26 2021* *A*
	ARDEIDAE - Herons, Bitterns & Allies			
Cattle Egret	*Bubulcus ibis*	A	2	1
	ZOSTEROPIDAE - White-eyes			
Warbling White-eye	*Zosterops japonicus*	A	6	3
	MUSICAPIDAE - Old World Flycatchers			
White-rumped Shama	*Copsychus malabaricus*	A	1	0
	STURNIDAE - Starlings			
Common Myna	*Acridotheres tristis*	A	2	6
	FRINGILLIDAE - Fringilline and Carduline Finches & Allies			
House Finch	*Haemorhous mexicanus*	A	5	12
	CARDINALIDAE - Cardinals & Allies			
Northern Cardinal	*Cardinalis cardinalis*	A	2	0

Key to table 1

ST Status

A Alien – Introduced to the Hawaiian Islands by humans

A Abundance - Number of birds detected

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *ʻōpeʻapeʻa* as it is known locally, all terrestrial mammals currently found on the Island of Kauaʻi 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.

Mammalian Survey Results

The only mammalian species detected during the course of these surveys were tracks, scat and sign of feral pigs (*Sus scrofa*). No mammalian species currently proposed for listing or listed under either the

federal or State of Hawai‘i endangered species statutes was recorded on this site (DLNR 1998; USFWS, nd).

Figure 3. South bank of stream viewed from north side of crossing. Guinea grass, hau, and Moluccan albizia dominate the vegetation.

Discussion

Botanical Resources

The fieldwork results represent a snapshot of the plants inhabiting the project site. However, when considered together with the results of historical surveys, they represent a reasonably accurate description of the environment and vegetation of the project area. Native plant habitat within the proposed project area has been highly modified by human activities, such as historical agricultural activities, road building, and the intentional and accidental introduction of alien species. The overwhelming abundance of non-native plant species at the project area is in direct correlation to disturbance over the last several hundred years.

The nature of the land and its present and historical disturbances limit the natural botanical resources anticipated to occur here. The results of our survey substantiate this prediction. The rare frequency of native plant species is an indication that because of constant disturbances (geological, vehicular, invasive plant and animal species), only species adapted to such conditions can survive, with few exceptions. *Pōpolo* and *hau*, were the only native plant species observed during the survey. None of the plant species observed are listed as threatened or endangered under either federal or state of Hawai‘i endangered species statutes.

Avian Resources

The findings of this avian survey are consistent with the almost completely alien dominated vegetation present on this site. As previously mentioned, we recorded 6 species during the course of the surveys. All species recorded are well established feral or alien species.

Waterbirds and Nēnē

The Hawaiian duck (*Anas wyvilliana*) and Hawaiian moorhen (*Gallinula galeata sandvicensis*) are both listed as Endangered (Federal and State). They are generally found in habitat with wetlands and waterways such as, freshwater marshes, coastal estuaries, kalo patches, and montane streams and marshlands. We did not record any waterbirds in or near the stream. There is little suitable habitat present in the area of the Queensland crossing to support waterbird species. Although we did not record Nēnē (*Branta sandvicensis*) during the survey, it is possible that there is occasional usage of the site by this endangered species.

Seabirds

Both the endangered Hawaiian Petrel (*Pterodroma sandwichensis*) and the threatened Newell's Shearwater (*Puffinus newelli*) may over-fly the project area between April and the middle of December each year. It is also possible that the endangered Band-rumped Storm-Petrel (*Hydrobatis castro*) also over fly the site during the seabird nesting season. All three species are regularly recovered as downed birds in the lowlands of Kauai on an annual basis (SOS – 2020, unpublished data). The primary cause of mortality in Hawaiian Petrels and Newell's Shearwaters in Hawaii is thought to be predation by alien mammalian species at the nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley et al., 2001). Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. Disoriented seabirds may collide with man-made structures and, if not killed outright, become easy targets of opportunity for feral mammals (Hadley, 1961; Telfer, 1979; Sincock, 1981; Reed et al., 1985; Telfer et al., 1987; Cooper and Day, 1998; Podolsky et al., 1998; Ainley et al., 2001; Hue et al., 2001; Day et al., 2003).

Migratory Shorebirds

We did not record any migratory shorebirds during the course of this survey, not surprising as they have all left for their nesting grounds in the high Arctic prior to this survey. Regularly occurring migratory shorebird, Pacific Golden-Plover (*Pluvialis fulva*), may at times visit the area for foraging. There is minimal suitable wintering habitat for this species on parts of the project site. Commonly seen across the state between late September and the end of April each year. They usually depart for their Arctic breeding grounds in late April or the first week of May.

Mammalian Resources

We recorded signs of one mammalian species, feral pig (*Sus scrofa*) on the site. Although, no rodents were recorded during the course of this survey, it is likely that one or more of the other four established alien Murida*e* found on Kaua'i - European house mouse (*Mus musculus*), roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), and black rat (*Rattus exulans hawaiiensis*) - use various resources found within the

general project area on a seasonal basis. These human commensal species are drawn to areas of human habitation and activity. All of these introduced mammalian species are deleterious to native ecosystems and the native faunal species dependent on them.

No Hawaiian hoary bats were detected during the course of this survey. It is within the realm of possibility that this species may use resources within portions of the project area on a seasonal basis.

Stream Biota and Habitat

Although this survey did not include a freshwater biota element, other studies in the area (SWCA 2019) have found several native species utilizing the North Fork Wailua River including; `opae kalaole (*Atyoida bisulcata*), `o`opu nakea (*Awaous stamineus*), `o`opu `akupa (*Eleotris sandvicensis*), `o`opu naniha (*Stenogobius hawaiiensis*), `opae `oeha`a (*Macrobrachium grandimanus*), and damselfly species (*Zygoptera* sp.). One undetermined damselfly was observed flitting around ponded areas on the south side of the crossing.

Potential Impacts to Protected Species

Botanical

No protected botanical resources were detected on or adjacent to the Queensland crossing. It is not expected that the proposed crossing repair project will result in deleterious impacts to any protected botanical resources.

Hawaiian hoary bat

The principal potential impact that the project could pose to bats is during any clearing and grubbing phase of the construction. The trimming or removal of foliage and/or trees in the area 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, females 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.

Stream Biota

Aquatic species described above could be affected by increased turbidity and sedimentation from construction activities during new crossing construction. Including BMPs to minimize erosion, and disturbance during construction should be included in project plans.

Critical Habitat

There is no federally delineated Critical Habitat for any avian or mammalian 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.

Literature Cited

Ainley, D. G, R. Podolsky, L. Deforest, G. Spencer, and N. Nur. 2001. The Status and Population Trends of the Newell's Shearwater on Kaua'i: Insights from Modeling, *in*: Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna.* Studies in Avian Biology No. 22: Cooper's Ornithological Society, Allen Press, Lawrence, Kansas. (Pg. 108-123).

Chesser, R. T., K. J. Burns, S. M. Billerman, K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, N. A. Mason, P. C. Rasmussen, J. V., Remsen, Jr., D. F. Stotz, and K. Winker. 2020. Check-list of North American Birds (online). American Ornithological Society. Available online at URL: http://checklist.aou.org/taxa.

Cooper, B. A, and R. H. Day. 1998. Summer Behavior and Mortality of Dark-rumped Petrels and Newells' Shearwaters at Power Lines on Kauai. Colonial Waterbirds, 21 (1): 11-19.

Day, R. H., B. Cooper, and T. C. Telfer. 2003. Decline of Townsend's (Newell's Shearwaters (*Puffinus auricularis newelli*) on Kauai, Hawaii. The The Auk 120: 669-679.

Department of Land and Natural Resources (DLNR). 1998. Indigenous Wildlife, Endangered And Threatened Wildlife And Plants, And Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-134-1 through §13-134-10, dated March 02, 1998.

DLNR. 2014. Hawai'i Administrative Rules, Title 13, Department of Land and Natural Resources, Subtitle 5 Forestry and Wildlife, Part 2 Wildlife, Chapter 124, Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife. Exhibit 1. November 1, 2014. 21 pp.

Hadley, T. H. 1961. Shearwater calamity on Kauai. Elepaio 21:60.

Hue, D., C. Glidden, J. Lippert, L. Schnell, J. MacIvor and J. Meisler. 2001. Habitat Use and Limiting Factors in a Population of Hawaiian Dark-rumped Petrels on Mauna Loa, Hawai'i. , *in:* : Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna*. Studies in Avian Biology No. 22. Cooper's Ornithological Society, Allen Press, Lawrence, Kansas (Pg. 234-242).

Imada, C. 2019. Hawaiian Naturalized Vascular Plant Checklist. February 2019 update. Bishop Museum Technical Report 69.

Palmer DD. 2003. Hawai'i''s ferns and fern allies. Honolulu: University of Hawai'i Press.

Podolsky, R., D.G. Ainley, G. Spencer, L. de Forest, and N. Nur. 1998. "Mortality of Newell's Shearwaters Caused by Collisions with Urban Structures on Kaua'i". Colonial Waterbirds 21:20-34.

Puttock, C.F. and Imada. C., 2004. Wetland Status List for Hawaiian Plants, Final report for U.S. Fish and Wildlife Service, Honolulu.

Pukui , M. K., S. H. Elbert, and E. T. Mookini 1976. *Place Names of Hawaii*. University of Hawaii Press. Honolulu, Hawai'i. 289 pp.

Reed, J. R., J. L Sincock, and J. P. Hailman 1985. Light Attraction in Endangered Procellariform Birds: Reduction by Shielding Upward Radiation. The Auk 102: 377- 383.

Simons, T. R., and C. N. Hodges. 1998. Dark-rumped Petrel (*Pterodroma phaeopygia*). *In* A. Poole and F. Gill (editors). The Birds of North America, No. 345. The Academy of Natural Sciences, Philadelphia, PA. and the American Ornithologists Union, Washington, D.C.

Sincock, J. L. 1981. Saving the Newell's Shearwater. Pages 76-78 in Proceedings of the Hawaii Forestry and Wildlife Conference, 2-4 October 1980. Department of Land and Natural Resources, State of Hawaii, Honolulu.

Staples, G. W. and D. R. Herbst. 2005. A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and other Tropical Places. Bishop Museum, Honolulu. 908 pp.

SWCA. 2019. Terrestrial Flora and Fauna Technical Report for the Proposed Waiahi Hydropower Long-Term Water Lease. February 2019. Prepared for SSFM International.

Telfer, T. C. 1979. Successful Newell's Shearwater Salvage on Kauai. 'Elepaio 39:71

Telfer, T. C., J. L. Sincock, G. V. Byrd, and J. R. Reed. 1987. Attraction of Hawaiian seabirds to lights: Conservation efforts and effects of moon phase. Wildlife Society Bulletin 15:406-413.

U.S. Army Corps of Engineers (USACE), 2021. North American Digital Flora: National Wetland Plant List, version 2.4.0. Accessed August 2021. https://cwbiapp.sec.usace.army.mil/nwpl_static/v34/home/home.html U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.

U.S. Fish & Wildlife Service (USFWS) 1983. Hawaiian Dark-Rumped Petrel & Newell's Manx Shearwater Recovery Plan. USFWS, Portland, Oregon. February 1983.

_____. 2015. Hawaiian Islands Threatened and Endangered Plants and Animals: Updated February 2, 2015.

_____. 2021. USFWS Endangered Species. Available online at URL: https://www.fws.gov/endangered/; last retrieved July 2021.

Wagner, W. L., D. R. Herbst and S.H. Sohmer. 1990. Manual of the Flowering Plants of Hawai'i: Volume I and II. Bishop Museum Special Publication 83. University of Hawai'i Press. 1853 pp. Supplement to the Manual of the flowering plants of Hawai'i, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the flowering plants of Hawai'i. Revised edition. 2 vols. University of Hawaii Press and B.P. Bishop Museum.

Biological Surveys Conducted for Queensland Crossing, Līhu'e-Kōloa Forest Reserve, Wailua, Island of Kaua'i

Prepared by:
LeGrande Biological Surveys, Inc.
Maya LeGrande: maya.legrande@gmail.com

Prepared for:
Haley & Aldrich

January 2022

General Site Description

The Queensland Crossing is a low-flow water crossing on the main roadway in the Lihue-Koloa Forest Reserve. The Crossing was severely damaged by flooding that occurred in 2018. The site for the Queensland Crossing Restoration project consists of the crossing itself and the terrestrial areas on the north and south sides of the stream near the existing crossing for proposed laydown areas and installation of a new revetment along the existing access road (south of the stream). The project Area of Potential Effect is shown in Attachment 1. Site surveys for plant and animals were conducted on June 29 and December 16, 2021. The vegetation is dominated by non-native forest along the roadside with somewhat dense understory (Figure 1).

Methods and Results

Plant names follow *Hawai`i's ferns and fern allies* (Palmer, 2003) for ferns, *Manual of the Flowering Plants of Hawai'i* (Wagner et al. 1990, 1999) & *Records of the Hawaii Biological Survey, Bishop Museum Occasional Papers* (editors; Evenhuis, N.L. and L.G. Eldredge, 1999-2020) for naturalized flowering plants, *Hawaiian Naturalized Vascular Plants Checklist* (Imada, 2019), and *A Tropical Garden Flora* (Staples and Herbst, 2005) for ornamental plants. The avian phylogenetic order and nomenclature used in this report follows the AOU *Check-List of North and Middle American Birds* 2019 and the Sixtieth First Supplement to the Check-list of North American Birds (Cheeser et al., 2020). Place names follow *Place Names of Hawaii* (Pukui et al., 1976).

Botanical Survey Methods

Prior to undertaking the field study, a search was made of the pertinent literature to familiarize the botanist with other plant studies conducted in the general area (SWCA, 2019). Topographic maps and aerial satellite images were examined to determine terrain characteristics, access, boundaries, and reference points.

A pedestrian survey was carried out on June 29 and December 16, 2021, The biologist walked all boundaries, or to the extent that ground distrubance may be expected during the repair work, as well as transects throughout the project area. Notes were made on plant associations and distribution, disturbances, topography, substrate types, exposure, and drainage. Plant identifications were made in the field; plants that could not be positively identified were photo documented for comparison with the recent taxonomic literature.

Botanical Survey Results

The vast majority of the plants observed during the survey were naturalized introduced species, with the project area characterized by a non-native alien wet forest. There was a total of 45 naturalized plant species observed within the project site. 43 species are alien (introduced), of which 4 are Polynesian introductions (plants brought to the Hawaiian Islands by early Polynesian settlers previous to European

contact). The remaining 2 are indigenous (native to the Hawaiian Islands and elsewhere). An inventory of the naturalized plant taxa is presented in the plant species list (Table 1).

The vegetation is dominated by an established alien forest composed of invasive and introduced tree species as well as shrubs, grasses, and vining plants in the understory. The two most dominant tree species on the north side of the stream crossing area and the proposed laydown are Moluccan albizia (*Falcataria moluccana*) and hau (*Hibiscus tiliaceus*). Most trees are thickly festooned with liana species dominated by golden pothos (*Epipremnum pinnatum*) and hoi (*Dioscorea bulbifera*). Uncommonly observed tree species included; African tulip (*Spathodea campanulata*) and satin leaf (*Chrysophyllum oliviforme*). Common understory species in the area include Guinea grass (*Megathyrsus maximus*), *ʻōwī* (*Stachytarpheta australis*), *ti* (*Cordyline fruticosa*), *ʻape* (*Xanthosoma robustum*), *lāua'e* (*Phymatosorus grossus*), Chinese violet (*Asystacia gangetica*), wedelia (*Sphagneticola trilobata*), Job's tears (*Coix lachryma-jobi*), Hilo paspalum (*Paspalum conjugatum*), and fireweed (*Erechtites hieracifolia*).

The south side of the stream crossing is dominated by Guinea grass and lower growing schrubs and groundcovers such as sourbush (*Pluchea carolinensis*), Jobʻs tears, tarweed (*Cuphea carthagenensis*), maile honohono (*Ageratum conyzoides*), Asiatic pennywort (*Centella asiatica*), and tick trefoil (*Desmodium intortum*). Seedlings of Moluccan albizia and kukui (*Aleurites moluccana*) were observed along the roadside and in areas near the river.

Only two indigenous species were observed at the project site; *hau* and *pōpolo* (*Solanum americanum*). Ti, kukui, and hoi were introduced by early Polynesian settlers. The primrose willow (*Ludwigia octovalvis*) has questionable status, but is believed to have possibly been introduced by early Polynesian settlers to the islands rather than established by natural vectors such as birds, wind, or ocean currents, or introduced after European contact.

Figure 1. North side of stream showing existing roadway and proposed laydown area to the right of people. Vegetation consists of tall Moluccan albizia trees, hau, hoi, golden pothos, `ape, and Guinea grass.

PLANT SPECIES LIST

The following checklist is an inventory of all the **naturally occurring or established** plant species observed within the project area of effect for the proposed replacement of Queensland crossing. 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 follow Imada, 2019.

For each species, the following name/information 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.
   P=Polynesian introduction, brought by early Polynesian settlers to the Hawaiian Islands
   I=Indigenous species native to the Hawaiian Islands and also found elsewhere in the world.
4. Wetland Indicator status: the probability of occurring in freshwater, brackish and saltwater wetlands: (USACE 2021 or *Puddock and Imada 2004)
   OBL=Obligate. Occur almost always under natural conditions in wetlands.
   FACW=Facultative Wetland. Usually occur in wetlands but occasionally found in non-wetlands.
   FAC=Facultative. Equally likely to occur in wetlands and non-wetlands.
   FACU=Facultative Upland. Usually occur in non-wetlands but occasionally found in wetlands.
   UPL=Upland. Occur almost always under natural conditions in non-wetlands in the specific region.

Table 1. Plant Species List

Scientific Name	Common Name	Biogeographical Status	Wetland Indicator Status
PTERIDOPHYTES			
POLYPODIACEAE			
Phymatosorus grossus (Langsd.&Fisch.)	lāua`e, maile-scented fern	A	FACU
PTERIDACEAE			
Pityrogramma calomelanos (L.) Link	silver fern	A	FAC
THELYPTERIDACEAE			
Christella dentata (Forssk.) Brownsey & Jermy		A	FAC
Christella parasitica (L.) Lev.		A	FAC
MONOCOTS			
AGAVACEAE			
Cordyline fruticosa (L.) A.Chev.	ti, kī	P	FAC
ARACEAE			
Epipremnum pinnatum (L.) Engl.	golden pothos	A	FAC
Xanthosoma robustum Schott	`ape	A	FAC
COMMELINACEAE			
Commelina diffusa Burm.f.	honohono, dayflower	A	FACW
CYPERACEAE			
Cyperus brevifolius (Rottb.) Hassk.	*kili'o'opu*, green kyllinga	A	FAC
Cyperus involucratis Rottb.	umbrella sedge	A	FACW

Cyperus rotundus L.	nut grass	A	FACU
DIOSCOREACEAE			
Dioscorea bulbifera L.	hoi, bitter yam, air potato	P	UPL
POACEAE			
Chloris radiata (L.) Sw.	radiate fingergrass	A	FACU
Coix lachryma-jobi L.	Job's-tears	A	FACW
Megathyrsus maximus (Jacq.) B.K.Simon&S.W.L. Jacobs	Guinea grass	A	FAC
Paspalum conjugatum P.J.Bergius	Hilo grass	A	FAC
Paspalum fimbriatum Kunth	fimbriate paspalum	A	FAC
DICOTS			
ACANTHACEAE			
Asystasia gangetica (L.) T. Anderson	Chinese violet	A	FACU
APIACEAE			
Centella asiatica (L.) Urb.	asiatic pennywort	A	FAC
ASTERACEAE			
Ageratum conyzoides L.	maile honohono	A	*FAC
Calyptocarpus vialis	straggler daisy	A	FAC
Erechtites hieracifolia (L.) Raf.exDC.	fireweed	A	FAC
Erigeron karvinskianus DC.	daisy fleabane	A	FACU
Pluchea carolinensis (Jacq.) G.Don	sourbush	A	FAC
Sphagneticola trilobata (L.) Pruski	wedelia	A	FAC
Synedrella nodiflora (L.) Gaertn.	nodeweed	A	FAC
BIGNONIACEAE			
Spathodea campanulata P.Beauv.	African tulip tree	A	FACU
EUPHORBIACEAE			
Aleurites moluccana (L.) Willd.	*kukui*, candlenut tree	P	FACU
FABACEAE			
Desmodium intortum (Mill.) Urb.	tick trefoil	A	-
Desmodium triflorum (L.) DC.	tick clover	A	FAC
Falcataria moluccana (Miq.) Barneby& J.W.Grimes	Moluccan albizia	A	FACU
Mimosa pudica L. var. *unijuga* (Duchass. & Walp.) Griseb.	sleeping grass, sensitive plant	A	FACU
LINDERNIACEAE			
Lindernia procumbens (Krock.) Philcox	false pimpernel	A	FACW
LYTHRACEAE			
Cuphea carthagenensis (Jacq.) J.F.Macbr.	tarweed, Colombian cuphea	A	FAC
MALVACEAE			
Hibiscus tiliaceus L.	hau	I	*FAC
MELASTOMATACEAE			
Miconia crenata (Vahl) Michelang.	Koster's curse	A	FACU
ONAGRACEAE			
Ludwigia octovalvis (Jacq) P.H.Raven	primrose willow	P?	OBL
PLANTAGINACEAE			
Plantago major L.	broad-leaved plantain	A	FACU

POLYGALACEAE			
Polygala paniculata L.	milkwort	A	FACU
ROSACEAE			
Rubus rosifolius Sm.	thimbleberry	A	FACU
RUBIACEAE			
Richardia scabra L.		A	UPL
SAPOTACEAE			
Chrysophyllum oliviforme L.	satinleaf	A	UPL
SCROPHULARIACEAE			
Buddleja asiatica Lour.	dog tail, butterfly bush	A	FACU
SOLANACEAE			
Solanum americanum Mill.	pōpolo, glossy nightshade	I	FACU
VERBENACEAE			
Stachytarpheta australis Moldenke	ʻōwī	A	FAC

Figure 2. North bank looking down stream from existing stream crossing.

Avian Survey Methods

One avian point count station was sited on the north side of the stream crossing near the proposed construction laydown area on June 29th and another avian point count was conducted on the south side of the streamduring the December 16th site visit. 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 during morning hours, 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.

Avian Survey Results

A total of 45 individual birds of 6 species, representing 6 separate families, were recorded during point counts. All avian species recorded are common established alien or feral species (Table 2). Avian diversity and densities were in keeping with the location and the almost completely alien vegetation on the site.

Table 2 – Avian Species Detected During Point Counts – Queensland Crossing
June & December 2021

Common Name	*Scientific Name*	*ST*	*June 29 2021* *A*	*December 26 2021* *A*
	ARDEIDAE - Herons, Bitterns & Allies			
Cattle Egret	*Bubulcus ibis*	A	2	1
	ZOSTEROPIDAE - White-eyes			
Warbling White-eye	*Zosterops japonicus*	A	6	3
	MUSICAPIDAE - Old World Flycatchers			
White-rumped Shama	*Copsychus malabaricus*	A	1	0
	STURNIDAE - Starlings			
Common Myna	*Acridotheres tristis*	A	2	6
	FRINGILLIDAE - Fringilline and Carduline Finches & Allies			
House Finch	*Haemorhous mexicanus*	A	5	12
	CARDINALIDAE - Cardinals & Allies			
Northern Cardinal	*Cardinalis cardinalis*	A	2	0

Key to table 1

ST Status

A Alien – Introduced to the Hawaiian Islands by humans

A Abundance - Number of birds detected

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *ʻōpeʻapeʻa* as it is known locally, all terrestrial mammals currently found on the Island of Kauaʻi 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.

Mammalian Survey Results

The only mammalian species detected during the course of these surveys were tracks, scat and sign of feral pigs (*Sus scrofa*). No mammalian species currently proposed for listing or listed under either the

federal or State of Hawai‘i endangered species statutes was recorded on this site (DLNR 1998; USFWS, nd).

Figure 3. South bank of stream viewed from north side of crossing. Guinea grass, hau, and Moluccan albizia dominate the vegetation.

Discussion

Botanical Resources

The fieldwork results represent a snapshot of the plants inhabiting the project site. However, when considered together with the results of historical surveys, they represent a reasonably accurate description of the environment and vegetation of the project area. Native plant habitat within the proposed project area has been highly modified by human activities, such as historical agricultural activities, road building, and the intentional and accidental introduction of alien species. The overwhelming abundance of non-native plant species at the project area is in direct correlation to disturbance over the last several hundred years.

The nature of the land and its present and historical disturbances limit the natural botanical resources anticipated to occur here. The results of our survey substantiate this prediction. The rare frequency of native plant species is an indication that because of constant disturbances (geological, vehicular, invasive plant and animal species), only species adapted to such conditions can survive, with few exceptions. *Pōpolo* and *hau*, were the only native plant species observed during the survey. None of the plant species observed are listed as threatened or endangered under either federal or state of Hawai‘i endangered species statutes.

Avian Resources

The findings of this avian survey are consistent with the almost completely alien dominated vegetation present on this site. As previously mentioned, we recorded 6 species during the course of the surveys. All species recorded are well established feral or alien species.

Waterbirds and Nēnē

The Hawaiian duck (*Anas wyvilliana*) and Hawaiian moorhen (*Gallinula galeata sandvicensis*) are both listed as Endangered (Federal and State). They are generally found in habitat with wetlands and waterways such as, freshwater marshes, coastal estuaries, kalo patches, and montane streams and marshlands. We did not record any waterbirds in or near the stream. There is little suitable habitat present in the area of the Queensland crossing to support waterbird species. Although we did not record Nēnē (*Branta sandvicensis*) during the survey, it is possible that there is occasional usage of the site by this endangered species.

Seabirds

Both the endangered Hawaiian Petrel (*Pterodroma sandwichensis*) and the threatened Newell's Shearwater (*Puffinus newelli*) may over-fly the project area between April and the middle of December each year. It is also possible that the endangered Band-rumped Storm-Petrel (*Hydrobatis castro*) also over fly the site during the seabird nesting season. All three species are regularly recovered as downed birds in the lowlands of Kauai on an annual basis (SOS – 2020, unpublished data). The primary cause of mortality in Hawaiian Petrels and Newell's Shearwaters in Hawaii is thought to be predation by alien mammalian species at the nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley et al., 2001). Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. Disoriented seabirds may collide with man-made structures and, if not killed outright, become easy targets of opportunity for feral mammals (Hadley, 1961; Telfer, 1979; Sincock, 1981; Reed et al., 1985; Telfer et al., 1987; Cooper and Day, 1998; Podolsky et al., 1998; Ainley et al., 2001; Hue et al., 2001; Day et al., 2003).

Migratory Shorebirds

We did not record any migratory shorebirds during the course of this survey, not surprising as they have all left for their nesting grounds in the high Arctic prior to this survey. Regularly occurring migratory shorebird, Pacific Golden-Plover (*Pluvialis fulva*), may at times visit the area for foraging. There is minimal suitable wintering habitat for this species on parts of the project site. Commonly seen across the state between late September and the end of April each year. They usually depart for their Arctic breeding grounds in late April or the first week of May.

Mammalian Resources

We recorded signs of one mammalian species, feral pig (*Sus scrofa*) on the site. Although, no rodents were recorded during the course of this survey, it is likely that one or more of the other four established alien Murida*e* found on Kaua'i - European house mouse (*Mus musculus*), roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), and black rat (*Rattus exulans hawaiiensis*) - use various resources found within the

general project area on a seasonal basis. These human commensal species are drawn to areas of human habitation and activity. All of these introduced mammalian species are deleterious to native ecosystems and the native faunal species dependent on them.

No Hawaiian hoary bats were detected during the course of this survey. It is within the realm of possibility that this species may use resources within portions of the project area on a seasonal basis.

Stream Biota and Habitat

Although this survey did not include a freshwater biota element, other studies in the area (SWCA 2019) have found several native species utilizing the North Fork Wailua River including; `opae kalaole (*Atyoida bisulcata*), `o`opu nakea (*Awaous stamineus*), `o`opu `akupa (*Eleotris sandvicensis*), `o`opu naniha (*Stenogobius hawaiiensis*), `opae `oeha`a (*Macrobrachium grandimanus*), and damselfly species (*Zygoptera* sp.). One undetermined damselfly was observed flitting around ponded areas on the south side of the crossing.

Potential Impacts to Protected Species

Botanical

No protected botanical resources were detected on or adjacent to the Queensland crossing. It is not expected that the proposed crossing repair project will result in deleterious impacts to any protected botanical resources.

Hawaiian hoary bat

The principal potential impact that the project could pose to bats is during any clearing and grubbing phase of the construction. The trimming or removal of foliage and/or trees in the area 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, females 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.

Stream Biota

Aquatic species described above could be affected by increased turbidity and sedimentation from construction activities during new crossing construction. Including BMPs to minimize erosion, and disturbance during construction should be included in project plans.

Critical Habitat

There is no federally delineated Critical Habitat for any avian or mammalian 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.

Literature Cited

Ainley, D. G, R. Podolsky, L. Deforest, G. Spencer, and N. Nur. 2001. The Status and Population Trends of the Newell's Shearwater on Kaua'i: Insights from Modeling, *in*: Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna.* Studies in Avian Biology No. 22: Cooper's Ornithological Society, Allen Press, Lawrence, Kansas. (Pg. 108-123).

Chesser, R. T., K. J. Burns, S. M. Billerman, K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, N. A. Mason, P. C. Rasmussen, J. V., Remsen, Jr., D. F. Stotz, and K. Winker. 2020. Check-list of North American Birds (online). American Ornithological Society. Available online at URL: http://checklist.aou.org/taxa.

Cooper, B. A, and R. H. Day. 1998. Summer Behavior and Mortality of Dark-rumped Petrels and Newells' Shearwaters at Power Lines on Kauai. Colonial Waterbirds, 21 (1): 11-19.

Day, R. H., B. Cooper, and T. C. Telfer. 2003. Decline of Townsend's (Newell's Shearwaters (*Puffinus auricularis newelli*) on Kauai, Hawaii. The The Auk 120: 669-679.

Department of Land and Natural Resources (DLNR). 1998. Indigenous Wildlife, Endangered And Threatened Wildlife And Plants, And Introduced Wild Birds. Department of Land and Natural Resources. State of Hawaii. Administrative Rule §13-134-1 through §13-134-10, dated March 02, 1998.

DLNR. 2014. Hawai'i Administrative Rules, Title 13, Department of Land and Natural Resources, Subtitle 5 Forestry and Wildlife, Part 2 Wildlife, Chapter 124, Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife. Exhibit 1. November 1, 2014. 21 pp.

Hadley, T. H. 1961. Shearwater calamity on Kauai. Elepaio 21:60.

Hue, D., C. Glidden, J. Lippert, L. Schnell, J. MacIvor and J. Meisler. 2001. Habitat Use and Limiting Factors in a Population of Hawaiian Dark-rumped Petrels on Mauna Loa, Hawai'i. , *in:* : Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna*. Studies in Avian Biology No. 22. Cooper's Ornithological Society, Allen Press, Lawrence, Kansas (Pg. 234-242).

Imada, C. 2019. Hawaiian Naturalized Vascular Plant Checklist. February 2019 update. Bishop Museum Technical Report 69.

Palmer DD. 2003. Hawai'i''s ferns and fern allies. Honolulu: University of Hawai'i Press.

Podolsky, R., D.G. Ainley, G. Spencer, L. de Forest, and N. Nur. 1998. "Mortality of Newell's Shearwaters Caused by Collisions with Urban Structures on Kaua'i". Colonial Waterbirds 21:20-34.

Puttock, C.F. and Imada. C., 2004. Wetland Status List for Hawaiian Plants, Final report for U.S. Fish and Wildlife Service, Honolulu.

Pukui , M. K., S. H. Elbert, and E. T. Mookini 1976. *Place Names of Hawaii*. University of Hawaii Press. Honolulu, Hawai'i. 289 pp.

Reed, J. R., J. L Sincock, and J. P. Hailman 1985. Light Attraction in Endangered Procellariform Birds: Reduction by Shielding Upward Radiation. The Auk 102: 377- 383.

Simons, T. R., and C. N. Hodges. 1998. Dark-rumped Petrel (*Pterodroma phaeopygia*). *In* A. Poole and F. Gill (editors). The Birds of North America, No. 345. The Academy of Natural Sciences, Philadelphia, PA. and the American Ornithologists Union, Washington, D.C.

Sincock, J. L. 1981. Saving the Newell's Shearwater. Pages 76-78 in Proceedings of the Hawaii Forestry and Wildlife Conference, 2-4 October 1980. Department of Land and Natural Resources, State of Hawaii, Honolulu.

Staples, G. W. and D. R. Herbst. 2005. A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and other Tropical Places. Bishop Museum, Honolulu. 908 pp.

SWCA. 2019. Terrestrial Flora and Fauna Technical Report for the Proposed Waiahi Hydropower Long-Term Water Lease. February 2019. Prepared for SSFM International.

Telfer, T. C. 1979. Successful Newell's Shearwater Salvage on Kauai. 'Elepaio 39:71

Telfer, T. C., J. L. Sincock, G. V. Byrd, and J. R. Reed. 1987. Attraction of Hawaiian seabirds to lights: Conservation efforts and effects of moon phase. Wildlife Society Bulletin 15:406-413.

U.S. Army Corps of Engineers (USACE), 2021. North American Digital Flora: National Wetland Plant List, version 2.4.0. Accessed August 2021. https://cwbiapp.sec.usace.army.mil/nwpl_static/v34/home/home.html U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.

U.S. Fish & Wildlife Service (USFWS) 1983. Hawaiian Dark-Rumped Petrel & Newell's Manx Shearwater Recovery Plan. USFWS, Portland, Oregon. February 1983.

_____. 2015. Hawaiian Islands Threatened and Endangered Plants and Animals: Updated February 2, 2015.

_____. 2021. USFWS Endangered Species. Available online at URL: https://www.fws.gov/endangered/; last retrieved July 2021.

Wagner, W. L., D. R. Herbst and S.H. Sohmer. 1990. Manual of the Flowering Plants of Hawai'i: Volume I and II. Bishop Museum Special Publication 83. University of Hawai'i Press. 1853 pp. Supplement to the Manual of the flowering plants of Hawai'i, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the flowering plants of Hawai'i. Revised edition. 2 vols. University of Hawaii Press and B.P. Bishop Museum.

SCS Project 2661 LRFI-1.4

AN ARCHAEOLOGICAL LITERATURE REVIEW AND FIELD INSPECTION FOR THE LĪHUʻE-KŌLOA FOREST RESERVE ROADWAY CROSSINGS PROJECT WAILUA AHUPUAʻA, KAWAIHAU DISTRICT (PUNA MOKU), ISLAND OF KAUAʻI [TMK: (2) 3-2-001:002]

Prepared by
Chong Jin B.A.
and
Michael Dega, Ph.D.

January 2023
DRAFT

Prepared for
Hart Crowser
500 Ala Moana Blvd #6-250
Honolulu, HI 96813

SCIENTIFIC CONSULTANT SERVICES, Inc.

HAWAII

1357 Kapiolani Blvd., Suite 850 Honolulu, Hawaiʻi 96814

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

At the request of engineering consulting company Hart Crowser, Scientific Consultant Services, Inc. (SCS) has prepared this Archaeological Literature Review and Field Inspection (LRFI) for the Līhuʻe-Kōloa Forest Reserve Roadway Crossings Project in Wailuā Ahupuaʻa, Kawaihau District, Island of Kauaʻi [Tax Map Key (TMK) parcel (4) 4-2-001:002].

SCS conducted field inspection of three damaged water crossings within the Līhuʻe-Kōloa forest reserve known as Keāhua Stream Ford, New Crossing, and Queensland Crossing. The damage was caused by extreme flooding during a storm in 2018 and by additional flooding in 2020. The inspection only included the Areas of Potential Effects at and in the vicinity of the water crossings at Keāhua Stream, Uhauʻiole Stream, and Wailuā River (North Fork) for Keāhua Stream Ford, New Crossing, and Queensland Crossing, respectively.

This report is not intended to meet HAR §13-276 requirements for an archaeological inventory survey, but to identify potential cultural resources in the area of potential effects and its vicinity, as well as to provide in brief the history of archaeological research nearby. Thus, the scope of work for the current investigation includes the following two aspects:

- Literature review consisting of a study of previous archaeological reports pertaining to the area of potential effects and its vicinity. This research is conducted in order to determine what type of archaeological sites have been recorded in the area of potential effects environs, broadly construed, and what features or sites are likely to be documented on the subject property or the terrain adjacent to it, if any.

- Field inspection via pedestrian survey of the area of potential effects. This inspection is conducted in order (1) to identify any surface archaeological features and (2) to investigate and assess the potential for impact to such sites. This assessment will also identify any sensitive areas that may require further investigation or mitigation before work on the project proceeds.

SCS archeologist Trevor Iliff, B.A., conducted the field inspection under the direction of principal investigator Michael Dega, Ph.D., on June 29, 2021. No newly identified historic properties were recorded within the area of potential effects during the pedestrian survey, although a few previously documented sites were found and redocumented.

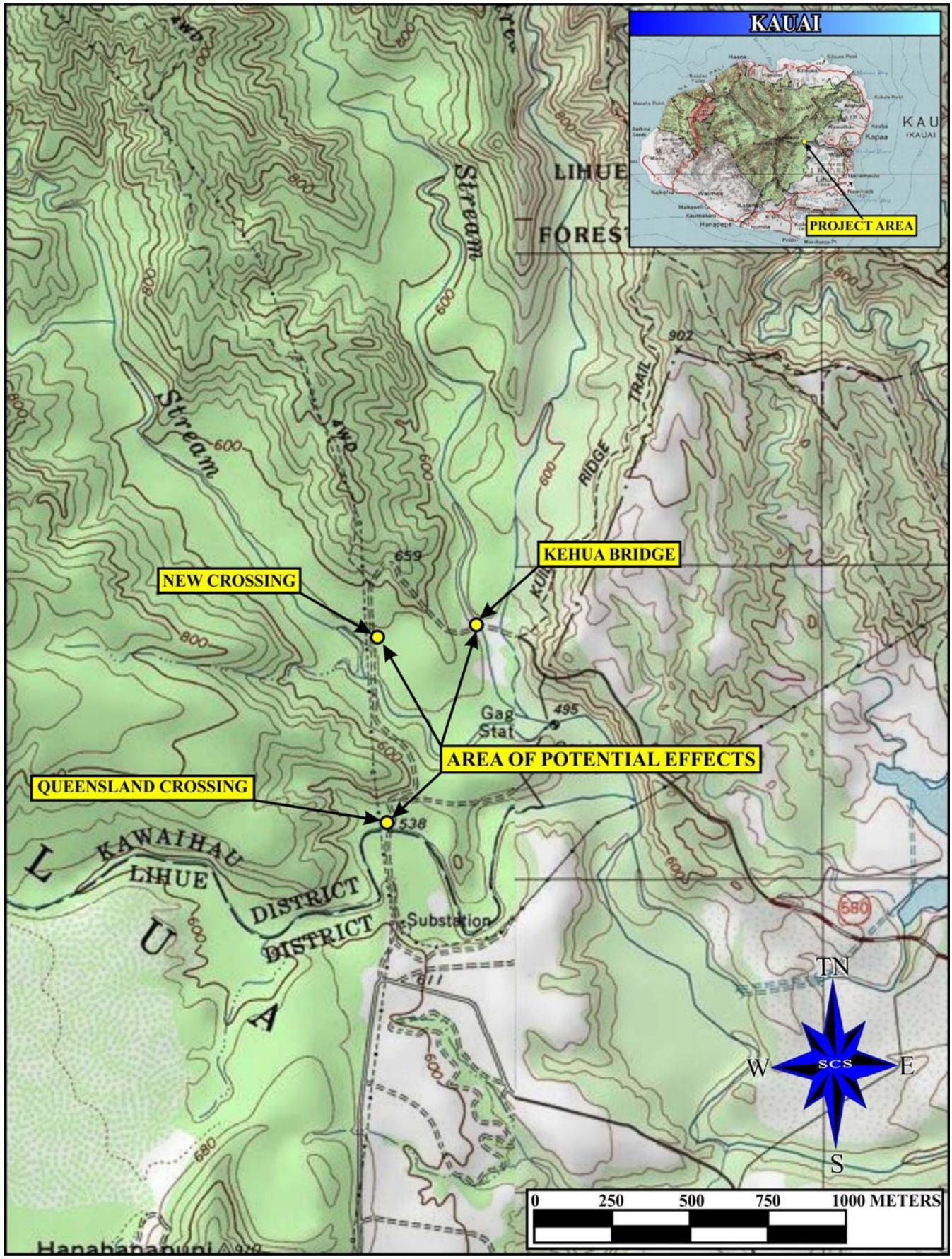


Figure 1: Composite USGS topographic map (Waialeale HI 1983 and Kapaa HI 1996 quadrangles) showing the location of the area of potential effects

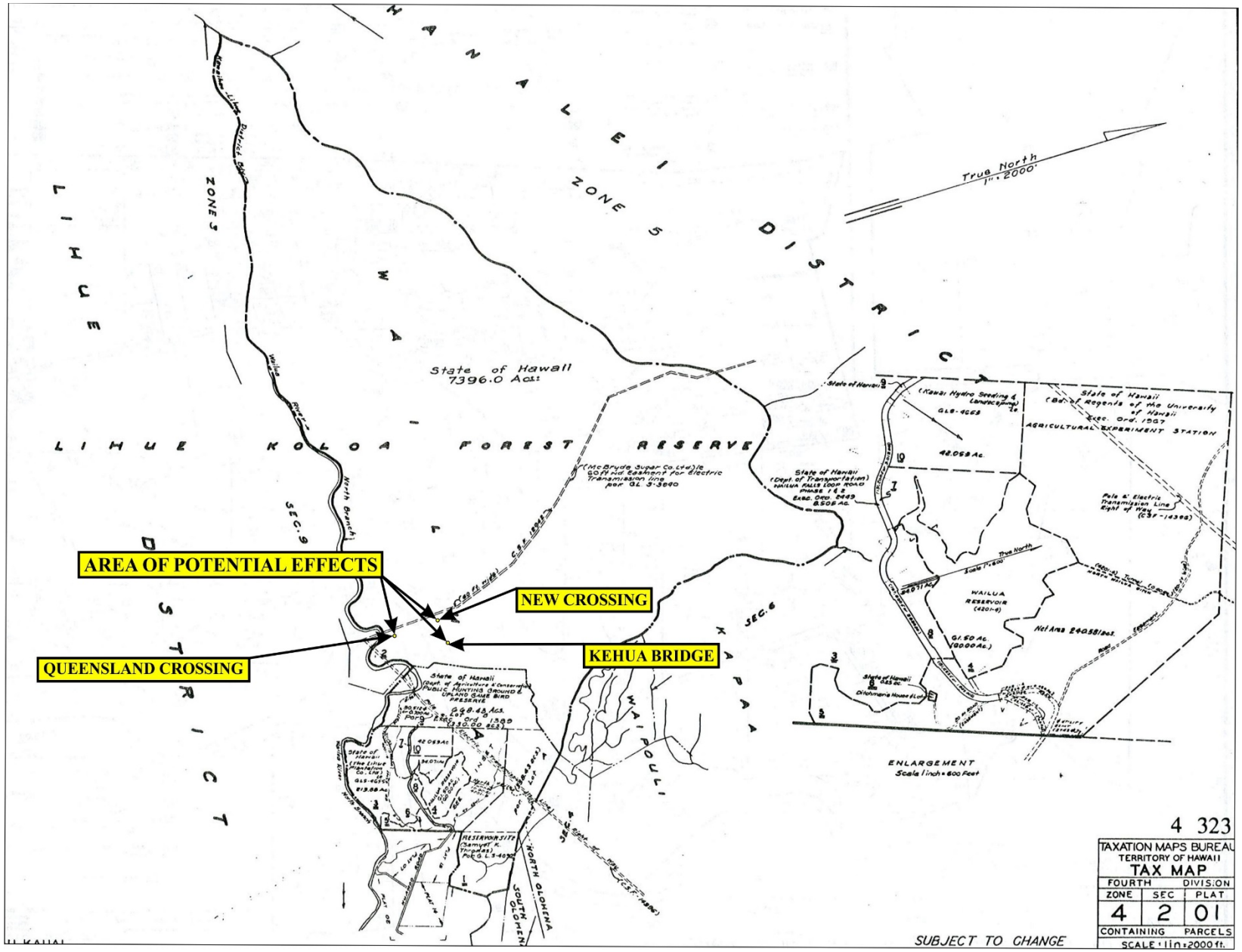


Figure 2: A portion of a TMK map showing the location of the area of potential effects in TMK: (4) 4-2-001:002 (County of Kaua‘i 2020)

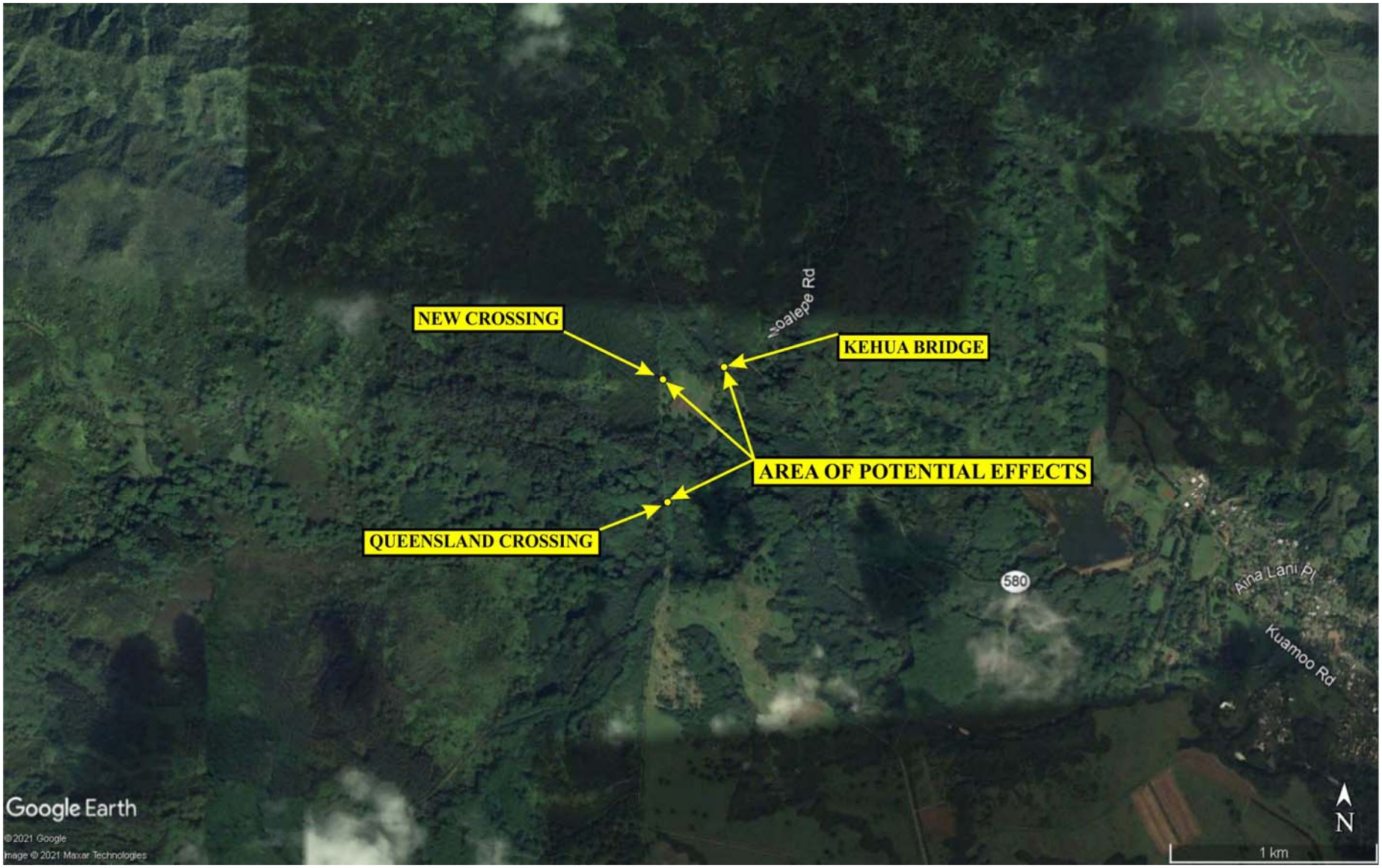


Figure 3: A 2013 Google Earth aerial photograph showing the location of the area of potential effects

ENVIRONMENTAL SETTING

LOCATION

The areas of potential effects consist of three small zones around three water crossings within TMK: (4) 4-2-001:002, a parcel which comprises the majority of the lands within Līhuʻe–Kōloa Forest Reserve. The elevation of the area of potential effects is approximately 500–600 ft (152–163 m) above mean sea level, putting it well above the residential zones *makai* (seaward) of Wailuā Reservoir to the southeast.

The area of potential effects falls within Wailuā Ahupuaʻa, located in the district of Kawaihau (Hawaii Statewide GIS Program 2020). Kawaihau is one of the five judicial districts dividing the County of Kauaʻi and comprising the northeastern portion of the island.

GEOLOGY

Kauaʻi is the oldest of the major Hawaiian Islands. At its highest point it rises to a height of 1,598 meters and stretches for about 52 kilometers (32 miles) in length and 40 km (25 miles) in width. Geologists estimate submarine volcanic eruptions leading to the island's formation to have occurred between 2 to 4 million years ago (Stearns 1966:190). A volcanic fissure on the ocean floor where Kauaʻi now exists developed into a southeasterly chain of activity that has most recently formed the youngest island, Hawaiʻi. During the late Pliocene Era approximately 1.4 million years ago, eruptions from the volcanic vents in Kōloa began to modify the landscape of Kauaʻi, covering canyon walls and displacing streams. Surface lava flows from Kōloa encompassed over half of the eastern portion of the island, including the project parcel. These Kōloa flows occurred on top of the older Waimea lava flows (Stearns 1966:190).

CLIMATE

The area of potential effects is located in the central-eastern side of Kauaʻi, on the windward side of the island. As it faces the prevailing northeastern trade winds which bring clouds and precipitation, and because rainfall is greater in the mountains, the area of potential effects should receive relatively high rainfall. Mean annual rainfall over the area of potential effects is 2546 mm (100 in) (Giambelluca et al. 2014). Rainfall remains high throughout the year, peaking at 282 mm (11 in) in November, with a nadir of 174 mm (6.9 in) in February (Giambelluca et al. 2014).

Average annual air temperature in the area of potential effects is 21.8 °C (71.2 °F). August is the hottest month with an average of 23 °C (74 °F), while February is the coolest with an average at 20 °C (68 °F) (Giambelluca et al. 2014).

SOILS

According to Foote et al. (1972: Sheet 20) and the National Cooperative Soil Survey (Figure 4), two segments of the area of potential effects (New Crossing and Queensland Crossing) fall within a curving region along the streams where the topsoil is Kolokolo clay loam, 0 to 2 percent slopes (Kw). The third crossing (Keāhua Stream Ford) falls within a small region of Marsh (MZ).

The Kolokolo series "consists of well-drained soils on the bottom lands" of Kauaʻi and are "developed in alluvium washed from upland soils" (Foote et al. 1972:73). Kw has slight runoff and erosion risk but "is subject to damaging overflow" (Foote et al. 1972:73). It is typically used for pasture.

According to the soil survey conducted by Foote et al., MZ "consists of wet, periodically flooded areas covered dominantly with grasses and bulrushes or other herbaceous plants. It [typically] occurs as small low-lying areas along the costal plains" (Foote et al. 1972:95).

Table 1: Soil types on the soil map (Figure 4, below)

Map	Full Soil Name	Map	Full Soil Name
HfB	Halii gravelly silty clay, 3 to 8 percent slopes	KkE	Kapaa silty clay, 25 to 40 percent slopes
HfC	Halii gravelly silty clay, 8 to 15 percent slopes	KUL	Kolokolo extremely stony clay loam
HfD2	Halii gravelly silty clay, 15 to 25 percent slopes, eroded	Kw	Kolokolo clay loam
HfE2	Halii gravelly silty clay, 25 to 40 percent slopes, eroded	MZ	Marsh
HnA	Hanalei silty clay, 0 to 2 percent slopes,	PlB	Pooku silty clay loam, 3 to 8 percent slopes
HpA	Hanalei peaty silty clay loam, 0 to 2 percent slopes	PlD	Pooku silty clay loam, 8 to 25 percent slopes
HsB	Hanamaulu silty clay, 3 to 8 percent slopes	PmD	Pooku silty clay, 15 to 25 percent slopes
HsC	Hanamaulu silty clay, 8 to 15 percent slopes	PmE	Pooku silty clay, 25 to 40 percent slopes
KkC	Kapaa silty clay, 8 to 15 percent slopes	rRR	Rough broken land
KkD	Kapaa silty clay, 15 to 25 percent slopes	rRT	Rough mountainous land

VEGETATION

According to Juvik and Juvik (1998:122, 127–128) before human settlement the native ecosystem of the region would have been "wet forest and woodland." Persisting indigenous flora includes *ʻākala* (*Rubus hawaiensis*), *hala* (*Pandanus tectorius*), *koa* (*Acacia koa*), *ʻohiʻa* (*Metrosideros macropus*), *ʻōlapa* (*Cheirodendron* spp.), and *uluhe* (*Dicranopteris linearis*).

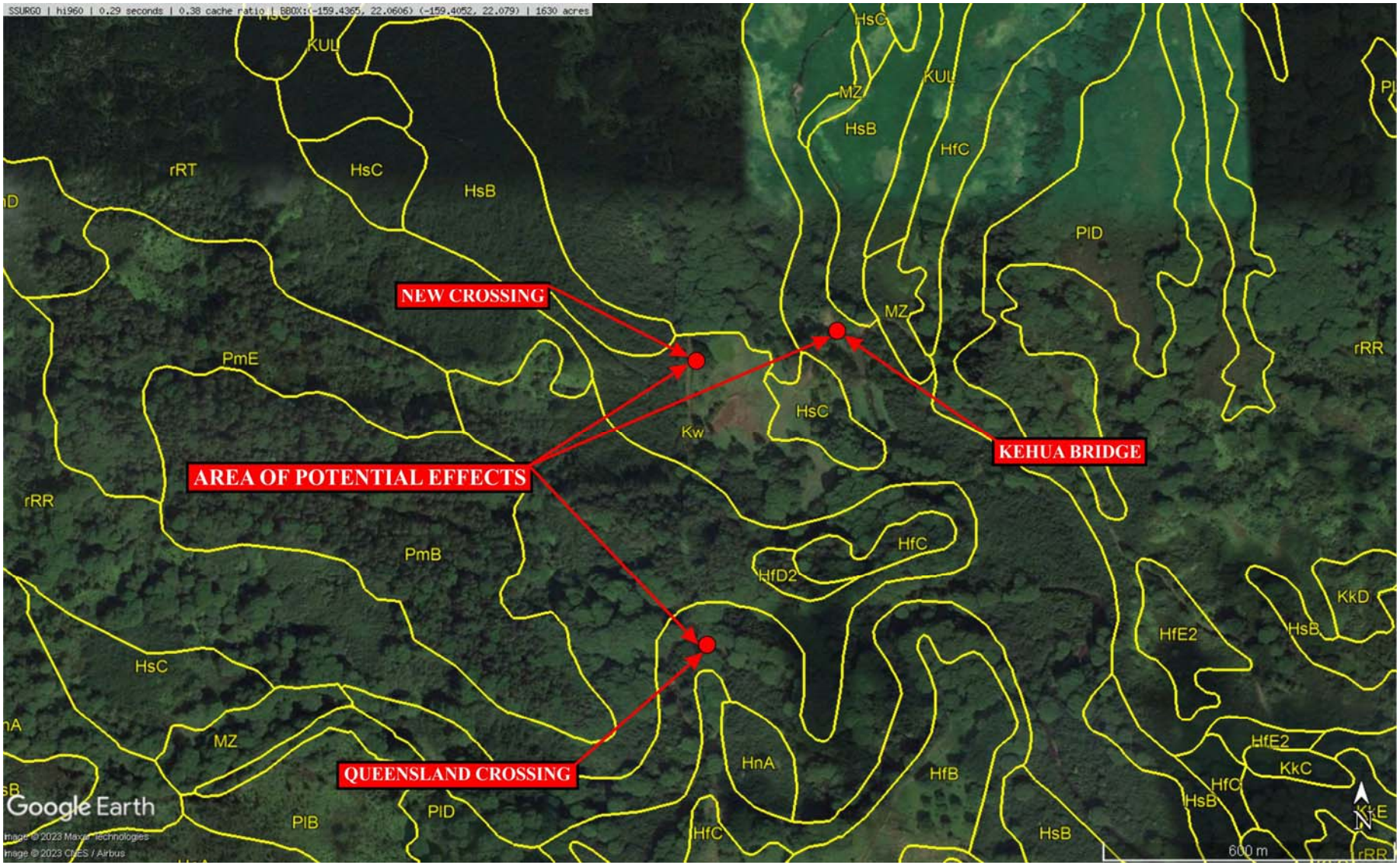


Figure 4: Google Earth aerial photograph showing the soil series in the area of potential effects and in its vicinity (U. S. Department of Agriculture Natural Resource Conservation Service, and University of California at Davis Soil Resource Lab 2017)

HYDROLOGY

The state Division of Aquatic Resources (Parham et al. 2008) places the area of potential effects within the Wailuā River watershed. Wailuā River is a perennial stream with numerous tributaries, including the Keāhua and Uhauʻiole Streams.

HISTORICAL SETTING

Archaeological data indicate that the initial settlement of the Hawaiian Islands by Polynesians occurred on the windward shores around the 10th century, with populations extending into leeward areas in later periods (Kirch 2011:22). It is likely that settled human presence in the area of potential effects can be traced to the early period of agricultural development, which on Kauaʻi began approximately 1100–1300 (Kirch 1985:100–01).

PRE-CONTACT

Pre-Contact Hawaiian economy was based on agricultural production, marine exploitation, and raising livestock, in addition to collecting wild plants and birds. Patrick Kirch notes that the Pre-Contact Hawaiian economy was productive and diverse enough to support "considerable craft specialization … canoe-makers, adz-makers, bird-catchers, wood-carvers and tattooing experts" (1985:3). The existence of these specialized artisans and artists implied a sophisticated society with both surplus food and spare labor.

Settlements were often concentrated in river valleys most amenable to wet *kalo* (taro, *Colocasia esculenta)* cultivation, which incorporated *loʻi* (pond fields) and irrigation canals. Areas with higher precipitation permitted cultivation of *kō* (sugar cane, *Saccharum officinarum*) and *maiʻa* (banana, *Musa* spp.). Dryland agriculture flourished on *kula* (plain, field) or areas with *ʻuala* (sweet potato, *Ipomoea batatas*) as the staple crop, especially on the leeward sides of the islands. These two patterns of wetland and dryland agriculture were typical of all islands in the Pre-Contact period (Kirch and Sahlins Vol. 1, 1992:5, 119).

Each *mokupuni*. (island) was divided into *moku* (districts) which were in turn divided into *ahupuaʻa*. These land divisions usually extended from the ocean to the mountain peaks in order to incorporate the natural resources relevant to subsistence and provide access to the ecosystems at all elevations (Lyons 1875:111). Their name is likely derived from the practice of marking their boundaries by a heap (*ahu*) of stones surmounted by an image of a pig (*puaʻa*), or because a pig or other tribute was laid on the altar as tax to the chief (Native Hawaiian Library n.d.). Some of these ancient divisions are still in common use to locate and refer to geographical features not only on Kauaʻi, but also on the rest of the islands (Sterling 1998:3).

Land was considered under the stewardship of the *aliʻi ʻai moku* (king), and his role was to ensure rights and responsibilities rather than ownership. The king kept the parcels he wanted, and distributed large parcels to his higher chiefs, who in turn, distributed smaller parcels to lesser chiefs. The *makaʻāinana* (commoners; *lit.* people that attended the land) worked individual plots of land. According to Paul Lucas (1995:40) the *ʻili* were smaller land divisions administered by the *aliʻi* (chief) who controlled the corresponding *ahupuaʻa*. The land holding of a *hoa ʻāina* (tenant) was called a *kuleana* (right, privilege), a term that also came to mean "property" or "title" (Lucas 1995:61).

Wailuā River is the largest river in the Hawaiian archipelago and is navigable by large canoes for some distance upstream. Its valley cuts between two mountains just before the river enters the sea. The abundance of freshwater and fertile land along the North and South forks of Wailuā River and ʻŌpaekaʻa Stream make the *ahupuaʻa* of Wailuā an attractive location for settlement. The upland areas of Wailuā were likely also productive zones for procuring natural resources: wood, feather products, medicines, and kapa cloth made from the *wauke* plant (paper mulberry, *Broussonetia papyrifera*). The *ahupuaʻa* became a political and religious center, one of two on the island, supported by extensive irrigated *kalo* fields, the fishponds constructed behind the dunes (e.g., Loko Puʻuone), *ʻuala* growing along the coastal plain, and the marine resources of Wailuā Bay. Francis Ching (1968) identified seven *heiau* (temples of the Hawaiian religion) in Wailuā Ahupuaʻa, testifying to its economic and cultural importance.

During the Pre-Contact Period, the lower portion of Wailuā Ahupuaʻa, where the river meets the ocean, was called Wailuā Nui Hoano (Great Sacred Wailuā). It was also one of the most sacred areas and was *kapu* (taboo, forbidden) to commoners. Edward Joesting writes that "a short way up the path of the chiefs is a place of immense importance to all Kauai royalty. Beneath a cliff are the Birthstones, two large pieces of smooth stone" (Joesting 1987:8). All Kauaʻi *aliʻi* were to be born at the sacred birthing stones. During periods "when the chiefly class became diminished for some reason, the King selected women of common birth to deliver children at the Birthstones. Legend says such a child would be a chief" (Joesting 1987:9). The important role the Birthstones of Holoholukū played during Pre-Contact times is shown in an ancient chant quoted in part by Joesting:

> The child of a chief born at Holoholo-ku is a high chief;
> The child of a commoner born at Holuholu-ku becomes a chief also;
> The child of a high chief born outside of Holoholo-ku is no chief, a commoner he! [Joesting 1987:9]

According to oral tradition there was a *pu'uhonua* (place of refuge) in Wailuā Ahupua'a, where people could flee to be saved from death. The extent of this refuge is not clear. Some suggest that the *pu'uhonua* was known as Hauola and consisted of the area around Hikina'akala Heiau near the mouth of Wailuā River (Bennett 1931:125; Dickey 1917:15–16). Others have suggested that the entire *ahupua'a* of Wailuā was a *pu'uhonua* (Kamakau 1976:17; Flores 1995: IV-10-11). The existence of this *pu'uhonua* also demonstrates the cultural and political importance of Wailuā and its reputation as a sacred place.

EARLY POST-CONTACT

The Post-Contact Period began in 1778 when Kaua'i was the first Hawaiian Island to encounter British Explorer Captain James Cook (Daws 1968:1). While early contact on Kaua'i took place on the western side of the island at Waimea, on the opposite side from the Wailuā, later arrivals visited greater parts of the island. Soon after, missionaries, visitors, and entrepreneurs also began arriving.Much of the knowledge of traditional land use and other practices in Hawai'i is based on what was recorded at the time of, and shortly after, Western Contact. Captain George Vancouver (1978:221–222) recorded the following observations of Wailuā during his visit:

> This part seemed to be very well watered, as three other rapid small streams were observed to flow into the sea within the limits above mentioned. This portion Attouai [Kaua'i], the most fertile and pleasant district of the island, is the principal residence of the King, or, in his absence, of the superior chief, who generally takes up his abode in an extensive village, about a league to the southward of the north-east point of the island. [Vancouver 1978:221–222]

Contact with the West came at a time of escalating war and political consolidation in the Hawaiian Islands. The great chiefs on the islands of Maui and Hawai'i were vying for dominance in a struggle that had been ongoing for generations. Warfare intensified as the capabilities of their consolidated chiefdoms reached the point where they could aim for the prize of unification of the entire island chain. Contact offered the chance for ambitious chiefs to procure gunpower weapons that could turn the tide of battle, and Hawai'i chief Kamehameha I (r. 1782–1819) proved the most successful at amassing and employing the new weapons, conquering Maui and O'ahu and consolidating control of Hawai'i. While Kaua'i, which was distant from the main theater of conflict, had its own civil war during this time, the relative remoteness made invasion a difficult prospect. Nonetheless, when Kaua'i chief Kaumuali'i saw that his relatives ruling Maui and O'ahu were defeated, he knew that Kamehameha would inevitably seek to take Kaua'i as well. Kaumuali'i scrambled to acquire ships, guns and promises of protection from any westerners who came by to trade.

Ultimately, Kauaʻi was saved from invasion not by the defenses that Kaumualiʻi amassed, nor by the intervention of the western powers he courted, but by a storm in 1796 that disrupted Kamehameha's invasion fleet and a plague in 1804 that ravaged his army (Joesting 1984:55-63). Instead, Kamehameha completed the unification of the islands by negotiation when Kaumualiʻi agreed to become his subordinate in 1810 (Joesting 1984:66-68).

Kamehameha I had won his wars with the aid of gunpower weapons gained by trade with passing American and European ships, and he shrewdly maintained control of foreign trade, which he made a royal monopoly (Daws 1968:44). Kamehameha's successors gave into the pressure from the lesser chiefs, who wanted a share of the bounty, especially exotic merchandise brought in by foreign merchants. During the reign of Liholiho (Kamehameha II, r. 1819–1824), chiefs imported foreign goods on credit, promising payment in sandalwood cut from the mountains. This practice caused famine because workers levied for the task were taken away from subsistence agriculture. In addition, the supply of sandalwood trees was exhausted within a few decades (Rhodes and Greene 1993: Chapter IV). By the reign of Kauikeaouli (Kamehameha III, r. 1825–1854), free enterprise dominated commerce in the islands, and suppling the booming whaling industry had become the main non-subsistence economic activity.

THE MĀHELE

In the 1840s, during the reign of Kauikeaouli, consequential changes in land tenure occurred. The change is commonly referred to as the "*Māhele*" (division). Prior to the changes, a *konohiki* was a superintendent of an *ahupuaʻa* under a chief and was responsible for the management of resources. After the Māhele, the *konohiki* (*ahupuaʻa* headmen) and his or her lands were distributed, and the position was replaced by a land commissioner, or *komikina hoʻonʻāina* (Lucas 1995:56).

Introducing Western-style land ownership had long been advocated by foreign advisors to the *mōʻī* (king) and his *aliʻi*. The five-month occupation of the islands by British naval officer George Paulet in 1843 showed that Hawaiian sovereignty was precarious, and those advisors "pointed out to Kauikeaouli that by granting others the right to own land, he would give himself the same privilege… to assign lands to his personal ownership" (Moffat and Fitzpatrick 1995:50), theoretically allowing him to retain land as private property even if national sovereignty were lost. Jon Chinen (1958:25) also notes that the *mōʻī* "did not want his lands to be considered public domain and subject to confiscation by a foreign power in the event of a conquest."

Chinen (1958:8) reports that the Board of Commissioners to Quiet Land Titles (often shortened to "the Land Commission") was established in 1845 for "the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any land property." The parcels awarded by the Land Commission were called Land Commission Awards (LCAs). Initially, this only established crown lands owned by the king, *aupuni* lands, and private lands owned by the *ali‘i* (also known as "*konohiki* lands," named after the term for an *ahupua‘a* headman). Chinen (1958:10) explains that "except for the government‘s right of commutation, a Land Commission Award gave complete title to the lands confirmed. The commutation was satisfied by the payment of cash or the return of land of equal value… generally one third of the value of the unimproved land as of the date of the award."

The Kuleana Act of 1850 allowed *maka‘āinana* to file claims for land parcels and house lots on which they had been living or cultivating. In order to file claims, however, the *maka‘āinana* first had to be aware of the awarding of *kuleana* lands and LCAs, procedures that were largely foreign to them. In some cases, the *ali‘i* or *konohiki* may have discouraged their *hoa‘āina* from filing claims, and many of the *maka‘āinana* could not afford the costs associated with filing. People claiming house lots in Honolulu, Hilo, and Lāhainā were in addition required to pay commutation to the government before obtaining a Royal Patent (RP) on their awards (Chinen 1961:16). Rural *kuleana* claims required a survey, which could be quite costly, assuming the services of one of the few surveyors in the islands could be obtained (Moffat and Fitzpatrick 1995:50). Surveys (and thus, awards) of rural *kuleana* lands often only encompassed land under active cultivation, without including locations such as fallow lands, stream fisheries, *‘okipu‘u* (swidden gardens), and others (Kame‘eleihiwa 1992:295; Kirch and Sahlins 1992:23, 110). These factors may have contributed to the relatively low number and size of claims, as only 8421 *kuleana* awards were issued, totaling only 28,658 acres (Moffat and Fitzpatrick 1995:50).

Kamanamaikalani Beamer and N. Wahine‘aipohaku Tong (2016:130) argue that the *kanaka maoli* (indigenous people) were able to acquire land for themselves, pointing out that although the claims system appears to have awarded the *maka‘āinana* little, records show that they were able to purchase an estimated 167,290 acres of land between 1850 and 1893, often *aupuni* lands sold to them at relatively low cost. Beamer and Tong (2016:136) also argue that many *ali‘i* leased or sold land to *hui* (associations) of *kanaka maoli*, in keeping with the former *ali‘i - hoa‘āina* relationship. In these ways, lands not awarded to *maka‘āinana* during the Māhele were still made available to them.

With land ownership established in law, foreigners gained the long-demanded right to own land in the Kingdom of Hawaii through the Alien Land Ownership Act of 1850, and would eventually acquire "almost two-thirds of the total land area" (Van Dyke 2009:51).

The Office of Hawaiian Affairs (2016) *Kipuka Online Database* includes a number of LCAs in Wailuā Ahupuaʻa, all of which are in the lowlands within 2 km of the coast and clustered near the banks of Wailuā River. It also lists land grants, which were not awarded as part of the Māhele but instead were parcels sold by the Hawaiian government out of the *aupuni* lands in order to generate income. The extent of these parcels reaches further upland, but still stops short of Wailuā Reservoir. The area of potential effects, located in the forest, is distant from any grants or claims.

Unlike many *ahupuaʻa*, which were claimed by a single *aliʻi* in their entirety aside from the *kuleana* lands, the only noble claim in Wailuā Ahupuaʻa came from Iosia Kaumualiʻi. He was the son of Deborah Kapule, the wife of Kaumualiʻi, and was appointed as a *konohiki* of Wailuā by Kaʻahumanu, the *kuhina nui* (prime minister) of the Kingdom of Hawaiʻi. Aside from this claim, there were 28 *kuleana* claims for *pāhale* (houselots), *ala nui* (access routes, trails), *loʻi* (pond fields), and *kula* in Wailuā Ahupuaʻa (Stauffer 1993).

MID 19TH CENTURY TO PRESENT

Whaling declined in the late 19th century, and sugar cane cultivation and ranching came to the forefront of Hawaiian economy, in part because the Māhele had allowed the consolidation of now privately owned lands into vast plantations and ranches. The Reciprocity Treaty of 1875 permitting duty-free trade of sugar between the Kingdom of Hawaiʻi and the United States eventually turned Hawaiian sugar into an immensely profitable commodity that would make commercial agriculture the economic mainstay until well into the next century (Kuykendall 1967:46–48).

The first sugar plantation in Kauaʻi was founded in relatively humble circumstances. Koloa Plantation pre-dated the Māhele, and was initially run on leased lands. As the first major sugar operation, it suffered difficulties in cobbling together sugar production facilities under the direction of determined but inexperienced managers. Nonetheless, it was ultimately successful in producing commercial sugar products. Koloa Plantation set the model for those that would come after, including payment in company script (adopted because of the lack of available coinage) redeemable at a company store (Joesting 1984:130–35). The second sugar plantation on Kauaʻi, the Lihue Plantation Company was founded in 1849 and also pioneered new methods, such as building the first sugar irrigation ditch in the islands (Wilcox 1996:68-70). Kauaʻi would see over 30 sugarcane plantations, though only a handful would survive to the 20th century (Dorrance and Morgan 2000:25).

The sugar industry propelled the so called "Big Five" corporations, all of which started as sugar factors, into a dominant position in the economy, such that they eventually "took over bodily the wholesaling of goods coming into the Islands; ninety percent of retail stock came from their warehouses" (Young 2017:1). Even after agriculture eventually gave way to tourism as the primarily economic activity in the Hawaiian Islands, many of these companies continued to be major players in real estate, shipping, and other businesses.

PREVIOUS ARCHAEOLOGY

The earliest archaeological endeavors on Kauaʻi in general were undertaken by Thomas G. Thrum (1909), and Wendell C. Bennett (1931) with the sponsorship of the Bernice Pauahi Bishop Museum. These studies identified a number of *heiau* and other religious features. Most of the archaeological research in Wailuā Ahupuaʻa, however, is more recent. The bulk of archaeological studies occur after the implementation of the State Historic Preservation Division's (SHPD's) requirements for protection of significant cultural, historical and archaeological properties in the 1980s. Almost all of these studies have been in the lowlands, usually along the coast, with little work in the forested uplands. The relatively sparse archaeological work in the vicinity of the area of potential effects is shown on Figure 5 and described below.

KEĀHUA ARBORETUM (KIKUCHI 1988, YENT 1988, SPEAR 1992)

In 1988, William Kikuchi (1988) of Kauaʻi Community College performed an archaeological field inspection of the Keāhua Arboretum [also in TMK: (4) 4-2-001:002]. An adze workshop, consisting of adze preforms and debitage, was identified and later designated as State Inventory of Historic Places (SIHP) Site Number 50-30-07-04000. Cultural materials were collected on the surface in an approximately three-acre area (Kikuchi 1988).

Subsequently, Martha Yent (1988) of the Department of State Parks conducted follow-up archaeological investigations of SIHP Site -04000, with an expanded area of potential effects of approximately 20 acres. This study mapped, surveyed and tested SIHP Site -04000, recording that the site occurred as discontinuous flakes scatters on the ground, with adze preforms occurring both within the scatters and as isolated finds. Test excavations showed that the cultural deposits were shallow, extending only 25 centimeters below surface. Yent (1988) concluded that the scatters and artifacts had been affected by previous bulldozing.

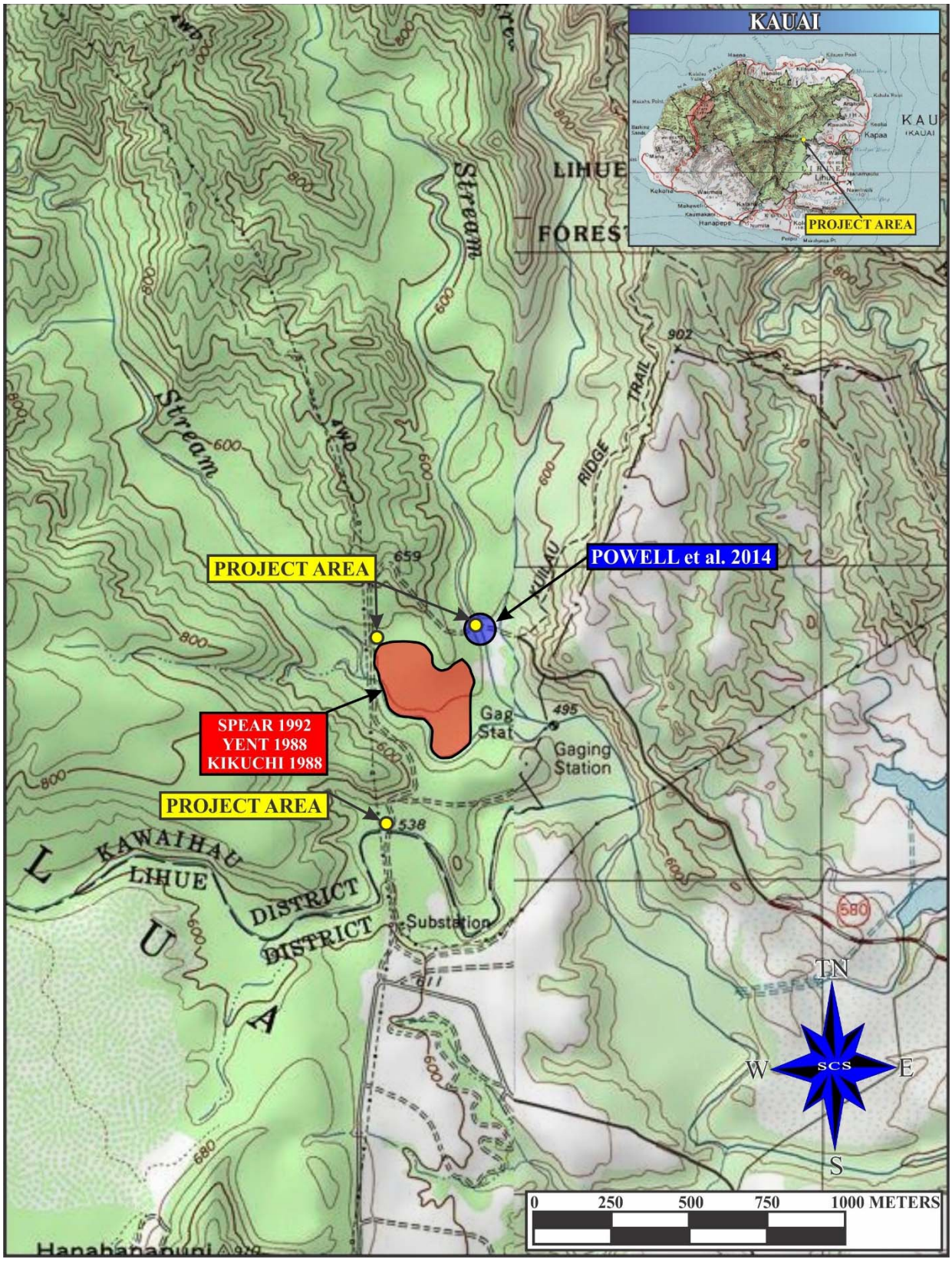


Figure 5: Composite USGS topographic map (Waialeale, HI 1983 and Kapaa, HI 1996 quadrangles) showing previous archaeology in the vicinity of the area of potential effects

In 1992, SCS (Spear 1992) conducted an archaeological survey of the same area to determine if SIHP Site -04000 extended into and beyond a Kauaʻi Electrical Division power line corridor. A total of 15 test units were excavated in and around the corridor, and cultural materials, including 15 pieces of basalt debitage and one split hammerstone, were recovered from four of these units. Robert Spear (1992) notes that both this study and the prior study by Yent (1988) also found tools not related to adze production, such as cobble cores, hammerstones, edge altered flakes and an awl. Therefore, while adze manufacturing may have been the primary use of the site, other activities likely also took place. The wide distribution of cultural materials suggests repeated visits over time. The lack of grinding or abrading stones and polished adzes or flakes suggests that the area was a workshop for adze blanks preforms, and the tools were finished elsewhere, probably after being transported to a coastal region (Spear 1992).

KEĀHUA STREAM BRIDGE (POWELL et al. 2014)

In 2014, SCS (Powell et al. 2014) conducted an archaeological inventory survey (AIS) of a one-acre area around Keāhua Stream Ford (overlapping with the current area of potential effects) for the Keāhua Stream Bridge Project. During a pedestrian survey, two historic properties were identified. Keāhua Stream Form was designated as SIHP Site No. 50-30-07-02248, and an adjacent basalt and concrete retaining wall along the stream was designated as SIHP Site No. 50-30-07-02249. Both sites were dated to 1964 based on dates inscribed on them. Three trenches were excavated, but no subterranean cultural deposits were found. No further work was recommended.

Subsequent to the completion of the AIS (Powell et al. 2014), the Keāhua Stream Bridge was constructed alongside the Keāhua Stream Ford (SIHP Site -02248), and over the retaining wall (SIHP Site -02249). Figures 6 and 7 are 2014 photographs of SIHP Sites -02248 and -02249 prior to the construction of the bridge, while Figure 8 is a 2019 photograph of the sites afterwards. Both sites were left in place and do not appear to have been impacted by the bridge construction; the damage to the ford (SIHP Site -02248) seen in Figure 8 is from flooding.

ARCHAEOLOGICAL FIELD METHODS

The archaeological field inspection was conducted for the project on June 29, 2021, by SCS archaeologist Trevor Iliff, B.A., under the supervision of principal investigator Michael F. Dega, Ph.D. Iliff was accompanied by wildlife biologist Maya LeGrande and Hart Crowser Assistant Project Manager Lisa Bledsoe during the inspection. Field methods included a pedestrian survey of the entire area of potential effects accompanied by digital photographs taken at multiple locations within and around it. Archival research was also conducted at the SHPD library in Kapolei to identify historic properties and previous archaeological research in the vicinity.

Figure 6: Photograph of the Keāhua Stream Ford pre-flood, view to East (adapted from Powell et al. 2014)
The ford is lightly eroded but intact, and the Post-Contact wall is visible to the right, with the parking lot behind it on the rise.

Figure 7: Photograph of the Keāhua Stream Ford pre-flood, view to West (adapted from Powell et al. 2014)
Centered view of the intact ford.

Figure 8: Photograph of the Keāhua Stream Ford post-flood, view to East (adapted from Hart Crowser, Inc. 2019)

The ford is badly damaged and missing its middle section. The wall is barely visible under the bridge and mostly intact. The parking lot is also present behind the bridge; part of a parked white car can be seen.

Field notes were recorded on SCS standard field forms and submitted to the SCS database. As no excavation occurred, stratigraphic profile drawings were not produced. Photographs were taken using the archaeologist's Samsung Galaxy 8 digital camera.

LABORATORY METHODOLOGY AND CURATION

As no artifacts were recovered during this survey, laboratory work consisted of cataloging field notes and photographs. All field notes and digital photographs have been curated at the SCS laboratory in Honolulu. All measurements were recorded in metric and true north compass orientation was employed.

RESULTS OF ARCHAEOLOGICAL FIELD INSPECTION

Full pedestrian survey of the area of potential effects not lead to the identification of any previously unrecorded historic properties. Brief descriptions of each crossing and accompanying photographs taken during the field inspection are presented below.

QUEENSLAND CROSSING

The primary focus of the field inspection, and first visited location, was the Queensland Crossing across Wailuā River (North Fork), which was most severely affected by the flooding. No historic properties or cultural deposits were identified in the vicinity of the crossing. Several basalt and cobble alignments and stacks were observed, but the alignments were assessed as modern construction, and the stacks as natural sorting created by hydrology. As the alignments were not present during an earlier visit to this site by Ms. Bledsoe, they must have been recently placed by visitors to the forest reserve, and may be intended as repairs to the damaged crossing.

Figure 9 is a photograph of the Queensland Crossing, and Figure 10 is a photograph of additional basalt bounder alignments near the Crossing.

NEW CROSSING

The next location visited was New Crossing created during the 2018 flood by a stream channel of Uhauʻiole Stream. The Hart Crowser team named it "New Crossing" because it is located where the stream jumped its normal channel along the west side of the road and crossed the roadway, causing significant damage to the road. According to Hart Crowser's preliminary damage assessment and recommendations report (Hart Crowser, Inc. 2019), overflow from the stream had previously flowed through a culvert to the south, but since that culvert had been blocked as a result of the high water flow during the storm, the stream jumped channels and flowed through this location instead. At the time of the inspection, this location was dry, and the roadway had been temporarily repaired to allow traffic to pass.

Figure 9: Photograph of the damaged Queensland Crossing
Note the recently constructed boulder alignments connecting the concrete remnants of the original crossing.

Figure 10: Photograph showing additional basalt boulder alignments near Queensland Crossing

Figure 11 is a photograph of the basalt and concrete road crossing erected at New Crossing, and Figure 12 is a photograph of the repaired road.

KEĀHUA STREAM FORD

The last location visited was Keāhua Stream Ford across Keāhua Stream. The bridge was elevated enough to remain unaffected by the flooding, although the historic ford (Site -02248) has been severely damaged. Its central portion has been torn away by the waters, while the retaining wall (Site -02249) appears to be largely intact, though it may also have suffered some flood damage. No other historic properties or cultural deposits were identified in the vicinity of the crossing. As with Queensland Crossing, modern boulder alignments were observed, and at the time of the inspection, the crossing was in recreational use, with one such alignment under construction by local visitors.

Figure 13 is a photograph of Keāhua Stream Ford and Keāhua Stream Bridge, with a visible boulder alignment, and Figure 14 is a photograph of the Post-Contact retaining wall under the bridge.

DISCUSSION AND SUMMARY

The location of Līhu‘e-Kōloa Forest Reserve in the uplands of Wailuā Ahupua‘a places the area of potential effects in a region that does not seem to have been subject to permanent habitation in the Pre-Contact Era (and still is not in the modern day, as it has been designated a “forest reserve”). While it is known that the Pre-Contact Hawaiians did use part of the forest for manufacturing adze blanks and preforms and likely also gathered other resources, no signs of permanent habitation have been identified in this or previous archeological work on TMK (4) 4-2-001:002. Therefore, the lack of any previously undocumented archaeological sites encountered during this field inspection is unsurprising.

Of the few documented sites within the forest preserve, SIHP Site -04000 does not seem to extend to the area of potential effects and is therefore unlikely to be impacted. SIHP Site -02249, while within the area of potential effects at Keāhua Stream Ford, is also unlikely to be impacted by the proposed ford repair because of its position under the intact Keāhua Stream Bridge, which the work will likely avoid. SIHP Site -02248, the ford itself, will necessarily be impacted by the work, as its proposed goal is repairing it. Because there are no historic properties at other two water crossings, no additional archaeological sites should be affected by the proposed repairs.

Figure 11: Photograph of the concrete and basalt boulder road crossing erected (as repairs) at the New Crossing

Figure 12: Photograph of the (crudely repaired) passible road at the New Crossing

Figure 13: Photograph of Keāhua Stream Ford in recreational use
Note the boulder alignment connecting the concrete remnants of the original ford (as at Queensland Crossing)

Figure 14: Close-up photograph of the historic Post-Contact wall (Site-02249) underneath Keāhua Stream Bridge

REFERENCES

Beamer, Kamanamaikalani and N. Wahineʻaipohaku Tong
2016 "The Māhele Did What? Native Interest Remains" in *Hūlili: Multidisciplinary Research on Hawaiian Well-Being*, Vol. 10. Shawn Kanaʻiaupuni, Brandon Ledward, and RaeDeen Keahiolalo, eds. pp. 125-145. Kamehameha Publishing, Honolulu.

Bennett, Wendell C.
1931 *Archaeology of Kauaʻi.* Bernice Pauahi Bishop Museum Bulletin No. 80. Honolulu.

Chinen, Jon Jitsuzo
1958 *The Great Mahele: Hawaiiʻs Land Division of 1848*. University of Hawaiʻi Press, Honolulu.

Ching, Francis
1968 *Archaeological Surface Survey, Wailua State Park, Kauaʻi.* Report prepared for Dept. of Land and Natural Resources, Division of State Parks.

County of Kauaʻi
2020 *K4201A*. TMK map. Uploaded to (https://www.kauai.gov/TaxMaps) on July 20, 2020.

Daws, Gavan
1968 *Shoal of Time*. University of Hawaiʻi Press, Honolulu, Hawaiʻi.

Dickey, Lyle A.
1917 *Stories of Wailua, Kauaʻi.* Twenty-fifth Annual Report of the Hawaiian Historical Society for the Year 1916. Paradise of the Pacific Press, Honolulu

Dorrance, William and Francis S. Morgan
2000 *Sugar Islands*. Mutual Publishing. Honolulu.

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens
1972 *Soil Survey of the Islands of Kauaʻi, Oʻahu, Maui, Molokai, and Lānaʻi, State of Hawaiʻi*. U.S. Department of Agriculture, Soil Conservation Service, Government Printing Office, Washington, D.C.

Flores, Eric K.
1995 *Historical and Cultural Research of Malaehaakoa, District of Puna, Island of Kauai, State of Hawaii.* Draft Report Prepared for Department of Land and Natural Resources, Division of State Parks. Aug. 25, 1995. On file at the State Historic Preservation Division, Kapolei

Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger.
2014 *Evapotransportation of Hawai'i*. Final report submitted to the U.S. Army of Corps of Engineers – Honolulu District, and the Commission on Water Resource Management, State of Hawai'i. Accessed January 2023.

Google Earth
2013 Aerial photographs of Hawai'i. Google Inc., 1600 Amphitheatre Parkway, Mountain View, California. Available at (www.google.com/earth.html) Accessed January 2023.

Handy, E. S. Craighill and E. G. Handy
1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum, Bulletin 233. Honolulu.

Hart Crowser, Inc.
2019 *Preliminary Damage Assessment and Recommendations, Līhu'e – Kōloa Forest Reserve Roadway Crossings, Wailua, Kaua'i*. prepared for Hawai'i Department of Land and Natural Resources; DLNR Project No. D00AK67A

Hawaii Statewide GIS Program
2020 *Ahupuaa* (https://geoportal.hawaii.gov/datasets/07624815fc7d42d4b23c527d20ad2f58_1) Accessed January 2023

Joesting, Edward
1987 *Kauai, The Separate Kingdom*. University of Hawaii Press and Kauai Museum Association, Limited. Honolulu

Juvik, Sonia P. and James O. Juvik, ed.
1998 *Atlas of Hawai'i, Third Edition*. University of Hawai'i Press, Honolulu.

Kamakau, Samuel M.
1961 *Ruling Chiefs of Hawai'i*. The Kamehameha Schools Press, Honolulu.

Kame'eleihiwa, Lilikalā
1992 *Native Land and Foreign Desires: Pehea La E Pono Ai?* Bishop Museum Press, Honolulu.

Kikuchi, William
1988 *Kaukahi Adze Workshop and Quarry Site–Letter Report to Ralph Daehler, Kaua'i District Forester, Department of Land and Natural Resources, Division of Forestry and Wildlife*. Dated March 7, 1988

Kirch, Patrick Vinton
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. University of Hawai‘i Press, Honolulu.
2011 “When Did the Polynesians Settle Hawai‘i? A Review of 150 Years of Scholarly Inquiry and a Tentative Answer,” in *Hawaiian Archaeology*. 12 (2011), 3–26.

Kirch, Patrick V. and Marshall Sahlins
1992 *Anahulu: The Anthropology of History in the Kingdom of Hawaii*. Vol. 1 and 2. University of Chicago Press, Chicago.

Kuykendall, Ralph S.
1967 *The Hawaiian Kingdom: 1778-1854, Vol. 3*. University of Hawai‘i Press, Honolulu, Hawai‘i.

Lucas, Paul F. Nahoa
1995 *A Dictionary of Hawaiian Legal Land-terms*. Native Hawaiian Legal Corporation. University of Hawai‘i Committee for the Preservation and Study of Hawaiian Language, Art and Culture. University of Hawai‘i Press, Honolulu.

Lyons, Curtis J.
1875 “Land Matters in Hawaii. – No. 2.” *The Islander*, Vol. I, No. 19 (July 9, 1875). Pacific Commercial Advertiser, Honolulu.

Moffat, Riley M., and Gary L. Fitzpatrick
1995 *Surveying the Mahele*, Editions Unlimited, Honolulu.

Native Hawaiian Library (online)
n.d. Nā Puke Wehewehe ‘Ōlelo Hawai‘i (Hawaiian Dictionaries) (https://wehewehe.org/) Accessed January 2023

National Cooperative Soil Survey.
n.d. Web Soil Survey. (http://websoilsurvey.sc.egov.usda.gov) Accessed January 2023.

Office of Hawaiian Affairs
2016 *Kipuka Online Database* (http://kipukadatabase.com/kipuka). Accessed January 2023.

Parham, James E., Glenn R. Higashi, Eko K. Lapp, Darrell G.K. Kuamo‘o, Robert T. Nishimoto, Skippy Hau, J. Michael Fitzsimons, Daniel A. Polhemus, and William S. Devick
2008 Atlas of Hawaiian Watersheds & Their Aquatic Resources. Hawaii Division of Aquatic Resources and Bernice Pauahi Bishop Museum, Honolulu. Accessed from (https://www.hawaiiwatershedatlas.com/index.html) October 2022.

Powell, Jim, Milton Ching, and Michael F. Dega.
2014 *An Archaeological Inventory Survey for the Keāhua Stream Bridge Project in Keāhua, Wailua Ahupua'a, Kawaihau District, Kaua'i, Hawai'i [TMK: (4) 4-2-001:002] Division of Forestry and Wildlife Job No. D00ck62b*. Scientific Consultant Services, Inc., Honolulu.

Rhodes, Diane Lee, and Linda Wendel Greene
1993 "Chapter IV: Founding of the Hawaiian Kingdom" in *A Cultural History of Three Traditional Hawaiian Sites on the West Coast of Hawai'i Island*. United States Department of the Interior, National Park Service, Denver Service Center. Accessed from (http://npshistory.com/publications/hawaii/greene/chap4.htm) January 2023.

Stauffer, Robert H.
1993 *The Mahele Documents of Wailuā, Kaua'i.* DLNR, Division of State Parks, State of Hawai'i.

Sterling, Elspeth P.
1998 *Sites of Maui.* Bishop Museum Press, Honolulu, Hawai'i.

Thrum, Thomas
1909 "Heiaus and Heiau Sites Throughout the Hawaiian Islands." *Hawaiian Almanac and Annual for 1909*. Honolulu.

U. S. Department of Agriculture Natural Resource Conservation Service, and University of California, Davis California Soil Resource Lab
2017 *Soilweb*. (https://casoilresource.lawr.ucdavis.edu/gmap/) Accessed January 2023.

U.S. Geological Survey
2017 *Makena Quadrangle Map*. (https://www.usgs.gov/core-science-systems/ngp/tnm-delivery/topographic-maps) Accessed January 2023.

Van Dyke, Jon, M.
2008 *Who Owns the Crown lands of Hawai'i?* University of Hawai'i Press, Honolulu.

Vancouver, George
1978 *A Voyage of Discovery to the North Pacific Ocean and Round the World. 1791-1795*. Edited by W. Kaye Lamb. The Hakluyt Society, London.

Yent, Martha
1988 *Archaeological Investigations at Kauakahi Adze Workshop (Site No. 30-07-4000), Keahua Arboretum, Wailua, Kauai*. Ms. in Division of State Parks, Honolulu.

Young, Peter F.
2017 *Big Five (Plus 2)*. Ho'okuleana LLC. (https://imagesofoldhawaii.com/wp-content/uploads/Big-5-Plus-2.pdf) Accessed January 2022.

Attachment F. Additional Information

Item 12.9. Bank Stabilization

The project is not a bank stabilization project. However, project activities include a small section of grouted riprap that extends into the stream to protect the low-water crossing wingwall structure, amounting to approximately 70 square feet, or 12 linear feet (LF) along the bank, well under the NWP 13 – Bank Stabilization PCN threshold of 500 LF along the bank. Placement of riprap for this purpose is also authorized under the 2021 NWP 3 – Maintenance, which “authorizes new or additional riprap to protect the structure or fill.”

2. Permit Verification

DEPARTMENT OF THE ARMY
HONOLULU DISTRICT, U.S. ARMY CORPS OF ENGINEERS
FORT SHAFTER, HAWAII 96858-5440

August 2, 2023

SUBJECT: Nationwide Permit Verification for DLNR-Division of Forestry and Wildlife, Low-Water Crossing, North Fork Wailua River, Wailua, Island of Kauai, Hawaii; Department of the Army File No. POH-2023-00115

David G. Smith
DLNR, Division of Forestry and Wildlife (DOFAW)
1151 Punchbowl St., Room 325
Honolulu, HI 96813

Dear Mr. Smith:

The U.S. Army Corps of Engineers – Honolulu District, Regulatory Office (Corps) has completed review of your Pre-Construction Notification dated May 2, 2023, requesting authorization for the proposed Low Water Crossing Construction through the North Fork Wailua River located at TMKs (4) 3-9-001:004, (4) 4-2-001:002, and (4) 3-9-002:001, Wailua, Island of Kauai, Hawaii. Please reference Department of the Army (DA) file number POH-2023-00115 in any future correspondence related to this permit.

This letter verifies your activity complies with the terms and conditions of Nationwide Permit (NWP) No. 14 (Linear Transportation Projects) issued on February 25, 2022. This NWP verification letter is being issued pursuant to Section 404 of the Clean Water Act for the discharge of dredged and/or fill material into waters of the U.S. You are authorized to conduct the following work below the ordinary high water mark (OHWM) as described below and on the enclosed drawings (Enclosure 1):

The project will include the removal of the remaining road and approach structures leading to the crossing, replacement of these structures, and construction of a new low water crossing and protecting structures. The installation of the low water crossing and its adjacent protective structures will include the following fill placed below the OHWM:

- Leveling the stream bed using approximately 80 cubic yards (cy) of gravel
- Structurally supporting reinforced concrete boxes (RCBs) using approximately 40 cy of concrete
- Placing grouted riprap with approximately 36 cy placed below the OHWM
- Using a sandbag berm (approximately 2 cy placed below the OHWM) to isolate each bank of the stream, where work would be conducted.

Based upon the information and plans you provided, we hereby verify that the work described above, which would be performed in accordance with the enclosed plan, is authorized by Nationwide Permit (NWP) No. 14, Linear Transportation Projects. NWP No. 14 and its associated Regional and General Conditions can be accessed at: https://www.poh.usace.army.mil/Missions/Regulatory/Permits/Nationwide-Permits/. You must comply with all terms and conditions associated with NWP No. 14.

Verification of your project under this NWP is valid until **March 14, 2026** unless this NWP is modified, reissued, or revoked prior to that date. It is incumbent upon you to remain informed of changes to the NWPs. If the Corps modifies, reissues, or revokes any NWP at an earlier date, we will issue a public notice announcing the changes. Failure to comply with all terms and conditions of this NWP verification invalidates this authorization and could result in a violation of the Clean Water Act and subsequent enforcement action. This authorization does not relieve you of the responsibility to obtain any other federal, state, and/or local authorizations required by law.

Your project complies with the requirements of the Clean Water Act, Section 401 Blanket Water Quality Certification (WQC) WQC1092 issued for this Nationwide Permit by the State of Hawaii Department of Health, Clean Water Branch. You are responsible for complying with the attached General Conditions of this WQC (Enclosure 2).

Your project complies with the requirements of the Coastal Zone Management Consistency Concurrence for this Nationwide Permit issued by the State of Hawaii Department of Business, Economic Development and Tourism, Office of Planning during the Nationwide Permit reissuance process in 2021.

Lastly, General Condition #30 requires a signed certification be submitted to this office upon completion of work. Please sign, date, and return the enclosed *Compliance Certification* form (Enclosure 3) within 30 days of completion of work to the email address specified below or to the email address or mailing address indicated on the Compliance Certification form.

Thank you for your cooperation with the Honolulu District Regulatory Program. Should you have any questions related to this authorization, please contact me CJ Cayanan at (808) 835-4107 or via email at Cristian.J.Cayanan@usace.army.mil. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at https://regulatory.ops.usace.army.mil/ords/f?p=136:4.

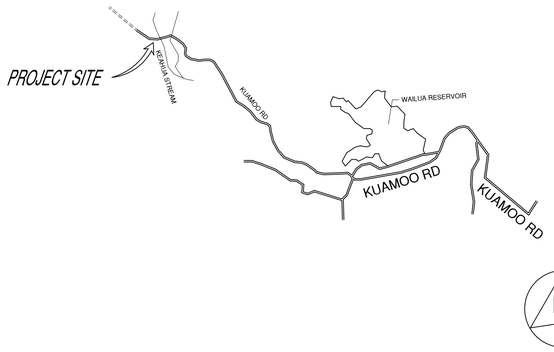
Sincerely,

CJ Cayanan
Regulatory Specialist, Regulatory Branch

Enclosures

Electronic cc:
Janice Marsters, Haley & Aldrich, Inc. JMarsters@haleyaldrich.com
Taylor Chock, Haley & Aldrich, Inc. TChock@haleyaldrich.com
State of Hawaii Department of Health, Clean Water Branch
Darryl C Lum darryl.lum@doh.hawaii.gov
State of Hawaii Office of Planning, Coastal Zone Management Program
Debra Mendes Debra.L.Mendes@hawaii.gov

3. Enclosure 1 -Plans



LOCATION MAP
NOT TO SCALE

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

ENGINEERING DIVISION

FOR

DIVISION OF FORESTRY AND WILDLIFE

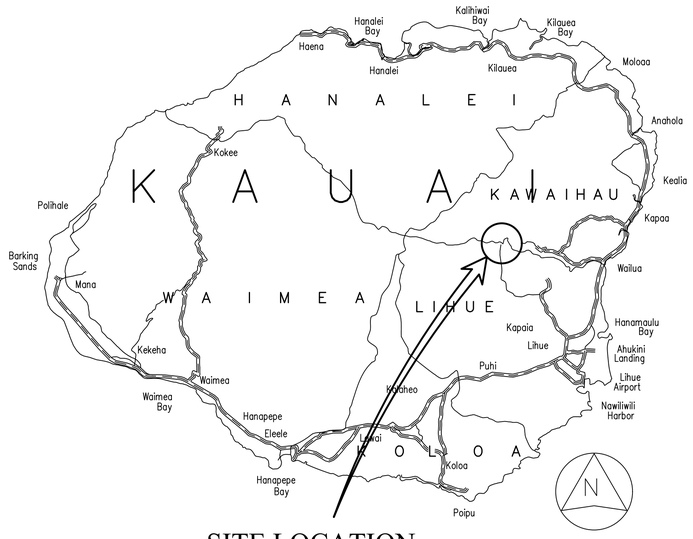
JOB NO. D00AK67B

LIHUE-KOLOA FOREST RESERVE

QUEENSLAND LOOP ROAD LOW WATER CROSSING

KAUAI, HAWAII

T.M.K.: 4-4-2-001-002



SITE LOCATION

ISLAND OF KAUAI
NOT TO SCALE

I N D E X

SCOPE OF WORK: WORK SHALL GENERALLY CONSIST OF PROVIDING CONCRETE BOX CULVERTS AND RETAINING WALLS AT THE QUEENSLAND CROSSING. THE CULVERTS AND RETAINING WALLS WILL PREVENT FUTURE WASHOUT DUE TO FLOODING.

APPROVED: DATE: _____

DAVID G. SMITH
ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE
DEPARTMENT OF LAND AND NATURAL RESOURCES

APPROVED: DATE: _____

CARTY S. CHANG, P.E.
CHIEF ENGINEER
ENGINEERING DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

JOB NO. D00AK67C LIHUE-KOLOAFOREST RESERVE, KEAHUA AND QUEENSLAND LOW WATER CROSSINGS

NOTES FOR GENERAL CONSTRUCTION

1. ALL CONSTRUCTION WORK IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE PUBLICATIONS "HAWAI'I STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005" AND ITS AMENDMENTS AND THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984", AS AMENDED, BY THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF KAUA'I, MAUI AND HAWAI'I. THE STANDARD DETAILS ARE AVAILABLE AT THE COUNTY OF KAUA'I CLERK'S OFFICE.
2. CONSTRUCTION SHALL BE DONE IN SUBSTANTIAL CONFORMANCE WITH GEOTECHNICAL ENGINEERING REPORT "LIHUE–KOLOA FOREST RESERVE QUEENSLAND CROSSING" DATED AUGUST 19, 2021 BY HART CROWSER WHERE APPLICABLE.
3. TOPOGRAPHIC INFORMATION OBTAINED FROM "TOPOGRAPHIC MAP SHOWING QUEENSLAND CROSSING" PREPARED BY ESAKI SURVEYING & MAPPING, MAY 4, 2021. THIS TOPOGRAPHIC SURVEY WAS BASED ON THE BEST AVAILABLE INFORMATION AND ACCURACY MUST BE VERIFIED PRIOR TO STARTING CONSTRUCTION.
4. ALL COORDINATES, GRIDS AND AZIMUTHS ARE REFERRED TO KEAHUA BRIDGE–KUAMOO ROAD"
5. ELEVATIONS SHOWN ON THE PLANS ARE BASED ON MEAN SEA LEVEL DATUM BENCH MARK IS SHOWN ON SHEET C–04.
6. SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, COUNTY OF KAUA'I, SEPTEMBER 1984, AND ITS AMENDMENTS.
7. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL CONTACT THE VARIOUS UTILITY AGENCIES FOR LOCATION OF EXISTING UTILITIES WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THE PLANS. ANY COSTS INCURRED BY DAMAGES TO EXISTING UTILITIES WILL BE BORNE BY THE CONTRACTOR.
8. ALL EXISTING UTILITIES, WHETHER OR NOT SHOWN ON THE PLANS, SHALL BE PROTECTED AT ALL TIMES BY THE CONTRACTOR UNLESS SPECIFIED ON THE PLANS TO BE ABANDONED.
9. WHEREVER CONNECTIONS TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES PRIOR TO EXCAVATION OF THE MAIN TRENCHES TO VERIFY THEIR LOCATION AND DEPTH.
10. ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION.
11. THE CONTRACTOR SHALL MAKE PROPER ARRANGEMENTS FOR THE USE OF UTILITIES SUCH AS ELECTRICITY, WATER, ETC. AND SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS RESULTING FROM SUCH USAGE.
12. SURVEYS SHALL BE DONE UNDER THE SUPERVISION OF A LAND SURVEYOR LICENSED IN THE STATE OF HAWAI'I.
13. THE CONTRACTOR SHALL CONTACT THE DEPARTMENT OF LAND AND NATURAL RESOURCES, ENGINEERING DIVISION, INSPECTION SECTION AT LEAST FIVE (5) WORKING DAYS BEFORE COMMENCING ANY WORK ON THE PROJECT. THE CONTRACTOR SHALL HOLD A PRECONSTRUCTION MEETING WITH THE CONSTRUCTION SECTION OF DLNR BEFORE COMMENCING ANY WORK.
14. CONTRACTOR SHALL SUBMIT 'AS–BUILT' PLANS WITHIN 14 DAYS AFTER FINAL INSPECTION, INCLUDING STREET MONUMENT DATA (ELEVATIONS & LOCATION) DONE BY A LICENSED SURVEYOR, REGISTERED IN THE STATE OF HAWAI'I.
15. IF SYSTEM CONDITIONS REQUIRE NON–EMERGENCY NIGHT TIME WORK DURING THE AUTUMN SEABIRD FALL SEASON (SEPTEMBER 15 THROUGH DECEMBER 15), USE OF LIGHTING SHALL BE RESTRICTED BETWEEN 9:00 PM TO 4:30 AM. IF LIGHTING OF THE WORK AREA IS REQUIRED IN SUCH SITUATION, ALL LIGHTS SHALL BE SHIELDED (MINIMUM LIGHT SPILL TOWARDS THE SKY) AND DIRECTED DOWNWARDS TO THE MAXIMUM EXTENT PRACTICABLE. MINIMUM REQUIREMENTS FOR LIGHTING BY HIOSH AND OSHA SHALL BE PROVIDED AND ASSURED BY THE CONTRACTOR. THE CONTRACTOR SHALL TRAIN ALL EMPLOYEES WORKING AT NIGHT (RECORDS RETAINED BY THE CONTRACTOR) IN HOW TO HANDLE ANY RETRIEVED DOWNED BIRDS AND SHALL HAVE APPROPRIATE EQUIPMENT AS APPROVED BY SAVE OUR SHEARWATERS (SOS) ON SITE TO HOLD AND TRANSPORT ANY RETRIEVED BIRDS TO A SOS FACILITY. THIS REQUIREMENT DOES NOT ALLOW LIGHTING AS MAY BE RESTRICTED BY OTHER GOVERNMENT AGENCIES.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OVERTIME AND/OR NIGHT WORK PAYMENTS FOR COUNTY'S STAFF INSPECTION PERSONNEL INCLUDING CONSULTANTS WHEN THE CONTRACT REQUIRES OVERTIME OR NIGHT WORK TO BE PERFORMED, OR DIRECTS THE CONTRACTOR TO WORK ADDITIONAL SHIFTS OR OVERTIME FOR COUNTY'S CONVENIENCE.
17. ALL GRADING, GRUBBING AND STOCKPILING WORK SHALL BE PERFORMED IN ACCORDANCE WITH COUNTY OF KAUA'I ORDINANCE NO. 808.
18. AFTER EACH RAINFALL EVENT, THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS, AND OTHER AREAS. THE COST INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE COUNTY ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.
19. DURING CLEANING OPERATIONS, THE CONTRACTOR SHALL SUPPLY A WATER TRUCK FOR DUST CONTROL PURPOSES UNTIL THE VEGETATION HAS RE–ESTABLISHED ITSELF. EXCESS WATER, INCLUDING SILT AND DIRT, SHALL NOT BE ALLOWED TO RUN–OFF THE PROPERTY.
20. BENCHMARKS THAT ARE DISTURBED OR DESTROYED SHALL BE RESTORED UNDER A LICENSED LAND SURVEYOR'S DIRECTION. COPIES OF FIELD NOTES, DESCRIPTIONS AND NEW VALUES OF THE NEW BENCHMARK SHALL BE SENT TO THE DEPARTMENT OF PUBLIC WORKS SURVEY SECTION FOR REVIEW AND APPROVAL PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.
21. BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE EMPLOYED AT ALL TIMES TO THE MAXIMUM EXTENT PRACTICABLE TO PREVENT DAMAGE BY SEDIMENTATION, EROSION OR DUST TO STREAMS, WATERCOURSES, NATURAL AREAS AND THE PROPERTY OF OTHERS.
22. DLNR WILL DELEGATE THE CONTRACTOR AS THE AUTHORIZED REPRESENTATIVE TO SUBMIT ALL NECESSARY DOCUMENTS AND REPORTS AS REQUIRED BY THE COUNTY AND DOH DIRECTLY TO THEIR OFFICES AT NO COSTS TO THE STATE.
23. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DIRECTION.
24. AT ALL TIMES DURING PERFORMANCE OF THIS CONTRACT, ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SITE SAFETY CONDITIONS FOR ALL PERSONS AND PROPERTY.
25. HARD BOULDERS AND MEDIUM HARD TO HARD BASALT ROCK MAY BE ENCOUNTERED NEAR OR AT THE SITE. APPROPRIATE EQUIPMENT FOR EXCAVATING THE MEDIUM HARD TO HARD BASALT ROCK SHALL BE REQUIRED.
26. NO BLASTING SHALL BE ALLOWED ON THIS PROJECT.
27. CONSTRUCT TEMPORARY BARRICADES DURING CONSTRUCTION, FOR THE PROTECTION OF LIFE, SAFETY, AND PROPERTY.
28. THE LIHUE–KOLOA FOREST RESERVE SHALL REMAIN OPEN DURING THE CONSTRUCTION PERIOD. PROVIDE TEMPORARY BARRICADES AND WARNING SIGNS TO PROTECT THE PUBLIC DURING THE CONSTRUCTION PERIOD. PROVIDE AND MAINTAIN FOR SAFE PEDESTRIAN ACCESS AND VEHICLE ACCESS TO THE FACILITY THROUGHOUT THE CONSTRUCTION PERIOD.
29. PROVIDE AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND TAKE NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.
30. EXISTING PEDESTRIAN WALKWAYS SHALL BE MAINTAINED IN A PASSABLE CONDITION OR PROVIDE FOR ALTERNATE/TEMPORARY ACCESSIBLE PEDESTRIAN ACCESS ROUTES AND FACILITIES PER THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN CHAPTER 2 AND ADAAG 201.3 AND ADAAG 206.1.
31. NO PERFORMANCE OF ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATER COURSES. SHOULD SUCH VIOLATIONS OCCUR, THE COSTS INCURRED FOR ANY REMEDIAL ACTION SHALL BE PAYABLE BY THE CONTRACTOR.
32. COORDINATE CONSTRUCTION ACTIVITIES WITH ANY ADJACENT OR RELATED CONSTRUCTION ACTIVITIES ON ANOTHER CONSTRUCTION SITE. AVOID DELAY OR HINDRANCE IN THE PERFORMANCE OF THEIR RESPECTIVE CONTRACTS.
33. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. ALL DAMAGED PORTIONS SHALL BE REPLACED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE AFFECTED UTILITY COMPANY AND SHALL BE THE CONTRACTORS RESPONSIBILITY. PERSONAL INJURY RESULTING FROM CONTACT WITH EXISTING UTILITIES SHALL BE THE CONTRACTORS RESPONSIBILITY.
34. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTION POINT TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR NEW LINES.
35. NOTIFY ALL AGENCIES AND UTILITY COMPANIES TO VERIFY THE ACTUAL LOCATION OF ALL SITE UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATION.
36. NOTIFY AND COORDINATE ALL SITE WORK WITH THE ONE CALL CENTER AT (866) 423–7287 AT LEAST 5 WORKING DAYS PRIOR TO THE START OF EXCAVATION OR TRENCHING.
37. IF WATER, SEWAGE, OR ELECTRICAL SERVICES ARE PLANNED TO BE INTERRUPTED FOR MORE THAN 1 HOUR, PROVIDE TEMPORARY WATER, SEWAGE, AND ELECTRICAL SERVICES DURING THE INTERRUPTION AT NO ADDITIONAL COST TO THE STATE.
38. ADJUST MANHOLE AND/OR VALVE BOX FRAMES AND COVERS AS REQUIRED BY THE UTILITY COMPANIES.
39. CONFORM WITH THE APPLICABLE PROVISIONS OF CHAPTER 54, WATER QUALITY STANDARDS, AND CHAPTER 55, WATER POLLUTION CONTROL, OF TITLE 11, HAWAII ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH.
40. OBTAIN AND PAY FOR ALL REQUIRED PERMITS FROM THE APPROPRIATE GOVERNMENT AGENCIES.
41. RESTORE ALL AREAS DISTURBED AS A RESULT OF ALL CONSTRUCTION ACTIVITIES, TO EQUAL OR BETTER CONDITION(S), INCLUDING BUT NOT LIMITED TO VEGETATION, PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALKWAYS, FENCES, ETC. UNLESS SPECIFICALLY NOTED OTHERWISE.
42. IF ONE (1) OR MORE ACRE OF LAND IS DISTURBED, DO NOT START GROUND DISTURBANCE UNTIL A NPDES PERMIT IS OBTAINED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ALL OTHER APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. ALSO, FOR COUNTY PROJECTS, PROVIDE A WRITTEN COPY OF THE NPDES PERMIT TO THE APPROPRIATE COUNTY OR GOVERNMENTAL AGENCY PER THEIR REQUIREMENTS.
43. ALL STRIPING SHALL BE A THERMOPLASTIC TYPE.
44. PROVIDE THEFT–RESISTANT FASTENERS FOR ALL ACCESSORY MOUNTINGS. ALL FASTENERS SHALL BE STAINLESS STEEL WITH THEFT–RESISTANT TYPE HEADS OR NUTS.
45. PROVIDE ALL INCIDENTAL AND NECESSARY WORK TO COMPLETE THE PROJECT.
46. THE JOB SITE SHALL BE LEFT IN A SAFE, SECURE CONDITION AT THE END OF EACH CONSTRUCTION WORKDAY. CLEAN UP AND REMOVE, FROM THE JOB SITE, ALL RUBBISH AND MAINTAIN THE PREMISES IN A CLEAN ORDERLY CONDITION AT ALL TIMES.
47. UPON COMPLETION OF CONSTRUCTION THE ENTIRE JOB SITE SHALL BE CLEANED OF ALL RUBBISH AND DEBRIS.

HISTORICAL PRESERVATION NOTES

1. SHOULD HISTORIC REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL CORDON OFF THE AREA AND IMMEDIATELY NOTIFY THE PLANNING DEPARTMENT AT (808) 241–4050 AND THE STATE HISTORIC PRESERVATION DIVISION AT (808) 692–8015, WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND THE APPROPRIATE MITIGATION MEASURES, IF NECESSARY. IN ADDITION, IF HUMAN BURIALS ARE FOUND, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE COUNTY OF KAUA'I POLICE DEPARTMENT.

WATER POLLUTION AND EROSION CONTROL NOTES

1. GENERAL:
   - A. THE CONTRACTOR IS REMINDED OF THE REQUIREMENTS OF SECTION 209–WATER POLLUTION AND EROSION CONTROL AND SECTION 620–DUST CONTROL, IN THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005" AND ITS AMENDMENTS. SECTION 209 DESCRIBES BUT IS NOT LIMITED TO: SUBMITTAL REQUIREMENTS; SCHEDULING OF A WATER POLLUTION AND EROSION CONTROL CONFERENCE WITH THE COUNTY; CONSTRUCTION REQUIREMENTS; METHOD OF MEASUREMENT; AND BASIS OF PAYMENT. NO WORK SHALL COMMENCE WITHOUT A BMP PLAN APPROVED BY THE DEPARTMENT OF HEALTH.
   - B. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE "INTERIM BEST MANAGEMENT PRACTICES MANUAL FOR CONSTRUCTION SITES FOR COUNTY OF KAUA'I" IN DEVELOPING, INSTALLING AND MAINTAINING THE BEST MANAGEMENT PRACTICES (BMPS) FOR THE PROJECT. THE CONTRACTOR MAY SUBMIT ALTERNATE METHODS TO THE COUNTY FOR ACCEPTANCE.
   - C. THE CONTRACTOR SHALL KEEP A COPY OF THE APPROVED BMP PLAN, NOI, ETC. ON THE PROJECT SITE. THE BMP PLAN SHALL BE UPDATED TO REFLECT ANY CHANGES MADE DURING THE COURSE OF CONSTRUCTION FOR THE DURATION OF THE PROJECT.
   - D. THE DLNR MAY ASSESS LIQUIDATED DAMAGES OF UP TO $27,500 FOR NONCOMPLIANCE OF EACH BMP REQUIREMENT AND EACH REQUIREMENT STATED IN SECTION 209, FOR EVERYDAY OF NONCOMPLIANCE. THERE IS NO MAXIMUM LIMIT ON THE AMOUNT ASSESSED PER DAY.
   - E. THE DLNR MAY DEDUCT THE COST FROM THE PROGRESS PAYMENT FOR ALL CITATIONS RECEIVED BY THE DEPARTMENT FOR NON–COMPLIANCE, OR THE CONTRACTOR/OWNER SHALL REIMBURSE THE STATE AND/OR COUNTY FOR THE FULL AMOUNT OF THE OUTSTANDING COST INCURRED BY THE STATE AND/OR COUNTY.
2. WASTE DISPOSAL:
   - A. WASTE MATERIALS: ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER THAT DOES NOT LEAK. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER SHALL BE EMPTIED A MINIMUM OF TWICE PER WEEK OR AS OFTEN AS IS DEEMED NECESSARY. NO CONSTRUCTION WASTE MATERIAL SHALL BE BURIED ONSITE. THE CONTRACTOR'S SUPERVISORY PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES SHALL BE POSTED IN THE OFFICE TRAILER AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.
   - B. HAZARDOUS WASTE: ALL HAZARDOUS WASTE MATERIAL SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATIONS OR BY THE MANUFACTURER. THE CONTRACTOR'S SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES AND SHALL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES FOR FOLLOWED.
   - C. SANITARY WASTE: ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK, OR AS REQUIRED.
3. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:
   - A. ALL CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EACH WEEK AND WITHIN 24 HOURS FOLLOWING ANY RAINFALL EVENT OF 0.5 INCHES OR GREATER.
   - B. ALL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. IF REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS AFTER THE INSPECTION.
   - C. BUILT UP SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE–THIRD THE HEIGHT OF THE FENCE.
   - D. SILT SCREEN OF FENCE SHALL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, TO VERY THAT THE FABRIC FENCE IS SECURELY ATTACHED TO THE FENCE POST OR CONCRETE SLAB AND TO VERIFY THAT THE FENCE POST ARE FIRMLY IN THE GROUND
   - E. TEMPORARY AND PERMANENT SEEDING AND PLANTING SHALL BE INSPECTED FOR BARE SPOTS, WASH OUTS AND HEALTHY GROWTH.
   - F. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A MAINTENANCE INSPECTION REPORT PROMPTLY AFTER EACH WEEKLY INSPECTION.
   - G. THE CONTRACTOR SHALL SELECT A MINIMUM OF THREE PERSONNEL WHO SHALL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.
   - H. PERSONNEL SELECTED FOR THE INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE TRAINING FROM THE CONTRACTOR. THEY SHALL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER.
   - I. ALL SLOPES AND EXPOSED AREAS SHALL BE GRASSED AS FINAL GRADES HAVE BEEN ESTABLISHED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA IN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED OR EXPOSED FOR MORE THAN 15 DAYS SHALL BE GRASSED IN ORDER TO PREVENT DUST EMISSION, EROSION AND SILT RUNOFF. AREAS WITH IMPORTED SOILS SHALL BE GRASSED NOT MORE THAN 5 WORKING DAYS AFTER THE FINAL GRADES HAVE BEEN ESTABLISHED.
   - J. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN–PLACE AND ESTABLISHED.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

CONSTRUCTION NOTES 01

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

APPROVED: _____ CHIEF ENGINEER _____ DATE

DRAWING NO. C-01

JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – CONSTRUCTION NOTES 01.DWG
BEGIN: 2-Aug-21

PM: CLJ
CURRENT OPER: GMG 8/2/2021 2:10 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 11:54 AM

WATER POLLUTION AND EROSION CONTROL NOTES (CON'T)

4. GOOD HOUSE KEEPING BEST MANAGEMENT PRACTICES:

A. MATERIALS POLLUTION PREVENTION PLAN.

a. APPLICABLE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION. OTHER MATERIALS AND SUBSTANCES NOT LISTED BELOW SHALL BE ADDED TO THE INVENTORY OF THE CONSTRUCTION CONTRACTOR'S SITE–SPECIFIC BMP PLAN.

CONCRETE	FERTILIZERS
DETERGENTS	PETROLEUM BASED PRODUCTS
PAINTS (ENAMEL & LATEX)	CLEANING SOLVENTS
METAL STUDS	WOOD
TAR	MASONRY BLOCK

b. MATERIAL MANAGEMENT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT AS IS REQUIRED TO DO THE JOB.

c. ALL MATERIALS STORED ONSITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE UNDER A ROOF OR OTHER ENCLOSURE.

d. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.

e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

f. A PRODUCT SHALL BE USED UP COMPLETELY BEFORE DISPOSING OF THE CONTAINER.

g. MANUFACTURER'S RECOMMENDATION FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED.

h. THE CONTRACTOR SHALL CONDUCT A DAILY INSPECTION TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.

B. HAZARDOUS MATERIAL POLLUTION PREVENTION PLAN:

a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.

b. ORIGINAL LABELS AND MATERIALS SAFETY DATA SHEETS MSDS SHALL BE RETAINED AND MADE AVAILABLE TO THE COUNTY ENGINEER UPON REQUEST.

c. SURPLUS PRODUCTS SHALL BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR LOCAL AND STATE RECOMMENDED REGULATIONS.

C. ONSITE AND OFFSITE PRODUCTS SPECIFIC PLANS:

THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ONSITE:

a. PETROLEUM BASED PRODUCTS: ALL ONSITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ONSITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

b. FERTILIZERS: APPLY FERTILIZED USED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, WORK FERTILIZER INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE SHALL BE IN A COVERED SHED.

c. PAINTS: SEAL AND STORE ALL CONTAINER WHEN NOT REQUIRED FOR USE. DO NOT DISCHARGE EXCESS PAINT TO THE ROADWAY DRAINAGE SYSTEM. DISPOSE PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTION OR STATE AND LOCAL REGULATIONS.

d. CONCRETE TRUCKS: WASH OUT OR DISCHARGE CONCRETE TRUCK DRUM WASH WATER ONLY AT A DESIGNATED SITE. DO NOT DISCHARGE WATER IN ROADWAY DRAINAGE SYSTEM OR WATERS OF THE UNITED STATES. CONTACT DRINKING WATER BRANCH, DEPARTMENT OF HEALTH AT (808) 586–4258 TO RECEIVE PERMISSION TO DESIGNATE A DISPOSAL SITE. CLEAN DISPOSAL SITE AS REQUIRED OR AS REQUESTED BY THE OWNER'S REPRESENTATIVE.

D. SPILL CONTROL PLAN:

a. POST A SPILL PREVENTION PLAN TO INCLUDE MEASURES TO PREVENT AND CLEAN UP EACH SPILLWAY.

b. THE CONTRACTOR SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. DESIGNATE AT LEAST THREE SITE PERSONNEL WHO SHALL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS SHALL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. POST THE NAMES OF RESPONSIBLE SPILL PERSONAL IN THE MATERIAL STORAGE AREA AND IN THE OFFICE TRAILER ONSITE.

c. CLEARLY POST MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP. MAKE SITE PERSONNEL AWARE OF THE PROCEDURES AND THE LOCATION OF INFORMATION AND CLEANUP SUPPLIES.

d. KEEP MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP IN THE MATERIAL STORAGE AREA ONSITE. CLEAN UP ALL SPILL IMMEDIATELY AFTER DISCOVERY.

e. KEEP THE SPILL AREA WELL VENTILATED. PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH HAZARDOUS SUBSTANCE.

f. REPORT SPILLS OF TOXIC HAZARDOUS MATERIAL TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.

PAVEMENT AND TRENCH RESTORATION NOTES

1. PAVEMENT RESURFACING WORK SHALL INCLUDE 2–INCH THICKNESS OF EXISTING A.C. TO BE COLD PLANED AND CONSTRUCTION OF A MINIMUM OF 2–INCH OF NEW A.C. (STATE MIX IV) LAYER.

2. ALL EXISTING PAVEMENT STRIPING DISTURBED BY THIS PROJECT SHALL BE RESTORED. THE STRIPING MATERIALS SHALL BE THERMOPLASTIC TAPE OR THERMOPLASTIC EXTRUSION. PAINTING IS NOT ACCEPTABLE.

ADDITIONAL DOFAW NOTES

1. TAKE ALL MEASURES TO MINIMIZE DISTURBANCE OR DAMAGING EXISTING NATIVE PLANT SPECIES DURING CONSTRUCTION. DOFAW WILL CONDUCT BIOLOGICAL SURVEY OF ENTIRE PROJECT AREA (STAGING AND CONSTRUCTION) PRIOR TO CONTRACTOR STARTING WORK.

2. PRIOR TO ENTERING THE JOB SITE, ALL EQUIPMENT AND FOOTWEAR SHALL BE WASHED WITH POTABLE WATER AND SPRAYED WITH 70% ALCOHOL OR FRESH 10% CLOROX SOLUTION TO PREVENT EXOTIC PLANTS AND SEEDS FROM BEING INTRODUCED TO THE JOB SITE/AREA.

3. HAWAIIAN HOARY BATS OR ʻŌPEʻAPEʻA (LASIURUS CINEREUS SEMOTUS) IS KNOWN TO RESIDE IN THE VICINITY OF THE PROJECT AREA AND MAY ROOST IN NEARBY TREES. ANY SITE CLEARING REQUIRED SHALL BE TIMED TO AVOID DISTURBING THE BAT'S BIRTHING AND PUP REARING SEASON (JUNE 1 THROUGH SEPTEMBER 15). IF THIS CANNOT BE AVOIDED, WOODY PLANTS GREATER THAN 15 FEET (4.6 METERS) IN HEIGHT SHALL NOT BE DISTURBED, REMOVED, OR TRIMMED WITHOUT CONSULTING DOFAW AND STATE'S CONSTRUCTION REPRESENTATIVE. BARBED WIRE IS NOT ALLOWED BECAUSE BAT MORTALITIES HAVE BEEN DOCUMENTED BY ENSNAREMENT DURING FLIGHT.

4. NIGHT WORK THAT REQUIRES OUTDOOR LIGHTING SHALL NOT BE CONDUCTED DURING THE SEABIRD FLEDGING SEASON FROM SEPTEMBER 15 THROUGH DECEMBER 15. THIS IS THE PERIOD WHEN YOUNG SEABIRDS TAKE THEIR MAIDEN VOYAGE TO THE OPEN SEA. ARTIFICIAL LIGHTING CAN ADVERSELY IMPACT SEABIRDS BY CAUSING DISORIENTATION. THIS DISORIENTATION CAN RESULT IN COLLISION WITH MANMADE ARTIFACTS OR GROUNDING OF BIRDS. FOR NIGHT LIGHTING THAT MIGHT BE REQUIRED, DOFAW REQUIRES THAT ALL LIGHTS BE FULLY SHIELDED TO MINIMIZE IMPACTS.

5. THE ACTIVITIES ARE OCCURRING IN A STATE FOREST RESERVE AND THEREFORE ARE SUBJECT TO AND EXPECTED TO FOLLOW ALL PERTINENT CHAPTER 104 DOFAW–HAR THAT HAVE BEEN UPDATED IN JANUARY 2021.
http: //dlnr.hawaii.gov/dofaw/files/2013/09/HARChapter13–104.pdf

6. STATE LANDS UNDER THE JURISDICTION OF DOFAW ARE OPEN TO PUBLIC HUNTING THROUGHOUT THE YEAR. PLEASE VIEW THE HUNTING RULES AND DAYS ON OUR AGENCY WEBSITE. BLAZE ORANGE SHALL BE WORN ON ALL LEGAL HUNTING DAYS.
http: //dlnr.hawaii.gov/recreation/hunting/kauai/

7. IN THE EVENT ANY ARCHAEOLOGICAL SITES OR REMAINS SUCH AS BONES OR CHARCOAL DEPOSITS, HUMAN BURIALS, ROCK OR CORAL ALIGNMENTS, ROCK WALLS ARE ENCOUNTERED, CONTRACTOR SHALL STOP ALL ACTIVITIY AND CONTACT STATE HISTORIC PRESERVATION DIVISION IN KAPOLEI (808) 692–8015 OR SHERI MANN (808) 729–0714 IMMEDIATELY.

8. REPORTING OF INAPPROPRIATE ACTIVITIES TO DOFAW AND/OR DOCARE IS ENCOURAGED. DOCARE HOTLINE (808) 643–DLNR

ADDITIONAL NOTES RELATING HAWAII EXPERIMENTAL TROPICAL FOREST (H.E.T.F. BIOSECURITY MEASURES (SUCH AS RAPID OHIA DEATH, (VERIFY WTIH DOFAW ON APPLICABILILTY))

WITH REFERENCE TO THE H.E.T.F. BIOSECURITY HANDOUT, (WHICH IS AVAILABLE FROM D.O.F.A.W. STAFF) COMPLY WITH THE FOLLOWING PARAPHRASED INSTRUCTIONS TO PREVENT THE INTRODUCTION AND SPREAD OF HARMFUL ORGANISMS INCLUDING, BUT NOT LIMITED TO WEEDS, INSECTS, AND INFECTED PLANTS.

1. INSPECT AND CLEAN ALL EQUIPMENT, GEAR, AND VEHICLES (PERSONAL AND PROJECT) THAT ENTER AND EXIT THE JOB SITE.

2. ENSURE THAT ALL GEAR EQUIPMENT AND VEHICLES ARE FREE OF ANY PLANT, ANIMAL, OR EARTHEN MATERIALS. ALL EQUIPMENT, GEAR, AND VEHICLES SHALL BE INSPECTED, CLEANED AND SANITIZED WITH 70% ALCOHOL OR 10% CLOROX SOLUTION BEFORE ENTERING THE JOB SITE, AND BEFORE LEAVING ANY WEED INFECTED/CONTAMINATED AREA TO PREVENT TRACKING IN HARMFUL ORGANISMS (E.G.: WEEDS, INSECTS, PESTS) AND PREVENT SPREAD TO PRISTINE AND HEALTHY FOREST AREAS. EQUIPMENT TO INSPECT AND CLEAN INCLUDE BUT IS NOT LIMITED TO:

   a. CINDER ARE CLOTHES & FOOTWEAR (TREADS, LACES, BOOT TONGUES), SOCKS, PANT LEGS, POCKETS, JACKETS, RAIN GEAR (POCKETS AND CUFFS).

   b. EQUIPMENT & SUPPLIES–TOOLS, TOOL BAGS, BACKPACKS & BAGS (FOLDS, POCKETS, VELCRO), WOOD AND BUILDING MATERIALS, FENCING MATERIALS, BOTTOMS OF PLASTIC BUCKETS, CARDBOARD BOXES (ROACHES & ANTS), OPEN FOOD AND WATER CONTAINERS, TENTS, HAMMOCKS, TARPS, HELICOPTER SLING NETS, CHAINSAW BLADES.

   c. VEHICLES – THE INSIDE OF THE VEHICLES SHOULD BE VACUUMED AND THE TRUCK BEDS SWEPT OUT REGULARLY, ESPECIALLY IF USED OFF–ROAD. CLEAN PLACES SUCH AS THE INSIDE LIP OF BUMPERS, SEATS, FLOORS, DASHBOARDS, DOOR JAMBS, TIRES (ESPECIALLY TIRE TREADS), AND THE UNDERCARRIAGE.

   d. HEAVY EQUIPMENT, TRUCKS, ALL TYPES OF EARTHMOVING CONSTRUCTION EQUIPMENT AND GENERAL CONSTRUCTION EQUIPMENT AND SUPPLIES.

   e. OTHER– ENSURE SOIL AND STERILE AND FREE OF INSECTS, WEEDS, AND PATHOGENS. ANYTHING SUSPICIOUS SHOULD NOT BE TAKEN ONTO THE JOB SITE.

3. ON A DAILY BASIS, PACK AND REMOVE ALL TRASH, INCLUDING ANY DISCARDED FOOD, FROM THE JOB SITE TO PREVENT NEGATIVELY AFFECTING THE FLORA AND FAUNA AT THE FIELD SITE. (*DISCARDED FOOD MAY CONTAIN UNSEEN INSECTS, FUNGUS, BACTERIA, AND PARASITES; AND IS AN ATTRACTANT FOR INVASIVE INSECTS).

4. FOLLOW METHODS OF CLEANING SPECIFIED IN H.E.T.F. BIOSECURITY HANDOUT. SPECIFIED METHODS OF CLEANING INCLUDE:

   a. WATER & HOSE, BRUSH, TWEEZERS, CLEAN RAG, KNIFE EDGE, BLEACH RINSE AND/OR INSECTICIDE.

   b. CLEANING SHALL BE PERFORMED AWAY FROM THE FOREST WITH A NEARBY RECEPTACLE FOR DISPOSAL.

   c. LAUNDERING OF WASHABLE ITEMS SHALL BE PERFORMED AFTER EACH TRIP.

   d. IF ITEMS CANNOT BE CLEANED, THEY CANNOT BROUGHT INTO THE FOREST.

   e. IF CONTAMINATED SUPPLIES ARE DISCOVERED, THEY MUST BE IMMEDIATELY REMOVED AND PROPERLY DISPOSED, AWAY FROM THE H.E.T.F.

5. CLEAN AND DISINFECT EQUIPMENT PRIOR TO MOBILIZATION TO JOB SITE.

6. IN THE EVENT THAT INFECTED OHIA TREES ARE FOUND AT THE FIELD SITE, THE CONTRACTOR SHALL BE INFORMED AND AT THE DIRECTION OF DOFAW TAKE MEASURES TO PREVENT THE SPREAD OF THE CERATOCYSTIS INFECTION OF OHIA TREES.

   a. MEASURES INCLUDE AND ARE NOT LIMITED TO:

      i. CONTACTING MAPUANA O'SULLIVAN 808–346–2338 OR SHERI MANN 808–729–0714 REGARDING THE LOCATION OF THE INFECTED OHIA TREES AND INCLUDING DIGITAL PICTURES OF THE CROWN OF THE SUSPECTED INFECTED TREE AND PLACES ON THE WOOD WITH CHARACTERISTIC STAINING OF THE INFECTION

      ii. DO NOT TRANSPORT ANY OHIA WOOD.

      iii. FOLLOW THE REQUIRED H.E.T.F. BIOSECURITY MEASURES (AS NOTED IN THE ABOVE ITEMS 1–5)

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIHUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

CONSTRUCTION NOTES 02

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2022
CHECKED: KCK	SCALE: AS SHOWN

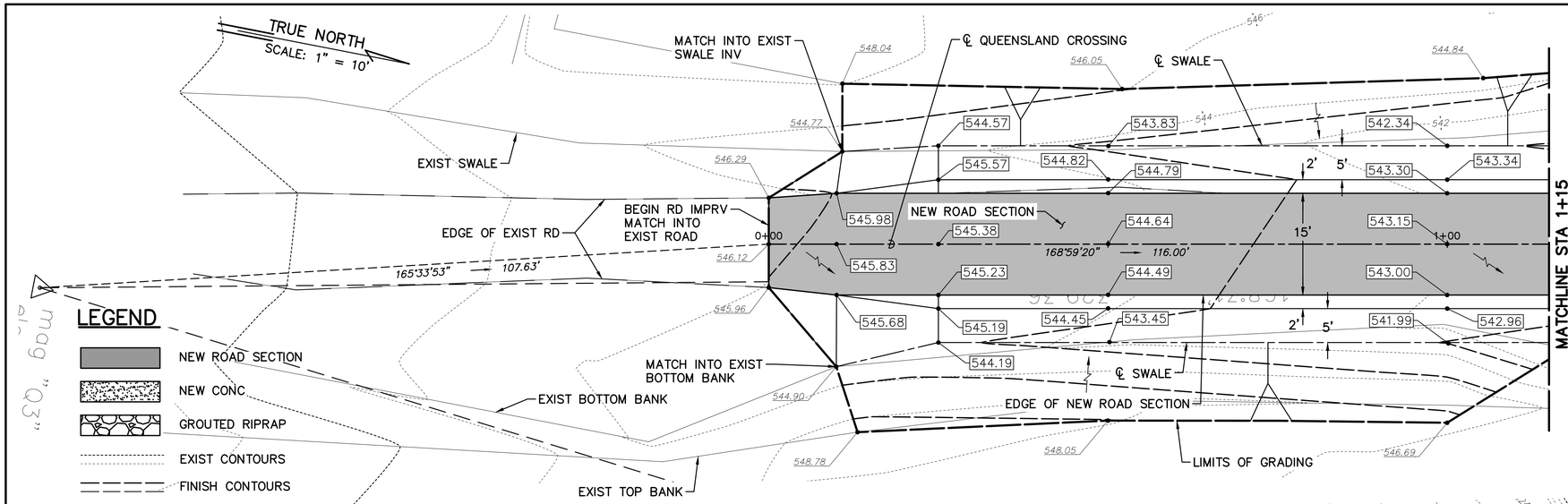
APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. C-02

JOB NO. D00AK67B SHEET NO. 3 OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002_– CONSTRUCTION NOTES 02.DWG
BEGIN: 28–Dec–21

PM: CLJ
CURRENT OPER: ATK 12/28/2021 9:34 AM
LAST SAVED BY: ATK REVISED: 7/12/2023 9:32 AM



NOTES:

1. ALL WORK DAMAGED OR CAUSED TO BE DEFECTIVE BY THE CONSTRUCTION OPERATIONS AND WHICH IS NOT INDICATED TO BE REPLACED OR INCLUDED WITH NEW CONSTRUCTION SHALL BE COMPLETELY REPAIRED OR FILLED IN AS REQUIRED TO MATCH THE ADJACENT EXISTING SURFACE.
2. ALL TREES SHALL REMAIN UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A ARBORIST FOR ALL WORK NEAR EXISTING TREES. THE CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING TREES FROM DAMAGE TO FOLIAGE, BRANCHES, TRUNKS OR ROOTS. ARBORIST SHALL BE CERTIFIED BY INTERNATIONAL SOCIETY OF ARBORICULTURE.
3. THE CONTRACTOR SHALL REMOVE VEGETATION BEFORE THE PLACING OF FILLS ON A NATURAL GROUND SURFACE.

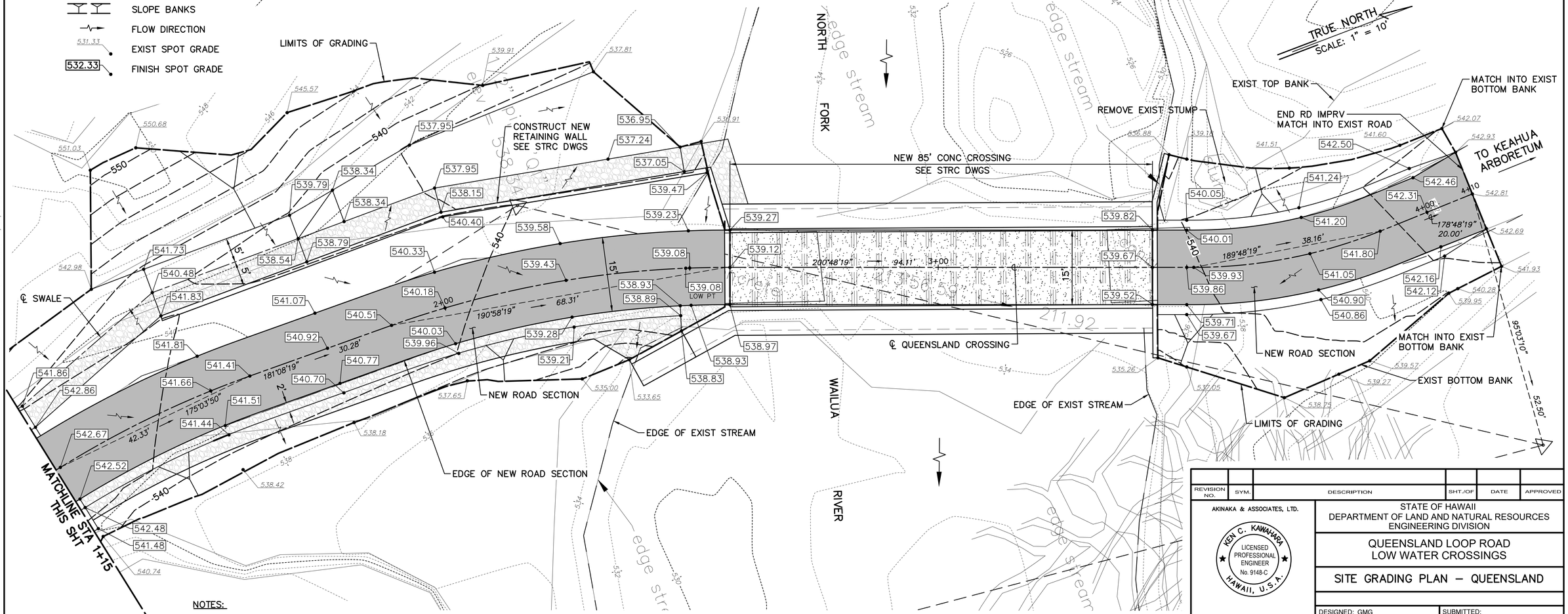
ESTIMATED EARTHWORK QUANTITIES
TOTAL RAW CUT = 145.0 CY
TOTAL RAW FILL = 480.0 CY
TOTAL AREA TO BE GRADED/DISTURBED = 0.38 AC

A. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE THE EXACT QUANTITIES FOR BIDDING PURPOSES.

B. NO ADJUSTMENT FACTOR IS APPLIED TO THE RAW CUT/FILL QUANTITIES.

C. EARTHWORK QUANTITIES SHOWN WERE TAKEN FROM EXISTING GROUND TO FINISH GRADE. QUANTITY DOES NOT REFLECT THE EXCAVATION OF PAVEMENT OR CONCRETE FOUNDATION.

D. CONTRACTOR/PROPOSER SHALL NOT USE THE EARTHWORK QUANTITIES SHOWN ABOVE FOR PROPOSING PURPOSES. REGARDLESS OF THE CUT AND FILL EARTHWORK QUANTITIES SHOWN ABOVE, THE CONTRACTOR IS RESPONSIBLE TO IMPORT OR EXPORT ALL NECESSARY MATERIALS TO COMPLETE THE GRADING WORK AT NO ADDITIONAL COST TO THE STATE.



SITE GRADING PLAN – QUEENSLAND

SCALE: 1" = 10'

NOTES:

1. FOR ROAD SECTIONS, SEE SHT C-05
2. FOR AC PAVEMENT SECTIONS, SEE SHT C-06
3. GRADES AT INTERVALS ARE EVERY 25 FT ALONG ROAD ℄ BEGINNING AT STA 0+00

10' 0 10' 20'

SCALE: 1" = 10'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA LICENSED PROFESSIONAL ENGINEER No. 9148-C HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

SITE GRADING PLAN – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-03
CHIEF ENGINEER	DATE

JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – GRADING PLAN 03 (QUEENSLAND).DWG
BEGIN: 30-Dec-21
PM: CLJ
CURRENT OPER: GMG 12/30/2021 9:37 AM
LAST SAVED BY: GMG REVISED: 4/26/2022 7:07 AM

CURVE DATA						
CURVE	Δ	Δ/2	R	T	C	Lc
1	19°40'00"	9°50'00"	200.00	34.67	68.31	68.65
2	22°00'00"	11°00'00"	100.00	19.44	38.16	38.40
3	12°08'59"	6°04'30"	200.00	21.29	42.33	42.41

TRUE NORTH
SCALE: 1" = 20'

CONSTRUCT NEW RETAINING WALL SEE STRC DWGS

STA 1+86.71 O/S 22.88 LT
℄ QUEENSLAND
END TRANSITION

STA 1+76.89 O/S 22.76 LT
℄ QUEENSLAND
END NEW ℄ SWALE
BEGIN TRANSITION

STA 1+46.66 O/S 17.79 LT
℄ QUEENSLAND
BEGIN NEW WALL

STA 2+04.27
O/S 18.75 LT
℄ QUEENSLAND
WALL

STA 2+54.50
O/S 20.18 LT
WALL

NORTH FORK WAILUA RIVER

EXIST TOP BANK

REMOVE EXIST STUMP

CONN TO EXIST BOTTOM BANK

NEW 85' CONC CROSSING
SEE STRC DWGS

TO KEAHUA ARBORETUM

STA 4+09.85 ℄ QUEENSLAND
END RD IMPRV CONN TO EXIST ROAD

CONN TO EXIST BOTTOM BANK

BEGIN 5' WIDE GRP

LIMITS OF GRADING

STA 0+25 O/S 14.5 LT
℄ QUEENSLAND
NEW ℄ SWALE

℄ SWALE

STA 0+10.84 O/S 13.66 LT
℄ QUEENSLAND
CONN TO EXIST SWALE INV

TRANSITION RD WIDTH

EXIST SWALE

EXIST EDGE OF RD

EXIST BOTTOM BANK

STA 0+09.95 O/S 18.06 RT
℄ QUEENSLAND
CONN TO EXIST BOTTOM BANK

STA 0+10 ℄ QUEENSLAND
BEGIN 15' WIDE RD SECTION

STA 0+00 ℄ QUEENSLAND
BEGIN RD IMPRV
CONN TO EXIST GRAVEL ROAD

NEW ROAD SECTION

EDGE OF NEW ROAD SECTION

STA 1+16.00 O/S 14.5 RT
℄ QUEENSLAND
END NEW ℄ SWALE

STA 0+25 O/S 14.5 LT
℄ QUEENSLAND
NEW ℄ SWALE

℄ QUEENSLAND CROSSING

LIMITS OF GRADING

NEW ROAD SECTION

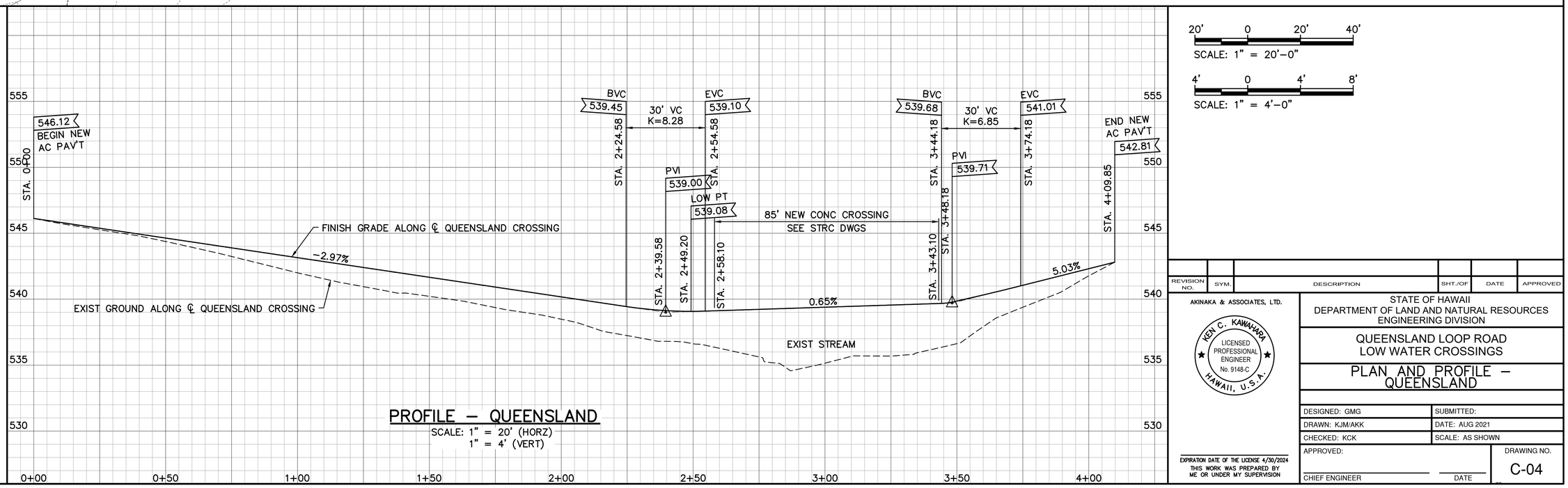
EXIST BOTTOM BANK

dbizia tree (typ.)

LEGEND

- NEW ROAD SECTION
- NEW CONC
- GROUTED RIPRAP
- EXIST. CONTOURS
- FINISH CONTOURS
- SLOPE BANKS

PLAN– QUEENSLAND
SCALE: 1" = 20'



PROFILE – QUEENSLAND
SCALE: 1" = 20' (HORZ)
1" = 4' (VERT)

20' 0 20' 40'
SCALE: 1" = 20'–0"

4' 0 4' 8'
SCALE: 1" = 4'–0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA
LICENSED PROFESSIONAL ENGINEER
No. 9148-C
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

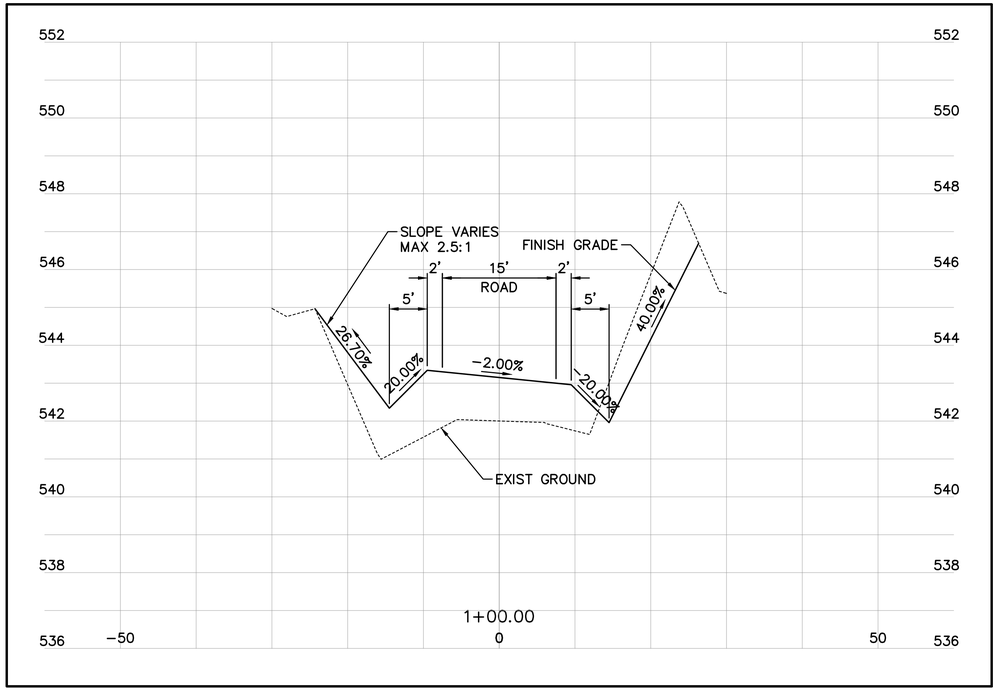
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

PLAN AND PROFILE – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-04
CHIEF ENGINEER	DATE

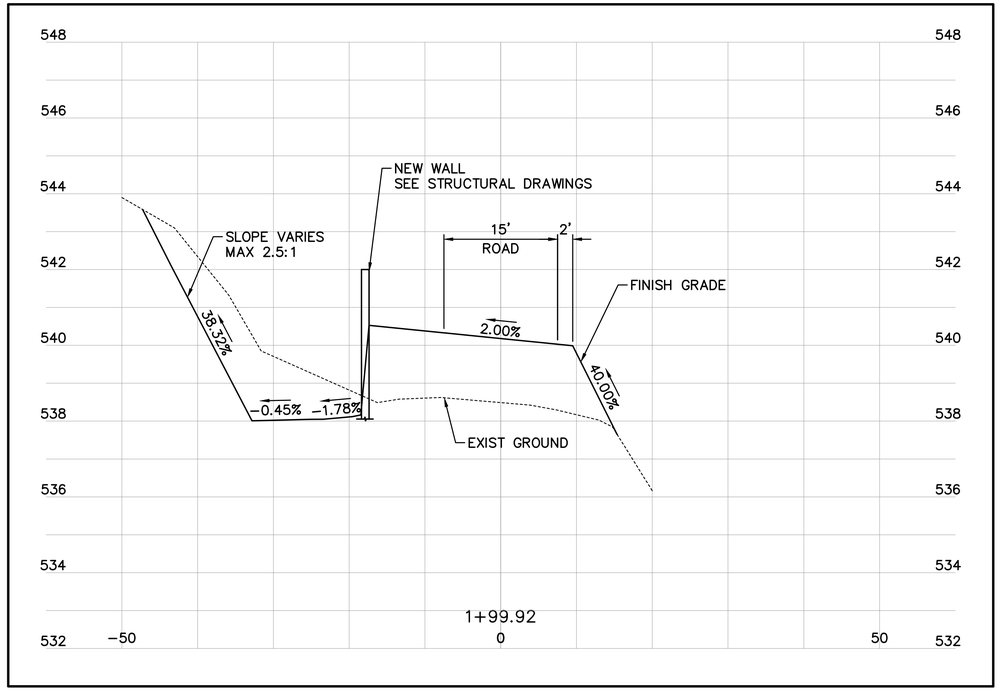
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – SITE PLAN 03 (QUEENSLAND).DWG
BEGIN: 2-Aug-21
PM: CLJ
CURRENT OPER: GMG 8/2/2021 3:48 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 3:10 PM



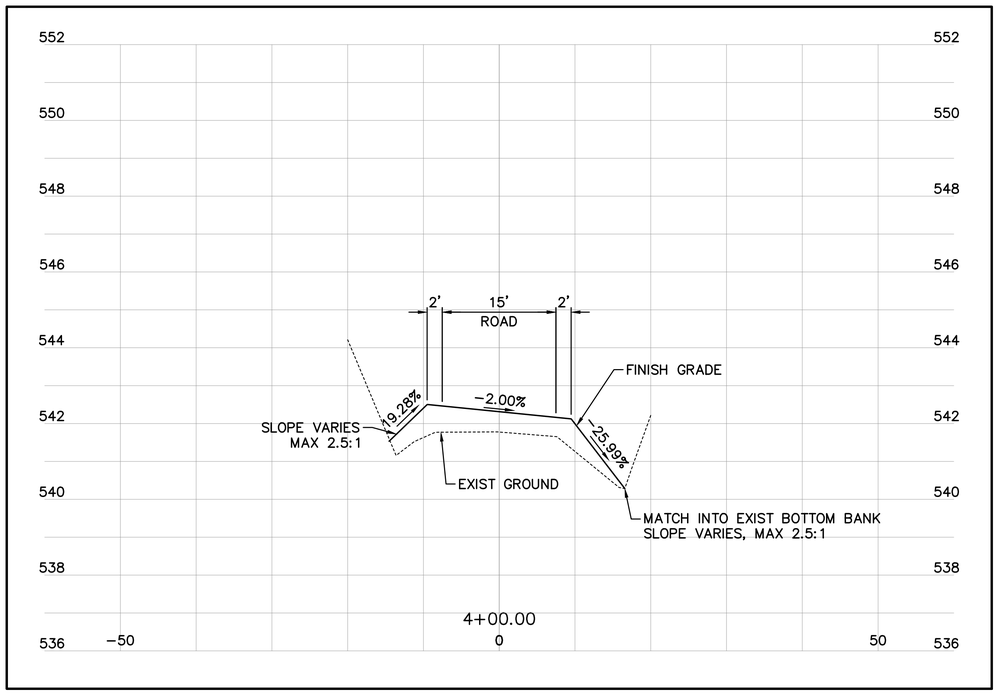
STA. 0+00

SCALE: 1" = 10' HORIZ.
SCALE: 1" = 2' VERT.



STA. 1+99.92

SCALE: 1" = 10' HORIZ.
SCALE: 1" = 2' VERT.



STA. 4+00

SCALE: 1" = 10' HORIZ.
SCALE: 1" = 2' VERT.

NOTES:

FOR AC PAVEMENT SECTIONS, SEE SHT C-06

10' 0 10' 20'
SCALE: 1" = 10'-0"

2' 0 2' 4'
SCALE: 1" = 2'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA
LICENSED PROFESSIONAL ENGINEER
No. 9148-C
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

ROADWAY SECTIONS 01 - QUEENSLAND

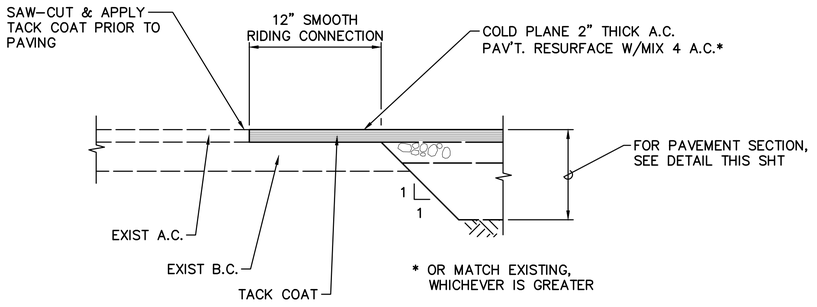
DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

APPROVED: _____ _____
CHIEF ENGINEER DATE

DRAWING NO. C-05

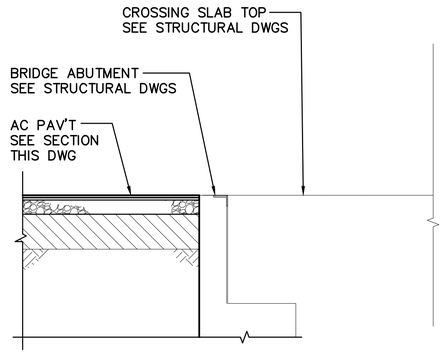
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 - ROADWAY SECTIONS 01.DWG
BEGIN: 7-Jan-22
PM: CLJ
CURRENT OPER: GMG 1/7/2022 2:26 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 12:52 PM



1 / C-06 SMOOTH RIDING CONNECTION DETAIL

NOT TO SCALE

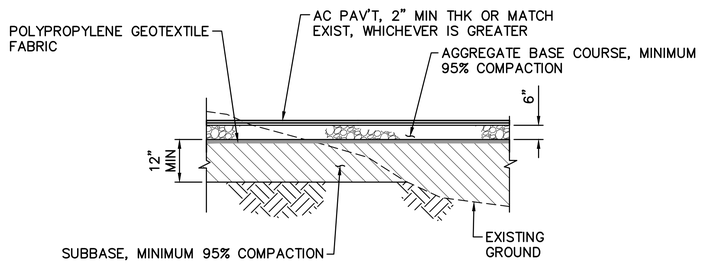


AT STA. 2+11.47

NOT TO SCALE

2 / C-06 BRIDGE PAVEMENT TRANSITION DETAILS

SCALE AS SHOWN



3 / C-06 TYPICAL PAVEMENT SECTION

NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

ROADWAY DETAILS 01 – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN

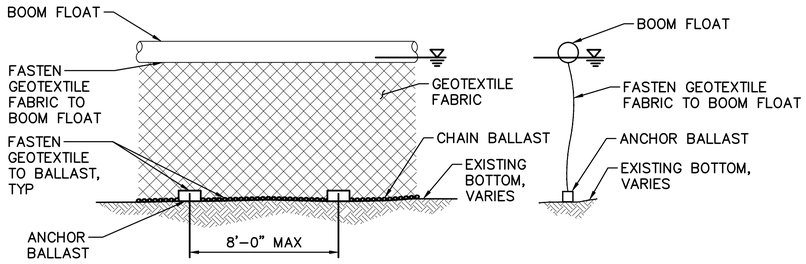
APPROVED: _____ CHIEF ENGINEER _____ DATE

DRAWING NO. C-06

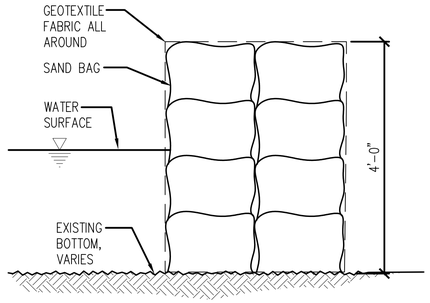
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 - ROADWAY DETAILS 01.DWG
PLOTTED: 7-Jan-22

PM: CLJ
CURRENT OPER: GMG 1/7/2022 2:42 PM
LAST SAVED BY: GMG REVISED: 4/26/2022 2:44 PM



ELEVATION SECTION



NOTES:
1. IMPLEMENTATION OF BEST MANAGEMENT PRACTICES (BMPs) INCLUDES CONSTRUCTION OF WORK SCAFFOLDING/PLATFORMS THAT WILL PROTECT STREAM BELOW FROM FALLING DEBRIS DURING CONSTRUCTION. COST OF MAINTENANCE OF BMPs AND OTHER ASSOCIATED WORK SHALL BE INCLUDED IN THE ENVIRONMENTAL POLLUTION CONTROL BID ITEM.
2. ANY REMOVAL OF ROCK OR MATERIAL TO FACILITATE THE PLACEMENT OF SANDBAGS SHALL BE COMPLETELY REMOVED FROM WAILUA RIVER.

LEGEND

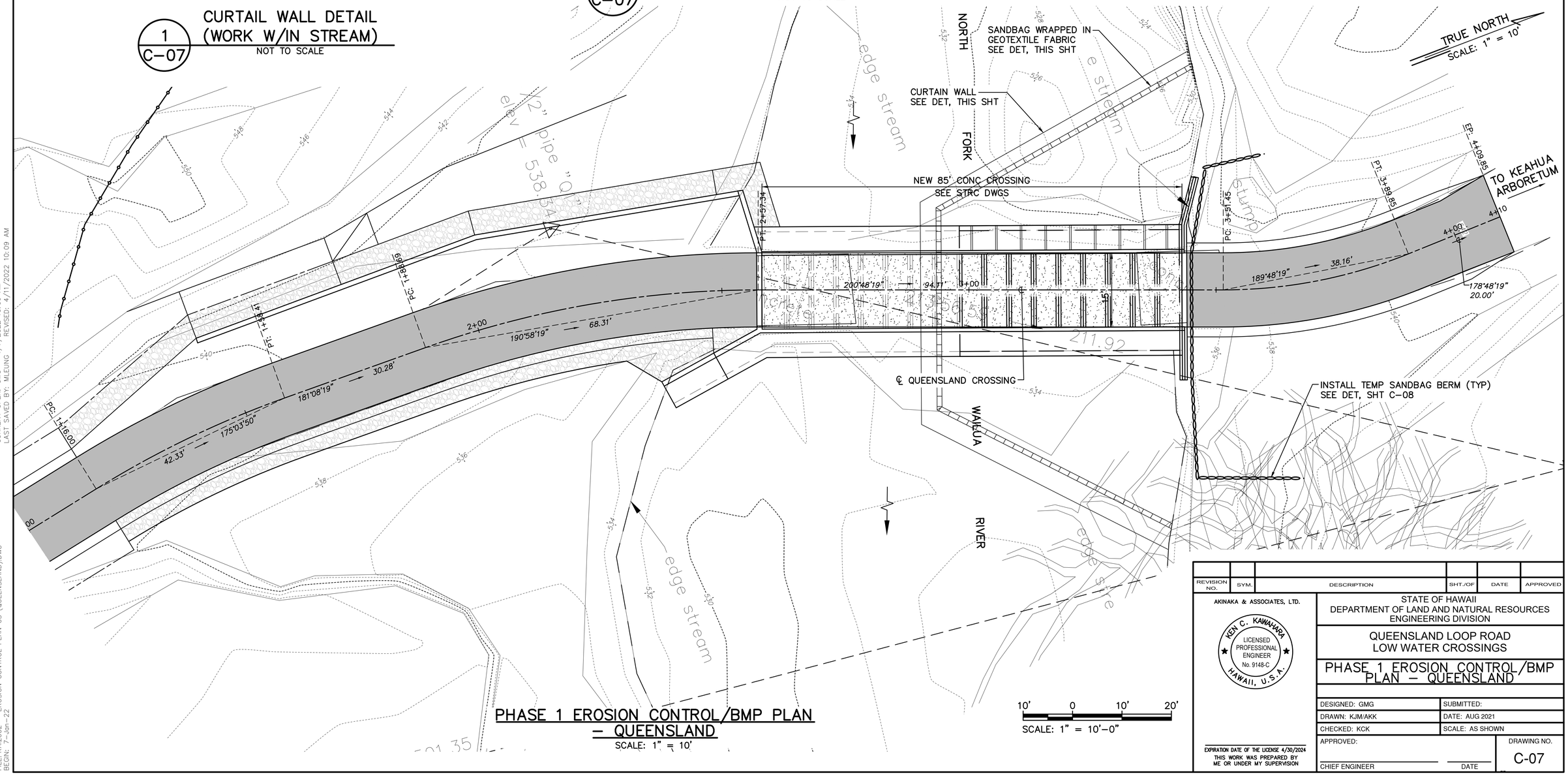
- NEW ROAD SECTION
- NEW CONC
- GROUTED RIPRAP
- EXIST. CONTOURS
- FINISH CONTOURS
- SLOPE BANKS
- SILT FENCE
- SANDBAG BERM

1 / C-07 CURTAIL WALL DETAIL (WORK W/IN STREAM)

NOT TO SCALE

2 / C-07 SANDBAG WRAPPING IN GEOTEXTILE FABRIC DETAIL (WORK W/IN STREAM)

NOT TO SCALE



PHASE 1 EROSION CONTROL/BMP PLAN – QUEENSLAND

SCALE: 1" = 10'

10' 0 10' 20'

SCALE: 1" = 10'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

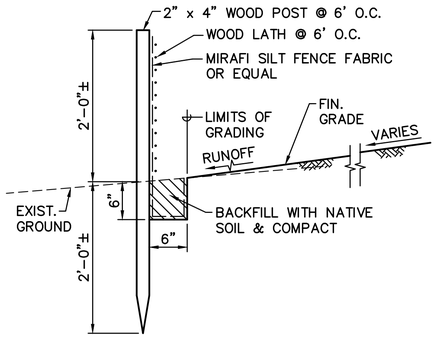
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

PHASE 1 EROSION CONTROL/BMP PLAN – QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-07
CHIEF ENGINEER / DATE	

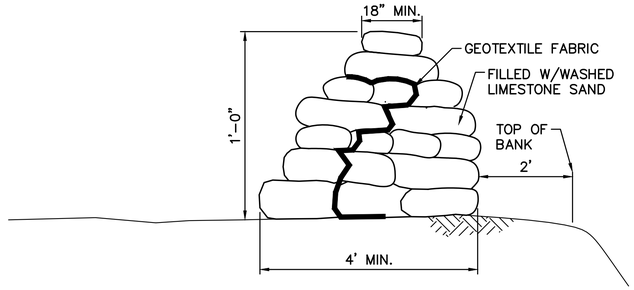
JOB NO. D00AK67B SHEET NO. OF SHEETS

PATH: G:\KAI2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KAI2002 – EROSION CONTROL PLAN 03 (QUEENSLAND).DWG
BEGIN: 7-Jan-22
PM: CLJ
CURRENT OPER: GMG 1/7/2022 10:06 AM
LAST SAVED BY: MLEUNG REVISED: 4/11/2022 10:09 AM



1 C-08 TYPICAL SILT FENCE INSTALLATION

NOT TO SCALE



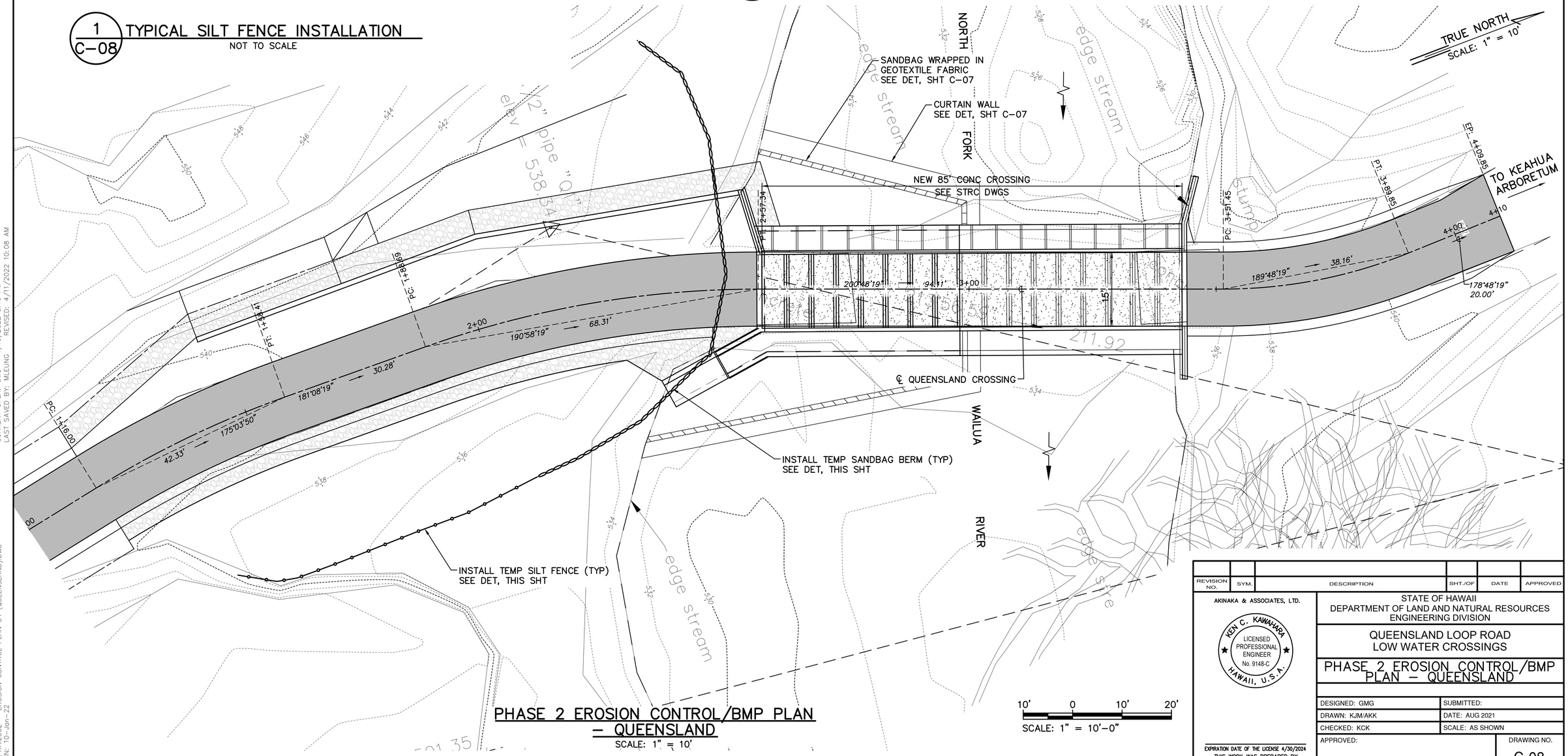
TYPICAL DIMENSIONS PER SANDBAG
WIDTH: 16" TO 18"
LENGTH: 24" TO 30"
THICKNESS: 6" TO 8"
WEIGHT: 90 TO 125 POUNDS

2 C-08 TEMPORARY SANDBAG BERM

NOT TO SCALE

LEGEND

- NEW ROAD SECTION
- NEW CONC
- GROUTED RIPRAP
- EXIST. CONTOURS
- FINISH CONTOURS
- SLOPE BANKS
- SILT FENCE
- SANDBAG BERM



PHASE 2 EROSION CONTROL/BMP PLAN — QUEENSLAND

SCALE: 1" = 10'

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

AKINAKA & ASSOCIATES, LTD.

KEN C. KAWAHARA — LICENSED PROFESSIONAL ENGINEER — No. 9148-C — HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

PHASE 2 EROSION CONTROL/BMP PLAN — QUEENSLAND

DESIGNED: GMG	SUBMITTED:
DRAWN: KJM/AKK	DATE: AUG 2021
CHECKED: KCK	SCALE: AS SHOWN
APPROVED:	DRAWING NO. C-08
CHIEF ENGINEER	DATE

JOB NO. D00AK67B SHEET NO. OF SHEETS

PM: CLJ
CURRENT OPER: GMG 1/10/2022 3:16 PM
LAST SAVED BY: MEUNG REVISED: 4/11/2022 10:08 AM

PATH: G:\KA\2002 LIHUE KOLOA LOW WATER CROSSINGS\300 DSGN\310 PLANS
FILE: KA12002 - EROSION CONTROL PLAN 04 (QUEENSLAND).DWG
BEGIN: 10-Jan-22

GENERAL:

A. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION, 9TH EDITION, 2020 INCLUDING ITS SUBSEQUENT INTERIM SPECIFICATIONS, AND THE HAWAII STANDARD SPECIFICATIONS FOR BRIDGE AND ROAD CONSTRUCTION, 2005 AS MODIFIED BY THE STATE OF HAWAII DEPARTMENT OF TRANSPORTATION.

B. THE CONTRACTOR SHALL COMPARE THE CIVIL AND STRUCTURAL DRAWINGS WITH EACH OTHER AND REPORT IN WRITING TO THE ENGINEER, INCONSISTENCIES OR OMISSIONS.

C. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND VERIFY FIELD CONDITIONS AND SHALL COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS WITH THE DRAWINGS BEFORE COMMENCING THE WORK. REPORT IN WRITING TO THE ENGINEER ALL INCONSISTENCIES OR OMISSIONS.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP AND JOB SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED FOR STABILITY OF STRUCTURAL MEMBERS AND SYSTEMS.

E. DETAILS NOTED AS TYPICAL ON STRUCTURAL DRAWINGS SHALL APPLY IN ALL CONDITIONS UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE.

F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE ADJACENT PROPERTIES, STRUCTURES, STREETS, AND UTILITIES DURING THE CONSTRUCTION PERIOD. ANY DAMAGE OR DETERIORATED PROPERTY SHALL BE RESTORED TO THE SAME OR BETTER CONDITION AT NO COST TO THE STATE.

DESIGN CRITERIA:

A. DEAD LOAD
   WEIGHT OF ALL COMPONENTS OF THE STRUCTURES, APPURTENANCES ATTACHED THERETO, AND EARTH COVERS.
B. LIVE LOAD
   HL-93 TRUCK
C. STATIC LATERAL EARTH PRESSURE
   ACTIVE CONDITION, ABOVE GROUNDWATER ---------- = 35 PCF

FOUNDATION:

A. FOUNDATION DESIGN IS BASED UPON GEOTECHNICAL INVESTIGATIONS BY HART CROWSER AND DATED AUGUST 19, 2021.
B. CONTRACTOR SHALL PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEETING, AND SHORING NECESSARY FOR PERSONNEL SAFETY AND TO PRESERVE EXCAVATIONS AND EARTH BANKS, AND ADJACENT STRUCTURES AND PROPERTY FOR DAMAGE.
C. EXCAVATION BOUNDARIES AND GRADE ELEVATIONS FOR FOOTING SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACING THE CONCRETE AND REINFORCING.
D. BACKFILL BEHIND THE RETAINING STRUCTURES (ABOVE THE GROUNDWATER LEVEL) MAY CONSIST OF THE ON-SITE SOILS OR SELECT GRANULAR FILLS (TYPE A STRUCTURE BACKFILL). BACKFILL SHALL BE PLACED IN UNIFORM LIFTS OF NO MORE THAN 8 INCHES IN LOOSE THICKNESS AND UNIFORMLY COMPACTED TO AT LEAST 95 PERCENT RELATIVE COMPACTION. BECAUSE SHALLOW GROUNDWATER CONDITIONS ARE ANTICIPATED, BACKFILL MATERIALS BELOW THE GROUNDWATER LEVEL SHOULD CONSIST OF FREE-DRAINING GRANULAR MATERIALS, SUCH AS AASHTO M43, NO 67 GRADATION (ASTM C33, NO 67 GRADATION), WRAPPED ON ALL SIDES WITH NON-WOVEN FILTER FABRIC (MIRAFI 180N OR EQUIVALENT). THE FREE-DRAINING GRANULAR MATERIALS SHOULD BE USED UP TO A LEVEL OF ABOUT 12 INCHES ABOVE THE GROUNDWATER LEVEL TO FACILITATE COMPACTION OF THE BACKFILL MATERIALS.

CONCRETE:

A. CONCRETE SHALL BE NORMAL WEIGHT HARD ROCK CONCRETE AND SHALL HAVE 4000 PSI MINIMUM 28-DAY COMPRESSIVE STRENGTHS.
   ALL CONCRETE SHALL HAVE MAXIMUM W/C RATIO OF 0.45 EXCEPT FOR CLASS "A" WHICH SHALL BE AS SPECIFIED IN THE STANDARD SPECIFICATIONS.
B. TETRAGUARD AS20 SHRINKAGE REDUCING ADMIXTURE, ECLIPSE PLUS SHRINKAGE REDUCING ADMIXTURE, OR AN APPROVED EQUAL, SHALL BE INCLUDED IN THE CONCRETE MIX FOR THE CONCRETE TOPPING AND BRIDGE RAILING. THE REQUIRED DOSAGE SHALL BE 128 OUNCES PER CUBIC YARD OF CONCRETE OR AS RECOMMENDED BY THE MANUFACTURER. ADDITION OF SHRINKAGE REDUCING ADMIXTURE SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
C. A CORROSION INHIBITING ADMIXTURE SHALL BE INCLUDED IN THE CONCRETE MIX FOR ALL CONCRETE. THE CORROSION INHIBITING ADMIXTURE SHALL CONTAIN A MINIMUM OF 30% CALCIUM NITRATE BY MASS AND SHALL BE ADDED AT A DOSAGE RATE OF 4.0 GALLONS PER CUBIC YARD OF CONCRETE OR AS RECOMMENDED BY THE MANUFACTURER. THE ADMIXTURE SHALL BE RHEOCRETE CNI CALCIUM NITRATE-BASED CORROSION INHIBITOR, DCI S CORROSION INHIBITOR OR AN APPROVED EQUAL. ADDITION OF CORROSION INHIBITING ADMIXTURE SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
D. ALL INSERTS, ANCHOR BOLTS, PLATES, ETC. EMBEDDED IN CONCRETE SHALL BE HOT-DIP GALVANIZED UNLESS OTHERWISE NOTED.
E. CONSTRUCTION JOINTS MAY BE RELOCATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. CONSTRUCTION JOINTS SHALL BE MADE AND RELOCATED AS NOT TO IMPAIR THE STRENGTH OF THE STRUCTURE AND TO MINIMIZE SHRINKAGE STRESSES. ALL CONSTRUCTION JOINTS SHALL BE CLEANED, LAITANCE REMOVED AND WETTED. SEE TYPICAL DETAILS FOR SPECIFIC REQUIREMENTS.
F. UNLESS OTHERWISE NOTED, CHAMFER ALL CONCRETE EDGES 3/4".
G. CONCRETE DELIVERY TICKETS SHALL RECORD ALL FREE WATER IN THE MIX: AT BATCHING BY PLANT, FOR CONSISTENCY BY DRIVER, AND ANY ADDITIONAL REQUEST BY CONTRACTOR IF PERMITTED BY THE MIX DESIGN.
H. REINFORCING BARS, ANCHOR BOLTS, INSERTS AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.

REINFORCING STEEL:

A. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60 UNLESS OTHERWISE NOTED.
B. CLEAR CONCRETE COVERAGE FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
   a. FOOTING CAST AGAINST EARTH ---------- 3"
   b. FOOTING FORMED AND EXPOSED TO EARTH ---------- 2"
   c. WALL FACES EXPOSED TO EARTH OR WEATHER ---------- 2"

C. STAINLESS STEEL REINFORCING BARS SHALL BE TYPE 316 GRADE CONFORMING TO ASTM A955 GRADE 60.

D. SPLICES:
   a. REINFORCING STEEL SHALL BE SPLICED ONLY WHERE INDICATED ON PLANS.

FIBERGLASS REINFORCED STRUCTURAL MEMBERS:

A. FIBERGLASS-REINFORCED PLASTIC STRUCTURAL SHAPES SHALL BE MANUFACTURED BY THE PULTRUDED METHOD FROM A NON-FLAME RETARDANT ISOPHTHALIC POLYESTER RESIN SYSTEM. THE MEMBERS SHALL HAVE A MINIMUM TENSILE AND COMPRESSIVE STRESS IN THE LENGTHWISE DIRECTION OF 30 KSI (ASTM D638), A MINIMUM FLEXURAL STRESS LENGTHWISE OF 30 KSI (ASTM D790) AND A MODULUS OF ELASTICITY OF 2,800 KSI.

B. ALL BOLTED CONNECTIONS FOR FRP MEMBERS SHALL BE WITH STAINLESS STEEL BOLTS IN CONFORMANCE WITH ASTM F593.

C. ALL BOLTS SHALL BE 316 STAINLESS STEEL.

D. INSTALL BEAMS WITH ANY CROWN IN MEMBER ORIENTED UPWARD.

E. STAINLESS STEEL WEDGE ANCHORS SHALL HAVE A CURRENT ICC ES REPORT. ANCHORS SHALL BE INSTALLED PER PRODUCTS ICC ES REPORT.

F. MEMBERS SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW THEM TO BE REMOVED IN THE FUTURE BY REMOVING BOLTS, AND NO EXTRAORDINARY EFFORT.

STRUCTURAL STEEL:

A. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL OF STEEL CONSTRUCTION, FIFTEENTH EDITION.

B. ALL STRUCTURAL STEEL SHALL BE 316 STAINLESS AND CONFORM TO ASTM F593.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

STRUCTURAL NOTES

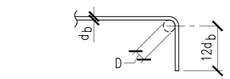
DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ _____
CHIEF ENGINEER DATE

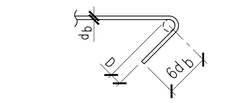
DRAWING NO. S-1

JOB NO. D00AK67B SHEET NO. 10 OF 17 SHEETS

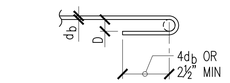
MINIMUM SPLICE AND EMBEDMENT LENGTHS					
CONCRETE STRENGTH = 4,000 PSI					
BAR SIZE	LAP SPLICE		DEVELOPMENT		
	TOP BARS	OTHER BARS	STRAIGHT		WITH STANDARD HOOK
			OTHER BARS	TOP BARS	
#3	29"	21"	12"	17"	10"
#4	29"	21"	12"	17"	10"
#5	36"	26"	15"	21"	12"
#6	43"	31"	18"	26"	16"
#7	54"	39"	23"	32"	18"
#8	71"	51"	30"	42"	20"
#9	90"	64"	38"	53"	22"
#10	114"	81"	48"	67"	26"
#11	140"	100"	59"	82"	28"



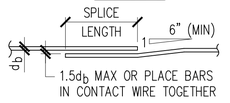
90° BEND



135° BEND



180° BEND

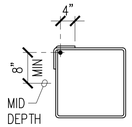


BAR LAP

D = $6d_b$ FOR #8 AND SMALLER
D = $8d_b$ FOR #9 TO #11

TYPICAL REBAR SPLICE AND DEVELOPMENT LENGTH SCHEDULE

1 / S-2 NOT TO SCALE

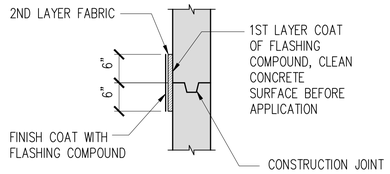


AT BEAMS

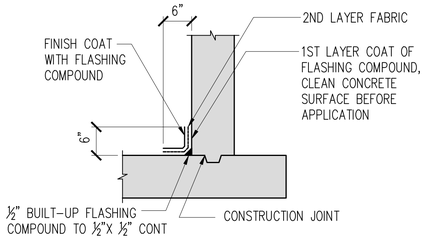
NOTE:
1. THESE DETAILS SHALL APPLY TO #3, #4, AND #5 BARS – GRADE 40 AND GRADE 60.
2. ALL BARS SHALL BE BENT COLD.

TYPICAL TIE AND STIRRUPS DETAIL

2 / S-2 NOT TO SCALE



WALL JOINT

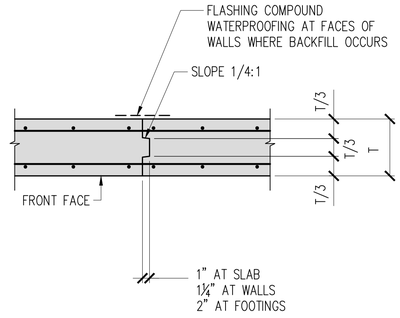


WALL FOOTING JOINT

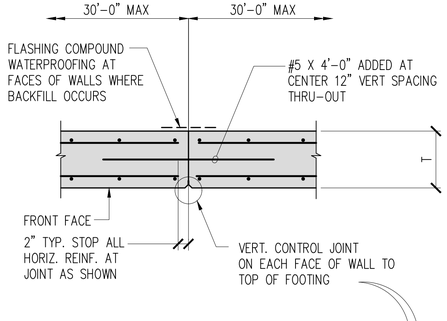
NOTE: TYPICAL EACH FACE UNLESS NOTED OTHERWISE

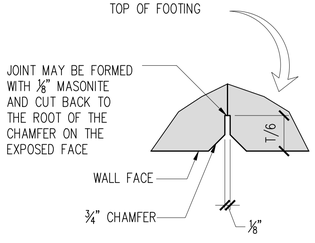
TYPICAL WATERPROOFING DETAIL

3 / S-2 NOT TO SCALE

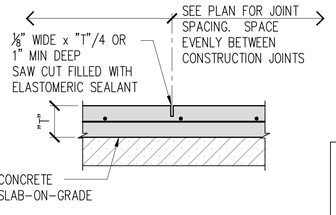


RETAINING WALL CONSTRUCTION JOINT





RETAINING WALL CONTROL JOINT

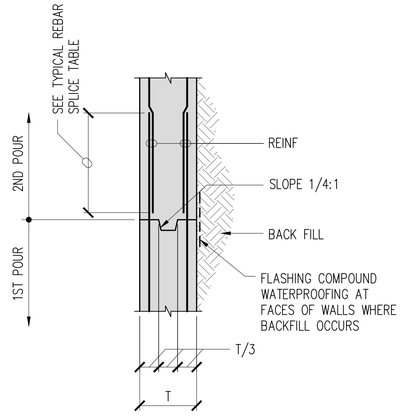


SLAB CONSTRUCTION JOINT

NOTES:
1. SAW CUTTING SHALL OCCUR AS SOON AS CONCRETE SURFACE IS FIRM ENOUGH TO NOT BE TORN BY CUTTING BLADE AND BEFORE SHRINKAGE CRACKING OCCURS, BUT NO LATER THAN 12 HOURS AFTER CONCRETE HAS BEEN POURED.
2. UNLESS NOTED OTHERWISE SUBMIT JOINTING PLANS FOR REVIEW.

TYPICAL JOINT DETAILS

4 / S-2 NOT TO SCALE



TYPICAL REBAR LAP DETAILS AT JOINT

5 / S-2 NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

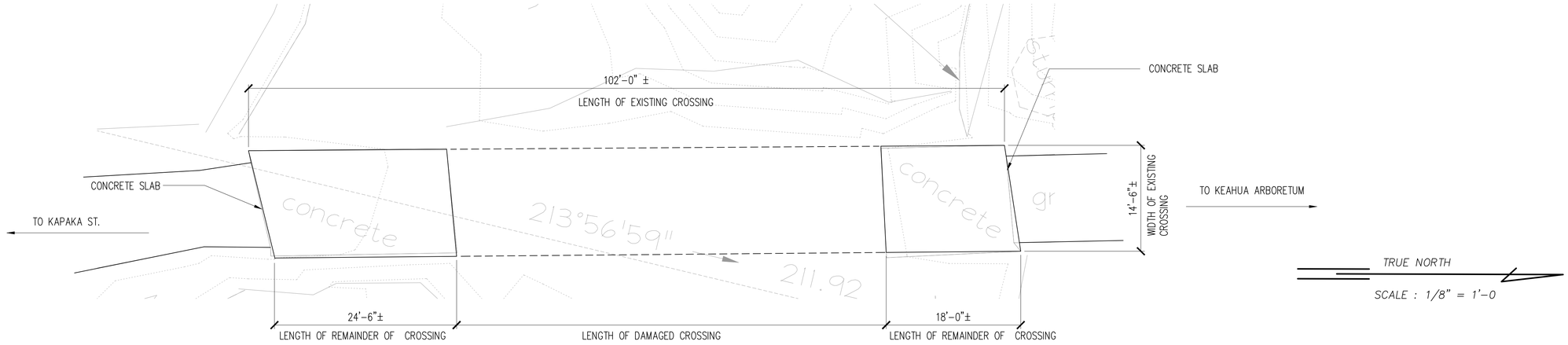
TYPICAL DETAILS

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-2

JOB NO. D00AK67B SHEET NO. 11 OF 17 SHEETS



1 / S-3 EXISTING QUEENSLAND CROSSING- PLAN VIEW

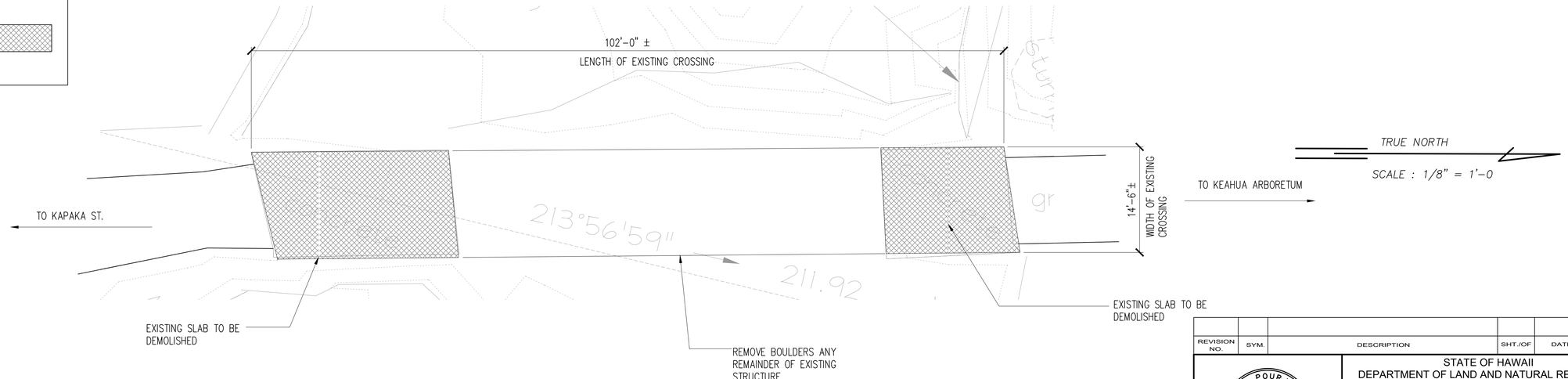
SCALE: 1/8" = 1'-0"

LEGEND:

DENOTES DEMOLITION AREA

NOTE:

SEE CIVIL DRAWINGS FOR APPROACH ROADWAYS DEMOLITION PLAN



2 / S-3 EXISTING QUEENSLAND CROSSING DEMO- PLAN VIEW

SCALE: 1/8" = 1'-0"

0' 4' 8' 16' 24'

1/8" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

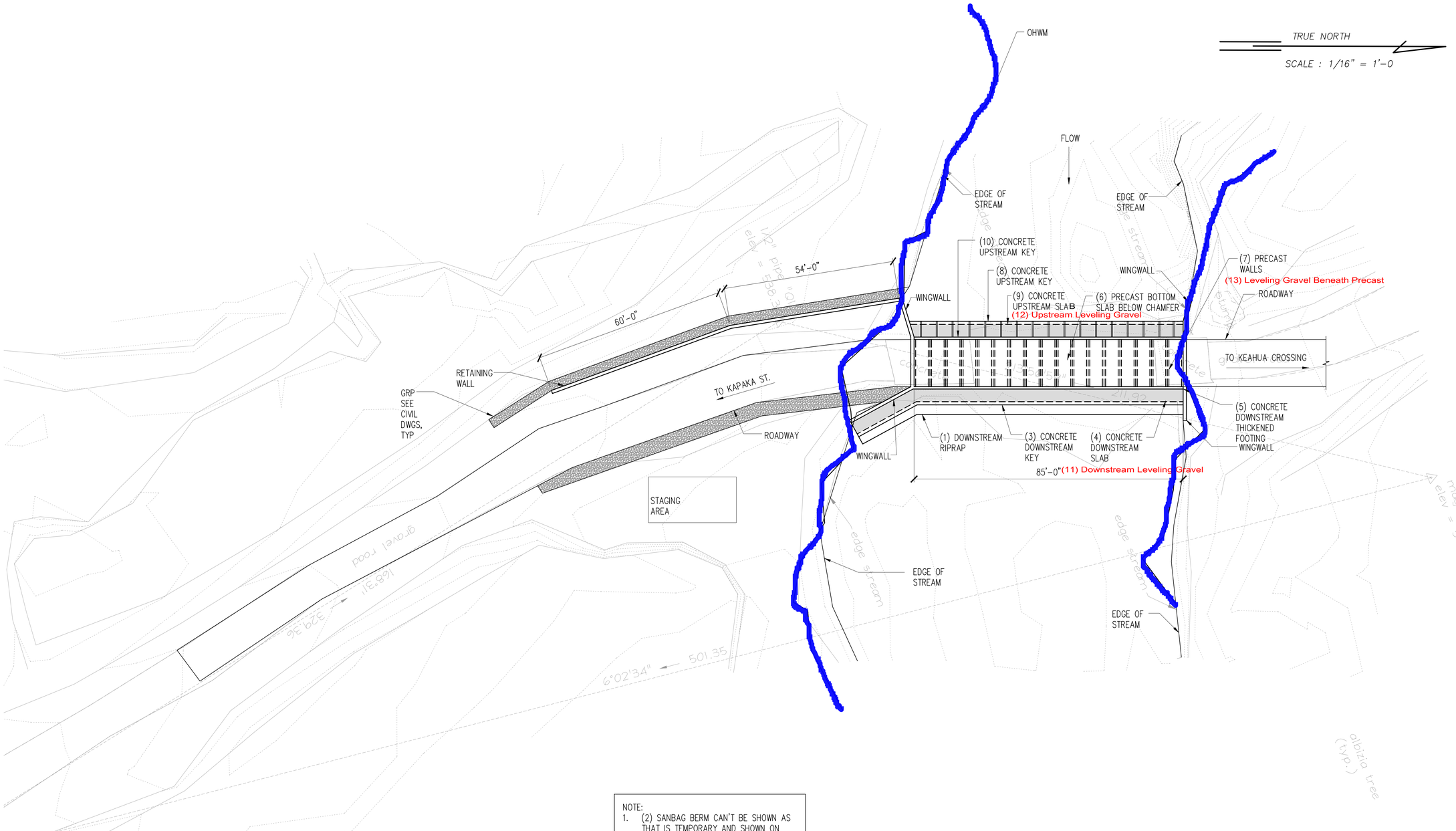
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING DEMO PLAN

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ _____
CHIEF ENGINEER DATE

DRAWING NO. S-3



NOTE:
1. (2) SANBAG BERM CAN'T BE SHOWN AS THAT IS TEMPORARY AND SHOWN ON SHEET C-07
2. ITEMS (11) – (13) ARE NOT ABLE TO BE SHOWN AS THIS IS BELOW THE CULVERT. FOR THE LEVELING GRAVEL DETAIL, SEE SHEET S-7

1/S-4 QUEENSLAND CROSSING IMPROVEMENT PLAN VIEW
SCALE: 1/16" = 1'-0"

0' 8' 16' 32' 48'
1/16" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIHUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING IMPROVEMENT PLAN VIEW

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ _____
CHIEF ENGINEER DATE

DRAWING NO. S-4

Fill below OHWM

RipRap = ~36 cubic yards (cy)
Sandbag Berm = ~2 cy
Concrete = ~40 cy
Gravel = ~ 80 cy

1 Downstream RipRap

Length	107	ft	
Width	3	ft	
Height	3	ft	
Total	963	cubic ft	

2 Sandbag Berm

Length	19	ft	Overlay OHWM
Width	1	ft	Civil Detail 2/S07
Height	2	ft	Difference at highest point
Total	38	cubic ft	

3 Concrete Downstream Key

Length	107	ft
Width	0.75	ft
Height	3	ft
Total	240.75	cubic ft

4 Concrete Downstream Slab

Length	107	ft
Width	4.25	ft
Height	0.5	ft
Total	227.375	cubic ft

5 Concrete Downstream Thickened footing

Length	107	ft
Width	1	ft
Height	0.75	ft
Total	80.25	cubic ft

6 Precast Bottom Slab below chamfer

Length	107	ft
Width	16.5	ft
Height	0.5	ft
Total	882.75	cubic ft

7 Precast Walls

Length	15	ft	
Width	0.5	ft	
Height	1.5	ft	
Total	360	cubic ft	32 Wall Segments

8 Concrete Upstream Key

Length	85	ft
Width	0.75	ft

	Height	3	ft
	Total	191.25	cubic ft

9	Concrete Upstream Slab		
	Length	85	ft
	Width	4.25	ft
	Height	0.5	ft
	Total	180.625	cubic ft

10	Concrete Downstream Upstream footing		
	Length	85	ft
	Width	1	ft
	Height	0.75	ft
	Total	63.75	cubic ft

11	Downstream Leveling Gravel		
	Length	107	ft
	Width	4.25	ft
	Height	1	ft
	Total	454.75	cubic ft

12	Upstream Leveling Gravel		
	Length	85	ft
	Width	4.25	ft
	Height	1	ft
	Total	361.25	cubic ft

13	Leveling Gravel Below Precast		
	Length	85	ft
	Width	15	ft
	Height	1	ft
	Total	1275	cubic ft

TRUE NORTH

SCALE : 1/8" = 1'-0

FLOW

EDGE OF STREAM

EDGE OF STREAM

STA. 2+58.10 AZ 110° 48' 19"
END OF CROSSING

STA. 3+43.10 AZ 110° 48' 19"
BEGINNING OF CROSSING

CONCRETE WALL SEE SHEET S-8

WINGWALL SEE S-8

CONTROL JOINT MAX 15 FT SPACING

CONCRETE APRON

FIBER REINFORCED POLYMER DEBRIS CATCHER, 4'-0" ON CENTER

WINGWALL SEE S-8

ROADWAY

13'-0"

10'-0"

5'-0"

℄ CROSSING

1
S-7

AZ. 200° 48' 19"

213°56'59"

211.92

TO KEAHUA CROSSING

15'-0"

5'-0"

10'-0"

22'-0"

6'-0"

CONCRETE APRON

WINGWALL, SEE S-8

85'-0"

WINGWALL, SEE S-8

2
S-7

EDGE OF STREAM

EDGE OF STREAM

1
S-5

QUEENSLAND CROSSING PLAN VIEW

SCALE: 1/8" = 1'-0"

0' 4' 8' 16' 24'

1/8" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAE, D POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

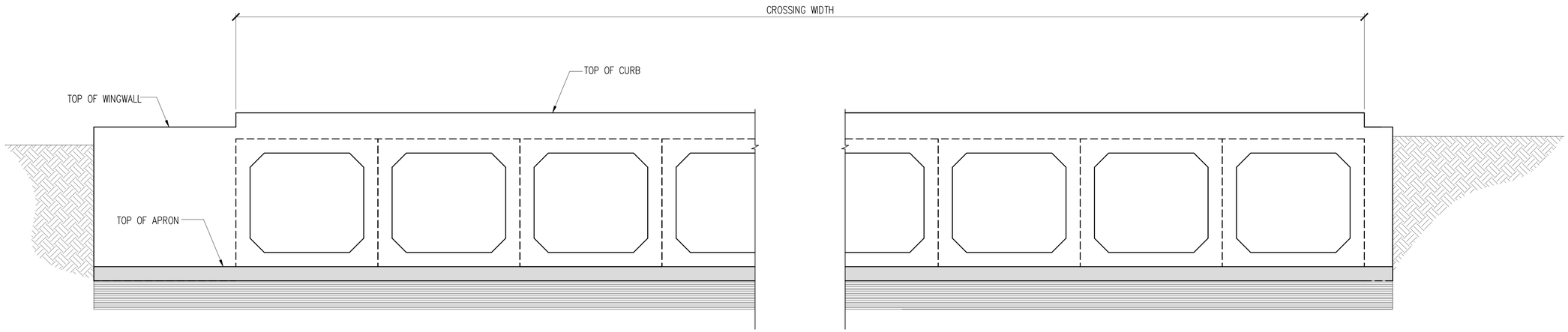
QUEENSLAND CROSSING PLAN

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED:

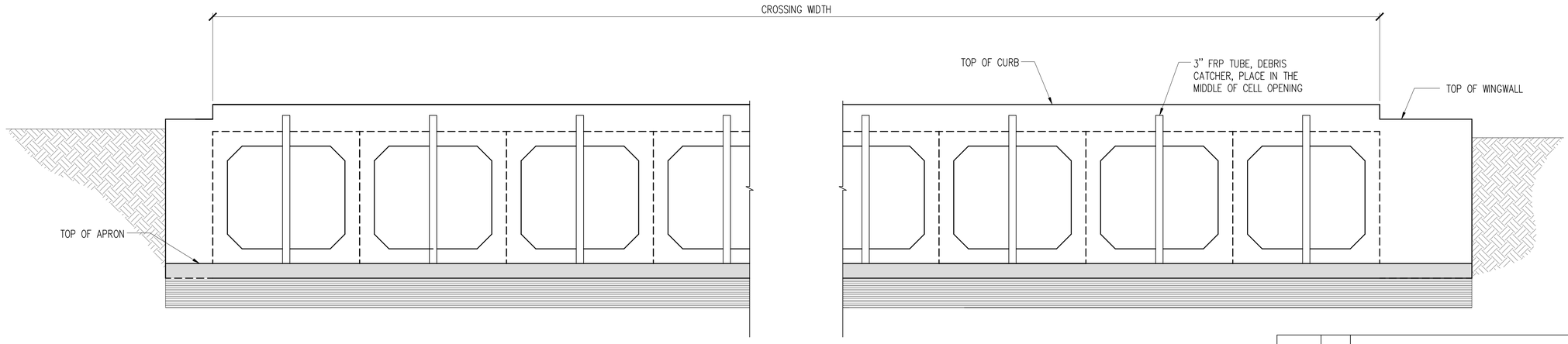
CHIEF ENGINEER DATE

DRAWING NO. S-5



1 S-6 CROSSING DOWNSTREAM ELEVATION

SCALE: 1/2" = 1'-0"



2 S-6 CROSSING UPSTREAM ELEVATION

SCALE: 1/2" = 1'-0"

0' 1' 2' 3' 4' 5' 6'

1/2" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

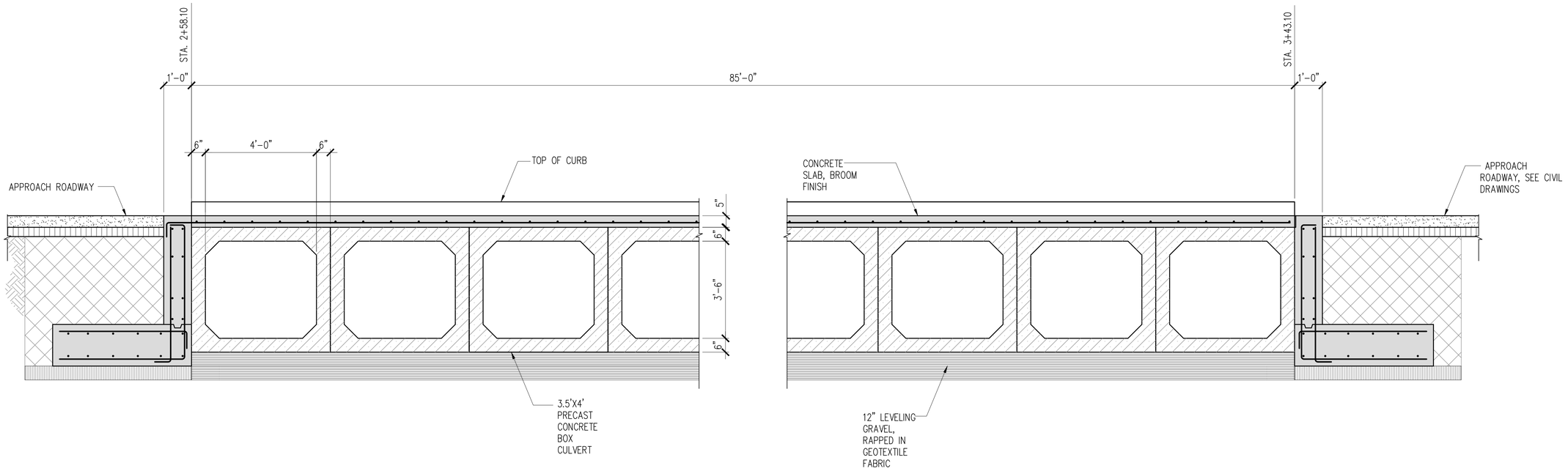
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING ELEV.

DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

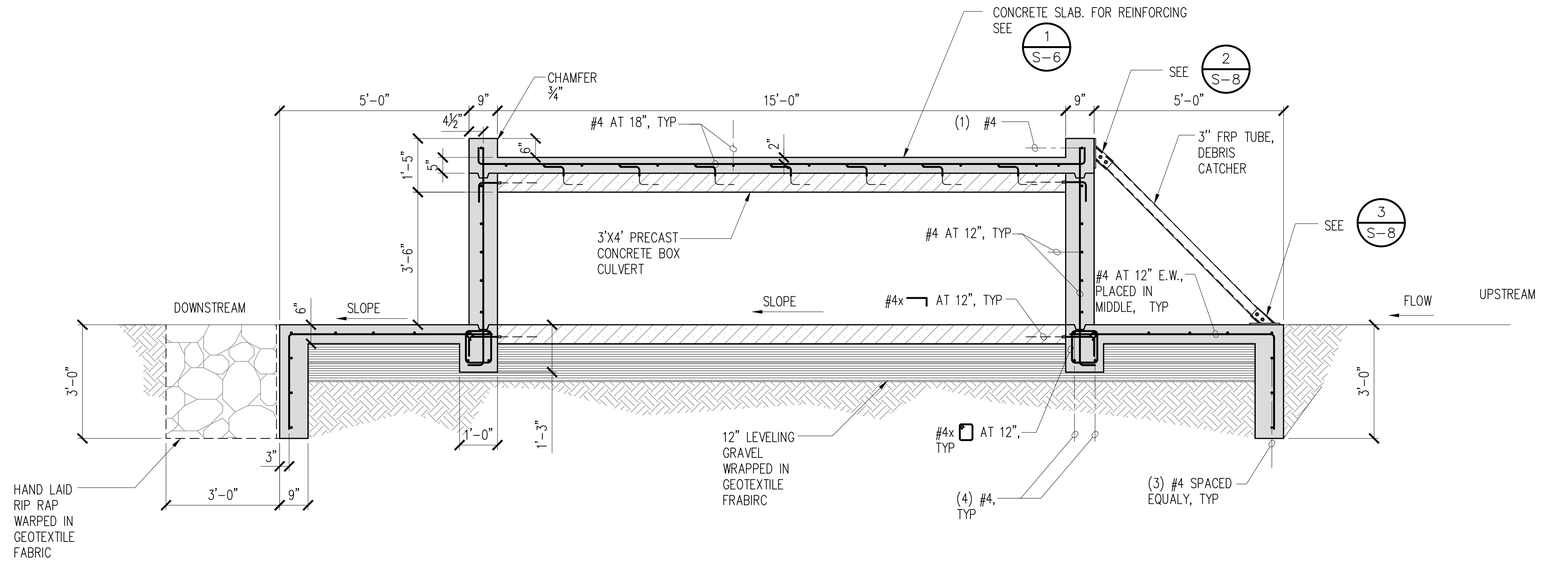
APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-6



1 S-7 **CROSSING LONG. SECTION**

SCALE: 1/2" = 1'-0"



2 S-7 **CROSSING TRAN. SECTION**

SCALE: 1/2" = 1'-0"

0' 1' 2' 3' 4' 5' 6'

1/2" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

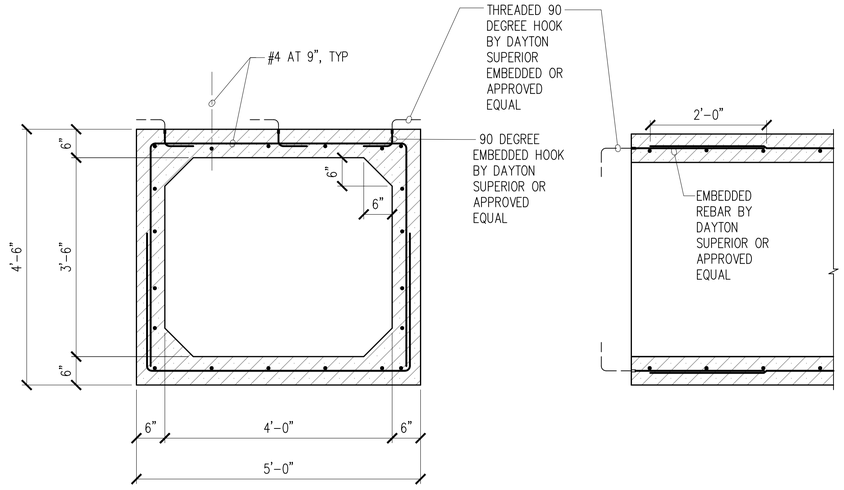
LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

QUEENSLAND CROSSING SECTIONS

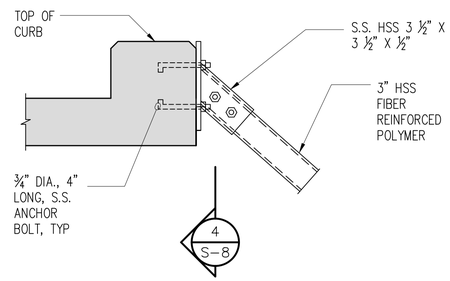
DESIGNED:	CS	SUBMITTED:	XX
DRAWN:	CAD	DATE:	XX
CHECKED:	SP	SCALE:	XX

APPROVED: _____ DATE _____
CHIEF ENGINEER

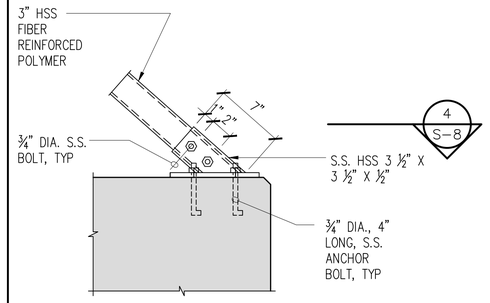
DRAWING NO. S-7



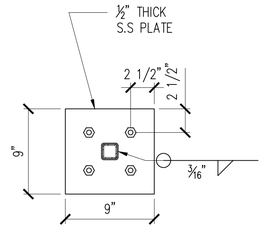
1 S-8 **PRECAST CULVERT SECTIONS**
SCALE: 3/4" = 1'-0"



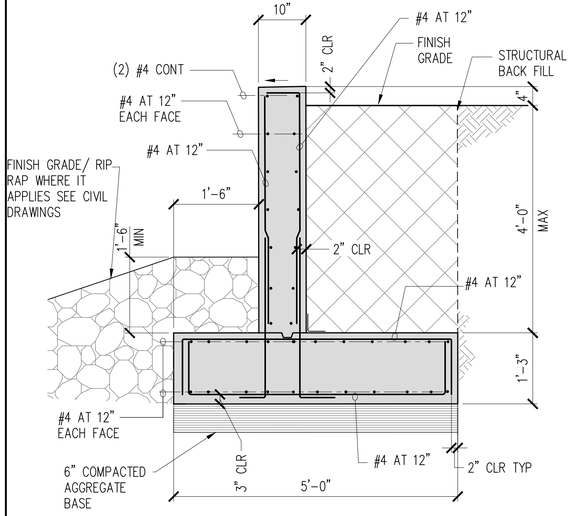
2 S-8 **DEBRIS CATCHER CONNECTION**
SCALE: 1 /2" = 1'-0"



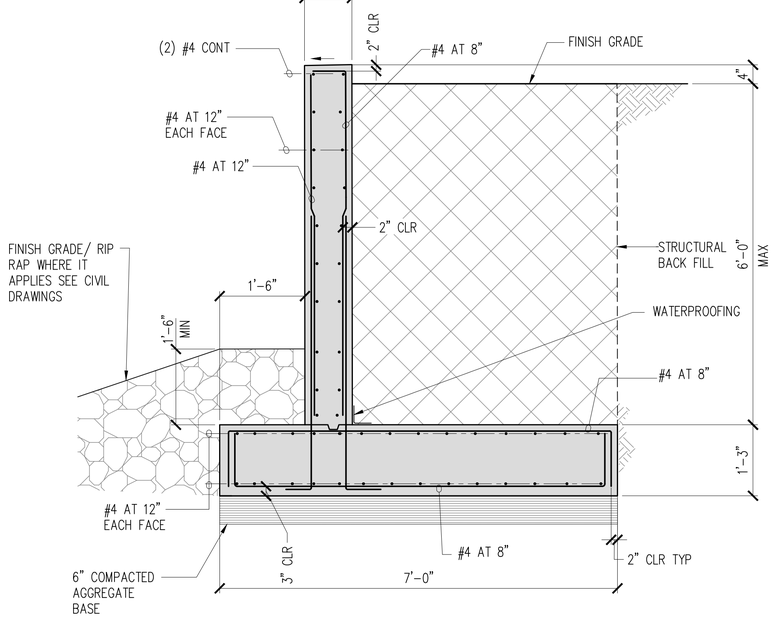
3 S-8 **DEBRIS CATCHER CONNECTION**
SCALE: 1 1/2" = 1'-0"



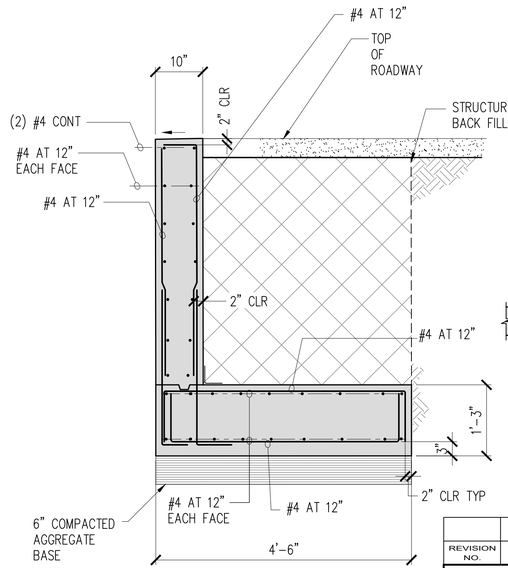
4 S-8 **SECTION**
SCALE: 1 1/2" = 1'-0"



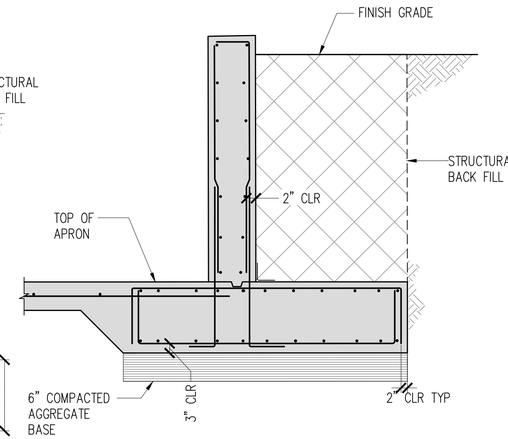
WALL LESS THAN 4'-0" HIGH



WALL LESS BETWEEN 4'-0" AND 6'-0" HIGH



WALL AT CULVERT



WALL CONNECTION AT APRON

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

SAFID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2022
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LIUE-KOLOA FOREST RESERVE
QUEENSLAND LOOP ROAD
LOW WATER CROSSINGS

WING WALL & CULVERT SECTIONS

DESIGNED: CS	SUBMITTED: XX
DRAWN: CAD	DATE: XX
CHECKED: SP	SCALE: XX

APPROVED: _____ DATE _____
CHIEF ENGINEER

DRAWING NO. S-8

0' 1' 2' 3' 4'
3/4" = 1'-0"

5 S-8 **RETAINING WALL SECTIONS**
SCALE: 3/4" = 1'-0"

JOB NO. D00AK67B SHEET NO. 17 OF 17 SHEETS

4. Enclosure 2- Blanket Water Quality Certification (WQC) WQC10921 General Conditions

Blanket Water Quality Certification WQC1092.FNL.20 General Conditions

The applicant of the activity/discharge shall be responsible for complying with the following requirements:

a. Report any non-compliance with the conditions of this Blanket Certification to the USACE POH. Do not report or submit compliance related information to DOH. This Blanket Certification is a condition of the USACE POH permit.

b. Maintain records at the project site or in the nearby field office demonstrating that all Blanket Certification requirements have been fully complied with.

c. Ensure that all activities are conducted in a manner that will comply with the “Basic Water Quality Criteria Applicable to All Waters” as specified in HAR § 11-54-4.

d. Ensure that all material(s) placed or to be placed in State waters are free of waste metal products, organic materials, debris, and any pollutants at toxic or potentially hazardous concentrations to aquatic life as specified in HAR § 11-54-4(c).

e. Ensure that the activities will not, after the completion of the activity, interfere or become injurious to any designated uses and/or existing uses of the receiving State water. Any such post-activity adverse impacts to the designated uses and/or existing uses of the receiving State water is a violation of HAR Chapter 11-54.

f. Ensure that pollution control measures and BMPs are utilized that prevent water pollutants from leaving the in-water work area authorized by the USACE POH permit. Any visual plume emanating from the authorized in-water work area is a violation of HAR Chapter 11-54.

g. Ensure that all construction debris from any portion of the activities (including but not limited to debris caused by hydraulic saws, waters jets, or drilling equipment) are contained and prevented from entering or re-entering State waters. All construction debris and sidecast material shall be properly removed from the aquatic environment and disposed of at an upland State and county approved site. Before the start of the activities, a Solid Waste Disclosure Form for Construction Sites shall be completed and returned to DOH’s Solid and Hazardous Waste Branch, Office of Solid Waste Management. No construction material or construction related materials shall be stockpiled in the aquatic environment or stored or placed in ways that will disturb the aquatic environment. The Solid Waste Disclosure Form for Construction Sites is available online at:

http://health.hawaii.gov/shwb/files/2013/06/swdiscformnov2008.pdf.

h. Only utilize BMPs that are inert and not sources of pollution themselves. Examples of inappropriate in-water porous material BMPs include but are not limited to: compost biosocks since they are a source of nutrients; and a soil berm since the soil particles will erode.

i. Collect activity/discharge related water pollutants utilizing appropriate catchment/detention devices (e.g. construction debris; airborne particulates; dust; concrete slurry; concrete chips; concrete surface preparation washing effluent; excess water and overflow from boring related activity, horizontal directional drilling slurry; etc.) from localized work areas and minimize or prevent the release of these water pollutants into State waters, including the in-water work area.

j. Utilize BMPs for all upland project activity to minimize the discharge of water pollutants into State waters, including the designated in-water work area.

k. Comply with the USACE POH Regional Conditions. Regional Condition 8 contains requirements for pre, during, and post construction BMPs.

l. For a stream, ditch, or gulch: Allow unimpeded flow around the in-water work area to allow for aquatic animal migration and/or to prevent work site and downstream flooding situations. The unimpeded flow shall be equivalent to a 2-year, 24-hour duration storm event and/or the existing flow capacity of the stream, ditch, or gulch. Pumped diversions may be utilized if the stream, ditch, or gulch is dry or there is only standing/ponded water without the existence of living aquatic animals.

m. There shall be no discharge of any type of wash water and/or effluent into State waters without first obtaining from DOH a National Pollutant Discharge Eliminations System (NPDES) permit authorizing such type of water pollutant discharge to State waters.

n. Not allow any concrete truck wash water to be disposed by percolation into the ground.

o. Ensure that all areas temporarily impacted, either directly or indirectly, by the project construction activities are fully restored to its pre-construction conditions. For example: Incidental construction debris is cleaned up prior to removal of BMPs; remove all scientific measurement devices and any other structures or fills associated with installation and use of these devices (e.g., foundations, anchors, buoys, lines, etc.) when no longer in use; etc.

p. When projects involve dredging/excavation activities:

(1) The applicant is also required to check the DOH, Hazard Evaluation and Emergency Response (HEER) Office Sites, Incidents and Records through the "Viewer" in iHEER at: https://eha-cloud.doh.hawaii.gov/iheer.[1]

(2) The applicant is required to contact the HEER Office at (808) 586-4249 and through e-permitting Form "Notification of Construction Activities" at Form Finder https://eha-cloud.doh.hawaii.gov/epermit/finder if contaminated soil, sediment, vapor, or groundwater is known to be present at your project site. Notify at least 90 days prior to surface and subsurface disturbing activities that may disturb the ground surface at HEER sites. If the 90-days' prior notification is missed, the applicant shall notify the HEER Office as soon as possible to avoid any potential delays regarding the covered project.

(3) Contain on land return flow or runoff from upland dredged spoils dewatering site(s)/disposal site(s), including the confined disposal facility (CDF), which shall be contained on land and not allowed to discharge and/or re-enter any State waters without first obtaining the required discharge permit from USACE POH or CWB. Unless authorized by a USACE POH or NPDES permit, do not allow any runoff, return flow, or airborne particulate pollutants from the excavated or dredged material dewatering or stockpiling site, including the CDF, to enter or re-enter State waters.

(4) Warning signs shall be properly deployed and maintained until the portion of the in-water work is completed and the affected area water quality has returned to its preconstruction condition and turbidity control devices have been removed from the waterway.

q. When projects involve moorings:

(1) Avoid locating moorings (including anchors and floats) in sensitive aquatic habitats such as coral reefs, fish spawning areas, and submerged aquatic vegetation (unless location is acceptable to the Department of Land and Natural Resources, Division of Aquatic Resources or the National Oceanic Atmospheric Administration);

(2) Ensure moorings (including anchors and floats) are made of clean, inert material. Treated lumber shall not be used as it may contain compounds that can be released into the water and become toxic to the aquatic environment;

(3) Pre-cast and cure concrete anchors, if required, away from State waters prior to use to prevent seepage of potentially toxic substances into the waterbody;

[1] The HEER Office is currently updating site information for sites. Most, but not all, sites may be displayed on the viewer map. Site Document data upload is ongoing and not all documents may be currently available via this website. To get the complete record for the site, a record request form can be filled and submitted it to the HEER Office. Users will then be notified when they are able to download all information via the iHEER system website.

(4) Locate moorings in depths that allow structures and vessels to remain afloat at the lowest possible water levels and that prevent propellers from disturbing bottom sediments;
(5) Select mooring anchors of an adequate size to secure vessels or structures and prevent the anchor from shifting or dragging along the bottom of the state water;
(6) Size the length of mooring lines, chains, or cables to avoid excess line, chain, or cable accumulation on the bed of the State water;
(7) Ensure native beach material such as logs, sand, gravel, and boulders that are important components of fish habitat are not used as mooring structures and are left in place on the foreshore;
(8) Properly dispose of derelict or unused floats, lines, chains, or cables in accordance with appropriate laws and rules; and
(9) Ensure moorings are kept in good repair by regularly inspecting and maintaining the structure. Mooring maintenance must be performed into perpetuity (or until it is properly disposed of) or it will itself become a pollution source.

5. Solid Waste Disclosure Form

STATE OF HAWAII
DEPARTMENT OF HEALTH
SOLID WASTE SECTION

Solid Waste Disclosure Form for Construction Sites

The following form shall be filled out for construction projects either identified as under 40 CFR 122.26(b)(14)(x) or produces (or will produce) dredged spoils. A response must be provided for each item. If an item is not relevant to the activity, indicate by "Not Applicable" (N/A), with a short comment.

This form helps the Department of Health, Solid Waste Section (SWS) to identify sources of construction/demolition waste and site clearing debris. Property owners, developers, operators and contractors are responsible for ensuring the proper disposal of such solid waste. Violators of Chapter 11-58.1, HAR, "Solid Waste Management Control," are subject to enforcement, corrective actions, and fines.

Mail completed forms to the Department of Health, Solid Waste Section, 2827 Waimano Home Road, Pearl City, Hawaii 96782. Any questions regarding this form should call (808) 586-4226.

I. Site Information

A. Site Address:_____
B. Name of Owner:_____
C. Owner address:_____
D. Owner phone number:_____
E. Tax Map Key (TMK):_____
F. Size of Site (acres):_____

II. County Permit Information

A. Issuing County Agency:_____
B. Grading permit no.:_____
C. Demolition permit no.:_____
D. Grubbing/Stockpiling permit no.:_____

III. Site Activity Information

A. State the kinds of site clearing activities to be completed. State final use of site:_____
_____
_____
_____

B. Describe structures on site (if none, indicate N/A):
_____
_____
If structures exist, are they to be demolished or removed?
_____☐ yes _____☐ no. If yes, submit copy of building assessment.

IV. Contractor Information

A. General Contractor:_____
Contact:_____ Phone:_____

B. Site Clearing/Demolition Contractor:_____
Contact:_____ Phone:_____

C. Hauling Contractor:_____
Contact:_____ Phone:_____

D. Asbestos/Lead Abatement Contractor:_____
Contact:_____ Phone:_____

E. Destination of Waste Materials:

1. Building demolition materials:
To landfill (name):_____

☐ concrete (specify)_____
☐ scrap metal (specify)_____
☐ non-ferrous metals (specify)_____
☐ roofing materials (specify)_____
☐ other (specify)_____

To permitted recycling facility (name):_____
_____

☐ concrete (specify)_____
☐ green waste (specify)_____
☐ non-ferrous metals (specify)_____
☐ scrap metal (specify)_____
☐ other (specify)_____

For re-use. State what wastes are to be reused and where:_____
_____

2. Dredged spoils:
To landfill (name):_____

To permitted recycling facility (name):_____
_____

For re-use (list address and TMK No.):_____
_____

I declare that I have read and examined the foregoing summary and that the facts stated in it are true.

Sign Here:_____ Title:_____
Print Name:_____ Date:_____
Employer:_____ Phone:_____

NOTE: The person who completed this form must be a representative of either the owner or contractor. Furthermore, if the destination of waste material(s) change or will change, then the owner, contractor or the representative of the owner or contractor shall submit a revised Solid Waste Disclosure Form with updated information to the Department of Health, Solid Waste Section, 2827 Waimano Home Road, Pearl City, Hawaii 96782.

6. Enclosure 3 – Compliance Certification

US Army Corps of Engineers
Honolulu District
BUILDING STRONG®

DEPARTMENT OF THE ARMY PERMIT

COMPLIANCE CERTIFICATION

File Number: POH-2023-00115
Project Title: DLNR-Division of Forestry and Wildlife, Low-Water Crossing, North Fork Wailua River, Wailua, Island of Kauai, Hawaii

PERMIT TYPE: Nationwide Permit No. 14

NAME OF PERMITTEE: David G. Smith, DLNR, Division of Forestry and Wildlife (DOFAW)

DATE OF ISSUANCE: August 2, 2023

DATE OF EXPIRATION: March 14, 2026

The permittee must, upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address or via email within thirty (30) days of completion of work:

U.S. Army Corps of Engineers, Honolulu District
Regulatory Office
Building 230, CEPOH-RO
Fort Shafter, HI 96858-5440
Email: CEPOH-RO@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of this permit, you are subject to permit suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee Date

ENCLOSURE 3

7. NWP No. 14 and its associated Regional and General Conditions

US Army Corps of Engineers ®

2021 Nationwide Permits

Index of 2021 Nationwide Permits, Conditions, District Engineer's Decision, Further Information, and Definitions[1]

Nationwide Permits

[1] The 2021 Nationwide Permits, General Conditions, District Engineer's Decision, Further Information, and Definitions were published in the *Federal Register* on January 13, 2021 (86 FR 2744, and the correction at 86 FR 27274) and December 27, 2021 (86 FR 73522).

32. Completed Enforcement Actions
33. Temporary Construction, Access, and Dewatering
34. Cranberry Production Activities
35. Maintenance Dredging of Existing Basins
36. Boat Ramps
37. Emergency Watershed Protection and Rehabilitation
38. Cleanup of Hazardous and Toxic Waste
39. Commercial and Institutional Developments
40. Agricultural Activities
41. Reshaping Existing Drainage Ditches
42. Recreational Facilities
43. Stormwater Management Facilities
44. Mining Activities
45. Repair of Uplands Damaged by Discrete Events
46. Discharges in Ditches
48. Commercial Shellfish Mariculture Activities
49. Coal Remining Activities
50. Underground Coal Mining Activities
51. Land-Based Renewable Energy Generation Facilities
52. Water-Based Renewable Energy Generation Pilot Projects
53. Removal of Low-Head Dams
54. Living Shorelines
55. Seaweed Mariculture Activities
56. Finfish Mariculture Activities
57. Electric Utility Line and Telecommunications Activities
58. Utility Line Activities for Water and Other Substances
59. Water Reclamation and Reuse Facilities

Nationwide Permit General Conditions

1. Navigation
2. Aquatic Life Movements
3. Spawning Areas
4. Migratory Bird Breeding Areas
5. Shellfish Beds
6. Suitable Material
7. Water Supply Intakes
8. Adverse Effects from Impoundments
9. Management of Water Flows
10. Fills Within 100-Year Floodplains
11. Equipment
12. Soil Erosion and Sediment Controls
13. Removal of Temporary Fills
14. Proper Maintenance
15. Single and Complete Project

16. Wild and Scenic Rivers
17. Tribal Rights
18. Endangered Species
19. Migratory Birds and Bald and Golden Eagles
20. Historic Properties
21. Discovery of Previously Unknown Remains and Artifacts
22. Designated Critical Resource Waters
23. Mitigation
24. Safety of Impoundment Structures
25. Water Quality
26. Coastal Zone Management
27. Regional and Case-by-Case Conditions
28. Use of Multiple Nationwide Permits
29. Transfer of Nationwide Permit Verifications
30. Compliance Certification
31. Activities Affecting Structures or Works Built by the United States
32. Pre-Construction Notification

District Engineer's Decision

Further Information

Nationwide Permit Definitions

Best management practices (BMPs)
Compensatory mitigation
Currently serviceable
Direct effects
Discharge
Ecological reference
Enhancement
Establishment (creation)
High Tide Line
Historic property
Independent utility
Indirect effects
Loss of waters of the United States
Navigable waters
Non-tidal wetland
Open water
Ordinary high water mark
Perennial stream
Practicable
Pre-construction notification
Preservation
Re-establishment

Rehabilitation
Restoration
Riffle and pool complex
Riparian areas
Shellfish seeding
Single and complete linear project
Single and complete non-linear project
Stormwater management
Stormwater management facilities
Stream bed
Stream channelization
Structure
Tidal wetland
Tribal lands
Tribal rights
Vegetated shallows
Waterbody

Nationwide Permits

1. Aids to Navigation. The placement of aids to navigation and regulatory markers that are approved by and installed in accordance with the requirements of the U.S. Coast Guard (see 33 CFR, chapter I, subchapter C, part 66). (Authority: Section 10 of the Rivers and Harbors Act of 1899 (Section 10))

2. Structures in Artificial Canals. Structures constructed in artificial canals within principally residential developments where the connection of the canal to a navigable water of the United States has been previously authorized (see 33 CFR 322.5(g)). (Authority: Section 10)

3. Maintenance. (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the

repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

(c) This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After conducting the maintenance activity, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Authorities: Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (Sections 10 and 404))

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

4. Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities. Fish and wildlife harvesting devices and activities such as pound nets, crab traps, crab dredging, eel pots, lobster traps, duck blinds, and clam and oyster digging, fish aggregating devices, and small fish attraction devices such as open water fish concentrators (sea kites, etc.). This NWP does not authorize artificial reefs or impoundments and semi-impoundments of waters of the United States for the culture or holding of motile species such as lobster, or the use of covered oyster trays or clam racks. (Authorities: Sections 10 and 404)

5. Scientific Measurement Devices. Devices, whose purpose is to measure and record scientific data, such as staff gages, tide and current gages, meteorological stations, water recording and biological observation devices, water quality testing and improvement devices, and similar structures. Small weirs and flumes constructed primarily to record water quantity and velocity are also authorized provided the discharge of dredged or fill material is limited to 25 cubic yards. Upon completion of the use of the device to measure and record scientific data, the measuring device and any other structures or fills associated with that device (e.g., foundations, anchors, buoys, lines, etc.) must be removed to the maximum extent practicable and the site restored to pre-construction elevations. (Authorities: Sections 10 and 404)

6. Survey Activities. Survey activities, such as core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching, soil surveys, sampling, sample plots or transects for wetland delineations, and historic resources surveys. For the purposes of this NWP, the term "exploratory trenching" means mechanical land clearing of the upper soil profile to expose bedrock or substrate, for the purpose of mapping or sampling the exposed material. The area in which the exploratory trench is dug must be restored to its pre-construction elevation upon completion of the work and must not drain a water of the United States. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. This NWP authorizes the construction of temporary pads, provided the discharge of dredged or fill material does not exceed 1/10-acre in waters of the U.S. Discharges of dredged or fill material and structures associated with the recovery of historic resources are not authorized by this NWP. Drilling and the discharge of excavated material from test wells for oil and gas exploration are not authorized by this NWP; the plugging of such wells is authorized. Fill placed for roads and other similar activities is not authorized by this NWP. The NWP does not authorize any permanent structures. The discharge of drilling mud and cuttings may require a permit under Section 402 of the Clean Water Act. (Authorities: Sections 10 and 404)

7. Outfall Structures and Associated Intake Structures. Activities related to the construction or modification of outfall structures and associated intake structures, where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted by, or otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System Program (Section 402 of the Clean Water Act).

The construction of intake structures is not authorized by this NWP unless they are directly associated with an authorized outfall structure.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

8. Oil and Gas Structures on the Outer Continental Shelf. Structures for the exploration, production, and transportation of oil, gas, and minerals on the outer continental shelf within areas leased for such purposes by the Department of the Interior, Bureau of Ocean Energy Management. Such structures shall not be placed within the limits of any designated shipping safety fairway or traffic separation scheme, except temporary anchors that comply with the fairway regulations in 33 CFR 322.5(l). The district engineer will review such proposals to ensure compliance with the provisions of the fairway regulations in 33 CFR 322.5(l). Any Corps review under this NWP will be limited to the effects on navigation and national security in accordance with 33 CFR 322.5(f), as well as 33 CFR 322.5(l) and 33 CFR part 334. Such structures will not be placed in established danger zones or restricted areas as designated in 33 CFR part 334, nor will such structures be permitted in EPA or Corps-designated dredged material disposal areas.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 10)

9. Structures in Fleeting and Anchorage Areas. Structures, buoys, floats, and other devices placed within anchorage or fleeting areas to facilitate moorage of vessels where such areas have been established for that purpose. (Authority: Section 10)

10. Mooring Buoys. Non-commercial, single-boat, mooring buoys. (Authority: Section 10)

11. Temporary Recreational Structures. Temporary buoys, markers, small floating docks, and similar structures placed for recreational use during specific events such as water skiing competitions and boat races or seasonal use, provided that such structures are removed within 30 days after use has been discontinued. At Corps of Engineers reservoirs, the reservoir managers must approve each buoy or marker individually. (Authority: Section 10)

12. Oil or Natural Gas Pipeline Activities. Activities required for the construction, maintenance, repair, and removal of oil and natural gas pipelines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Oil or natural gas pipelines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of oil and natural gas pipelines. There must be no change in pre-construction contours of waters of the United States. An "oil or natural gas pipeline" is defined as any pipe or pipeline for the transportation of any form of oil or natural gas, including products derived from oil or natural gas, such as gasoline, jet fuel, diesel fuel. heating oil, petrochemical feedstocks, waxes, lubricating oils, and asphalt.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Oil or natural gas pipeline substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities (e.g., oil or natural gas or gaseous fuel custody transfer stations, boosting stations, compression stations, metering stations, pressure regulating stations) associated with an oil or natural gas pipeline in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for above-ground oil or natural gas pipelines: This NWP authorizes the construction or maintenance of foundations for above-ground oil or natural gas pipelines in all waters of the United States, provided the foundations are the minimum size necessary.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of oil or natural gas pipelines, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads).

Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize oil or natural gas pipelines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Oil or natural gas pipelines routed in, over, or under section 10 waters without a discharge of dredged or fill material may require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing oil or natural gas pipelines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing oil or natural gas pipelines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the oil or natural gas pipeline activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) a section 10 permit is required; (2) the discharge will result in the loss of greater than 1/10-acre of waters of the United States; or (3) the proposed oil or natural gas pipeline activity is associated with an overall project that is greater than 250 miles in length and the project purpose is to install new pipeline (vs. conduct repair or maintenance activities) along the majority of the distance of the overall project length. If the proposed oil or gas pipeline is greater than 250 miles in length, the pre-construction notification must include the locations and proposed impacts (in acres or other appropriate unit of measure) for all crossings of waters of the United States that require DA authorization, including those crossings authorized by an NWP would not otherwise require pre-construction notification. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Where the oil or natural gas pipeline is constructed, installed, or maintained in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification

will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the oil or natural gas pipeline to protect navigation.

Note 2: For oil or natural gas pipeline activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Oil or natural gas pipeline activities must comply with 33 CFR 330.6(d).

Note 3: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the oil or natural gas pipeline must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 4: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, and may require a permit from the U.S. Coast Guard pursuant to the General Bridge Act of 1946. However, any discharges of dredged or fill material into waters of the United States associated with such oil or natural gas pipelines will require a section 404 permit (see NWP 15).

Note 5: This NWP authorizes oil or natural gas pipeline maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

Note 6: For NWP 12 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

13. Bank Stabilization. Bank stabilization activities necessary for erosion control or prevention, such as vegetative stabilization, bioengineering, sills, rip rap, revetment, gabion baskets, stream barbs, and bulkheads, or combinations of bank stabilization techniques, provided the activity meets all of the following criteria:

(a) No material is placed in excess of the minimum needed for erosion protection;

(b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse

environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a bulkhead that is greater than 1,000 feet in length along the bank);

(c) The activity will not exceed an average of one cubic yard per running foot, as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;

(d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;

(e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;

(f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas);

(g) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization;

(h) The activity is not a stream channelization activity; and

(i) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This NWP authorizes those maintenance and repair activities if they require authorization.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges of dredged or fill material into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of dredged or fill material of greater than an average of one cubic yard per running foot as measured along the length of the

treated bank, below the plane of the ordinary high water mark or the high tide line. (See general condition 32.) (Authorities: Sections 10 and 404)

Note: In coastal waters and the Great Lakes, living shorelines may be an appropriate option for bank stabilization, and may be authorized by NWP 54.

14. Linear Transportation Projects. Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, driveways, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge of dredged or fill material cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge of dredged or fill material cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge of dredged or fill material in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges of dredged or fill material for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

15. U.S. Coast Guard Approved Bridges. Discharges of dredged or fill material incidental to the construction of a bridge across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills, provided the construction of the bridge structure has been authorized by the U.S. Coast Guard under Section 9 of the Rivers and Harbors Act of 1899 or other applicable laws. Causeways and approach fills are not included in this NWP and will require a separate Clean Water Act Section 404 permit. (Authority: Section 404 of the Clean Water Act (Section 404))

16. Return Water From Upland Contained Disposal Areas. Return water from an upland contained dredged material disposal area. The return water from a contained disposal area is administratively defined as a discharge of dredged material by 33 CFR 323.2(d), even though the disposal itself occurs in an area that has no waters of the United States and does not require a section 404 permit. This NWP satisfies the technical requirement for a section 404 permit for the return water where the quality of the return water is controlled by the state through the Clean Water Act Section 401 certification procedures. The dredging activity may require a section 404 permit (33 CFR 323.2(d)), and will require a section 10 permit if located in navigable waters of the United States. (Authority: Section 404)

17. Hydropower Projects. Discharges of dredged or fill material associated with hydropower projects having: (a) Less than 10,000 kW of total generating capacity at existing reservoirs, where the project, including the fill, is licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act of 1920, as amended; or (b) a licensing exemption granted by the FERC pursuant to Section 408 of the Energy Security Act of 1980 (16 U.S.C. 2705 and 2708) and Section 30 of the Federal Power Act, as amended.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 404)

18. Minor Discharges. Minor discharges of dredged or fill material into all waters of the United States, provided the activity meets all of the following criteria:

(a) The quantity of discharged dredged or fill material and the volume of area excavated do not exceed 25 cubic yards below the plane of the ordinary high water mark or the high tide line;

(b) The discharge of dredged or fill material will not cause the loss of more than 1/10-acre of waters of the United States; and

(c) The discharge of dredged or fill material is not placed for the purpose of a stream diversion.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the discharge of dredged or fill material or the volume of area excavated exceeds 10 cubic yards below the plane of the ordinary high water mark or the high tide line, or (2) the discharge of dredged or fill material is in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404)

19. Minor Dredging. Dredging of no more than 25 cubic yards below the plane of the ordinary high water mark or the mean high water mark from navigable waters of the United States (i.e., section 10 waters). This NWP does not authorize the dredging or degradation through siltation of coral reefs, sites that support submerged aquatic vegetation (including sites where submerged aquatic vegetation is documented to exist but may not be present in a given year), anadromous fish spawning areas, or wetlands, or the connection of canals or other artificial waterways to navigable waters of the United States (see 33 CFR 322.5(g)). All dredged material must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization. (Authorities: Sections 10 and 404)

20. Response Operations for Oil or Hazardous Substances. Activities conducted in response to a discharge or release of oil or hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR part 300) including containment, cleanup, and mitigation efforts, provided that the activities are done under either: (1) the Spill Control and Countermeasure Plan required by 40 CFR 112.3; (2) the direction or oversight of the federal on-scene coordinator designated by 40 CFR part 300; or (3) any approved existing state, regional or local contingency plan provided that the Regional Response Team (if one exists in the area) concurs with the proposed response efforts. This NWP also authorizes activities required for the cleanup of oil releases in waters of the United States from electrical equipment that are governed by EPA's polychlorinated biphenyl spill response regulations at 40 CFR part 761. This NWP also authorizes the use of temporary structures and fills in waters of the U.S. for spill response training exercises. (Authorities: Sections 10 and 404)

21. Surface Coal Mining Activities. Discharges of dredged or fill material into waters of the United States associated with surface coal mining and reclamation operations, provided the following criteria are met:

(a) The activities are already authorized, or are currently being processed by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977 or by the Department of the Interior, Office of Surface Mining Reclamation and Enforcement;

(b) The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into tidal waters or non-tidal wetlands adjacent to tidal waters; and

(c) The discharge is not associated with the construction of valley fills. A "valley fill" is a fill structure that is typically constructed within valleys associated with steep, mountainous terrain, associated with surface coal mining activities.

Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.) (Authorities: Sections 10 and 404)

22. Removal of Vessels. Temporary structures or minor discharges of dredged or fill material required for the removal of wrecked, abandoned, or disabled vessels, or the removal of man-made obstructions to navigation. This NWP does not authorize maintenance dredging, shoal removal, or riverbank snagging.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the vessel is listed or eligible for listing in the National Register of Historic Places; or (2) the activity is conducted in a special aquatic site, including coral reefs and wetlands. (See general condition 32.) If the vessel is listed or eligible for listing in the National Register of Historic Places, the permittee cannot commence the activity until informed by the district engineer that compliance with the "Historic Properties" general condition is completed. (Authorities: Sections 10 and 404)

Note 1: Intentional ocean disposal of vessels at sea requires a permit from the U.S. EPA under the Marine Protection, Research and Sanctuaries Act, which specifies that ocean disposal should only be pursued when land-based alternatives are not available. If a Department of the Army permit is required for vessel disposal in waters of the United States, separate authorization will be required.

Note 2: Compliance with general condition 18, Endangered Species, and general condition 20, Historic Properties, is required for all NWPs. The concern with historic properties is emphasized in the notification requirements for this NWP because of the possibility that shipwrecks may be historic properties.

23. Approved Categorical Exclusions. Activities undertaken, assisted, authorized, regulated, funded, or financed, in whole or in part, by another Federal agency or department where:

(a) That agency or department has determined, pursuant to the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act (40 CFR part 1500 et seq.), that the activity is categorically excluded from the requirement to prepare an environmental impact statement or environmental assessment analysis, because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment; and

(b) The Office of the Chief of Engineers (Attn: CECW-CO) has concurred with that agency's or department's determination that the activity is categorically excluded and approved the activity for authorization under NWP 23.

The Office of the Chief of Engineers may require additional conditions, including pre-construction notification, for authorization of an agency's categorical exclusions under this NWP.

Notification: Certain categorical exclusions approved for authorization under this NWP require the permittee to submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). The activities that require pre-construction notification are listed in the appropriate Regulatory Guidance Letter(s). (Authorities: Sections 10 and 404)

Note: The agency or department may submit an application for an activity believed to be categorically excluded to the Office of the Chief of Engineers (Attn: CECW-CO). Prior to approval for authorization under this NWP of any agency's activity, the Office of the Chief of Engineers will solicit public comment. As of the date of issuance of this NWP, agencies with approved categorical exclusions are: the Bureau of Reclamation, Federal Highway Administration, and U.S. Coast Guard. Activities approved for authorization under this NWP as of the date of this notice are found in Corps Regulatory Guidance Letter 05-07. Any future approved categorical exclusions will be announced in Regulatory Guidance Letters and posted on this same web site.

24. Indian Tribe or State Administered Section 404 Programs. Any activity permitted by a state or Indian Tribe administering its own section 404 permit program pursuant to 33 U.S.C. 1344(g)-(l) is permitted pursuant to Section 10 of the Rivers and Harbors Act of 1899. (Authority: Section 10)

Note 1: As of the date of the promulgation of this NWP, only Florida, New Jersey and Michigan administer their own Clean Water Act Section 404 permit programs.

Note 2: Those activities that do not involve an Indian Tribe or State Clean Water Act Section 404 permit are not included in this NWP, but certain structures will be exempted by Section 154 of Pub. L. 94-587, 90 Stat. 2917 (33 U.S.C. 591) (see 33 CFR 322.4(b)).

25. Structural Discharges. Discharges of dredged or fill material such as concrete, sand, rock, etc., into tightly sealed forms or cells where the material will be used as a structural member for standard pile supported structures, such as bridges, transmission line footings, and walkways, or for general navigation, such as mooring cells, including the excavation of bottom material from within the form prior to the discharge of concrete, sand, rock, etc. This NWP does not authorize filled structural members that would support buildings, building pads, homes, house pads, parking areas, storage areas and other such structures. The structure itself may require a separate section 10 permit if located in navigable waters of the United States. (Authority: Section 404)

27. Aquatic Habitat Restoration, Enhancement, and Establishment Activities. Activities in waters of the United States associated with the restoration, enhancement, and establishment of tidal and non-tidal wetlands and riparian areas, the restoration and enhancement of non-tidal streams and other non-tidal open waters, and the rehabilitation or enhancement of tidal streams, tidal wetlands, and tidal open waters, provided those activities result in net increases in aquatic resource functions and services.

To be authorized by this NWP, the aquatic habitat restoration, enhancement, or establishment activity must be planned, designed, and implemented so that it results in aquatic habitat that resembles an ecological reference. An ecological reference may be based on the characteristics of one or more intact aquatic habitats or riparian areas of the same type that exist in the region. An ecological reference may be based on a conceptual model developed from regional ecological knowledge of the target aquatic habitat type or riparian area.

To the extent that a Corps permit is required, activities authorized by this NWP include, but are not limited to the removal of accumulated sediments; releases of sediment from reservoirs to maintain sediment transport continuity to restore downstream habitats; the installation, removal, and maintenance of small water control structures, dikes, and berms, as well as discharges of dredged or fill material to restore appropriate stream channel configurations after small water control structures, dikes, and berms are removed; the installation of current deflectors; the enhancement, rehabilitation, or re-establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to enhance, rehabilitate, or re-establish stream meanders; the removal of stream barriers, such as undersized culverts, fords, and grade control structures; the backfilling of artificial channels; the removal of existing drainage structures, such as drain tiles, and the filling, blocking, or reshaping of drainage ditches to restore wetland hydrology; the installation of structures or fills necessary to restore or enhance wetland or stream hydrology; the construction of small nesting islands; the construction of open water areas; the construction of oyster habitat over unvegetated bottom in tidal waters; coral restoration or relocation activities; shellfish seeding; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; re-establishment of submerged aquatic vegetation in areas where those plant communities

previously existed; re-establishment of tidal wetlands in tidal waters where those wetlands previously existed; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species should be planted at the site.

This NWP authorizes the relocation of non-tidal waters, including non-tidal wetlands and streams, on the project site provided there are net increases in aquatic resource functions and services.

Except for the relocation of non-tidal waters on the project site, this NWP does not authorize the conversion of a stream or natural wetlands to another aquatic habitat type (e.g., the conversion of a stream to wetland or vice versa) or uplands. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type. This NWP does not authorize stream channelization. This NWP does not authorize the relocation of tidal waters or the conversion of tidal waters, including tidal wetlands, to other aquatic uses, such as the conversion of tidal wetlands into open water impoundments.

Compensatory mitigation is not required for activities authorized by this NWP since these activities must result in net increases in aquatic resource functions and services.

Reversion. For enhancement, restoration, and establishment activities conducted: (1) In accordance with the terms and conditions of a binding stream or wetland enhancement or restoration agreement, or a wetland establishment agreement, between the landowner and the U.S. Fish and Wildlife Service (FWS), the Natural Resources Conservation Service (NRCS), the Farm Service Agency (FSA), the National Marine Fisheries Service (NMFS), the National Ocean Service (NOS), U.S. Forest Service (USFS), or their designated state cooperating agencies; (2) as voluntary wetland restoration, enhancement, and establishment actions documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or (3) on reclaimed surface coal mine lands, in accordance with a Surface Mining Control and Reclamation Act permit issued by the Office of Surface Mining Reclamation and Enforcement (OSMRE) or the applicable state agency, this NWP also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or establishment activities). The reversion must occur within five years after expiration of a limited term wetland restoration or establishment agreement or permit, and is authorized in these circumstances even if the discharge of dredged or fill material occurs after this NWP expires. The five-year reversion limit does not apply to agreements without time limits reached between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS, or an appropriate state cooperating agency. This NWP also authorizes discharges of dredged or fill material in waters of the United States for the reversion of wetlands that were restored, enhanced, or established on prior-converted cropland or on uplands, in accordance with a binding agreement between the landowner and NRCS, FSA, FWS, or their designated state cooperating agencies (even

though the restoration, enhancement, or establishment activity did not require a section 404 permit). The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the Federal agency or appropriate state agency executing the agreement or permit. Before conducting any reversion activity, the permittee or the appropriate Federal or state agency must notify the district engineer and include the documentation of the prior condition. Once an area has reverted to its prior physical condition, it will be subject to whatever the Corps Regulatory requirements are applicable to that type of land at the time. The requirement that the activity results in a net increase in aquatic resource functions and services does not apply to reversion activities meeting the above conditions. Except for the activities described above, this NWP does not authorize any future discharge of dredged or fill material associated with the reversion of the area to its prior condition. In such cases a separate permit would be required for any reversion.

Reporting. For those activities that do not require pre-construction notification, the permittee must submit to the district engineer a copy of: (1) the binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement, or a project description, including project plans and location map; (2) the NRCS or USDA Technical Service Provider documentation for the voluntary stream enhancement or restoration action or wetland restoration, enhancement, or establishment action; or (3) the SMCRA permit issued by OSMRE or the applicable state agency. The report must also include information on baseline ecological conditions on the project site, such as a delineation of wetlands, streams, and/or other aquatic habitats. These documents must be submitted to the district engineer at least 30 days prior to commencing activities in waters of the United States authorized by this NWP.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing any activity (see general condition 32), except for the following activities:

(1) Activities conducted on non-Federal public lands and private lands, in accordance with the terms and conditions of a binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS or their designated state cooperating agencies;

(2) Activities conducted in accordance with the terms and conditions of a binding coral restoration or relocation agreement between the project proponent and the NMFS or any of its designated state cooperating agencies;

(3) Voluntary stream or wetland restoration or enhancement action, or wetland establishment action, documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or

(4) The reclamation of surface coal mine lands, in accordance with an SMCRA permit issued by the OSMRE or the applicable state agency.

However, the permittee must submit a copy of the appropriate documentation to the district engineer to fulfill the reporting requirement. (Authorities: Sections 10 and 404)

Note: This NWP can be used to authorize compensatory mitigation projects, including mitigation banks and in-lieu fee projects. However, this NWP does not authorize the reversion of an area used for a compensatory mitigation project to its prior condition, since compensatory mitigation is generally intended to be permanent.

28. Modifications of Existing Marinas. Reconfiguration of existing docking facilities within an authorized marina area. No dredging, additional slips, dock spaces, or expansion of any kind within waters of the United States is authorized by this NWP. (Authority: Section 10)

29. Residential Developments. Discharges of dredged or fill material into non-tidal waters of the United States for the construction or expansion of a single residence, a multiple unit residential development, or a residential subdivision. This NWP authorizes the construction of building foundations and building pads and attendant features that are necessary for the use of the residence or residential development. Attendant features may include but are not limited to roads, parking lots, garages, yards, utility lines, storm water management facilities, septic fields, and recreation facilities such as playgrounds, playing fields, and golf courses (provided the golf course is an integral part of the residential development).

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

Subdivisions: For residential subdivisions, the aggregate total loss of waters of United States authorized by this NWP cannot exceed 1/2-acre. This includes any loss of waters of the United States associated with development of individual subdivision lots.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

30. Moist Soil Management for Wildlife. Discharges of dredged or fill material into non-tidal waters of the United States and maintenance activities that are associated with moist soil management for wildlife for the purpose of continuing ongoing, site-specific, wildlife management activities where soil manipulation is used to manage habitat and feeding areas for wildlife. Such activities include, but are not limited to, plowing or discing to impede succession, preparing seed beds, or establishing fire breaks. Sufficient riparian areas must be maintained adjacent to all open water bodies, including streams, to preclude water quality degradation due to erosion and sedimentation. This

NWP does not authorize the construction of new dikes, roads, water control structures, or similar features associated with the management areas. The activity must not result in a net loss of aquatic resource functions and services. This NWP does not authorize the conversion of wetlands to uplands, impoundments, or other open water bodies. (Authority: Section 404)

Note: The repair, maintenance, or replacement of existing water control structures or the repair or maintenance of dikes may be authorized by NWP 3. Some such activities may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

31. Maintenance of Existing Flood Control Facilities. Discharges of dredged or fill material resulting from activities associated with the maintenance of existing flood control facilities, including debris basins, retention/detention basins, levees, and channels that: (i) were previously authorized by the Corps by individual permit, general permit, or 33 CFR 330.3, or did not require a permit at the time they were constructed, or (ii) were constructed by the Corps and transferred to a non-Federal sponsor for operation and maintenance. Activities authorized by this NWP are limited to those resulting from maintenance activities that are conducted within the "maintenance baseline," as described in the definition below. Discharges of dredged or fill materials associated with maintenance activities in flood control facilities in any watercourse that have previously been determined to be within the maintenance baseline are authorized under this NWP. To the extent that a Corps permit is required, this NWP authorizes the removal of vegetation from levees associated with the flood control project. This NWP does not authorize the removal of sediment and associated vegetation from natural water courses except when these activities have been included in the maintenance baseline. All dredged and excavated material must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization. Proper sediment controls must be used.

Maintenance Baseline: The maintenance baseline is a description of the physical characteristics (e.g., depth, width, length, location, configuration, or design flood capacity, etc.) of a flood control project within which maintenance activities are normally authorized by NWP 31, subject to any case-specific conditions required by the district engineer. The district engineer will approve the maintenance baseline based on the approved or constructed capacity of the flood control facility, whichever is smaller, including any areas where there are no constructed channels but which are part of the facility. The prospective permittee will provide documentation of the physical characteristics of the flood control facility (which will normally consist of as-built or approved drawings) and documentation of the approved and constructed design capacities of the flood control facility. If no evidence of the constructed capacity exists, the approved capacity will be used. The documentation will also include best management practices to ensure that the adverse environmental impacts caused by the maintenance activities are no more than minimal, especially in maintenance areas where there are no constructed channels. (The Corps may request maintenance records in areas where there has not been recent maintenance.) Revocation or

modification of the final determination of the maintenance baseline can only be done in accordance with 33 CFR 330.5. Except in emergencies as described below, this NWP cannot be used until the district engineer approves the maintenance baseline and determines the need for mitigation and any regional or activity-specific conditions. Once determined, the maintenance baseline will remain valid for any subsequent reissuance of this NWP. This NWP does not authorize maintenance of a flood control facility that has been abandoned. A flood control facility will be considered abandoned if it has operated at a significantly reduced capacity without needed maintenance being accomplished in a timely manner. A flood control facility will not be considered abandoned if the prospective permittee is in the process of obtaining other authorizations or approvals required for maintenance activities and is experiencing delays in obtaining those authorizations or approvals.

Mitigation: The district engineer will determine any required mitigation one-time only for impacts associated with maintenance work at the same time that the maintenance baseline is approved. Such one-time mitigation will be required when necessary to ensure that adverse environmental effects are no more than minimal, both individually and cumulatively. Such mitigation will only be required once for any specific reach of a flood control project. However, if one-time mitigation is required for impacts associated with maintenance activities, the district engineer will not delay needed maintenance, provided the district engineer and the permittee establish a schedule for identification, approval, development, construction and completion of any such required mitigation. Once the one-time mitigation described above has been completed, or a determination made that mitigation is not required, no further mitigation will be required for maintenance activities within the maintenance baseline (see Note, below). In determining appropriate mitigation, the district engineer will give special consideration to natural water courses that have been included in the maintenance baseline and require mitigation and/or best management practices as appropriate.

Emergency Situations: In emergency situations, this NWP may be used to authorize maintenance activities in flood control facilities for which no maintenance baseline has been approved. Emergency situations are those which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if action is not taken before a maintenance baseline can be approved. In such situations, the determination of mitigation requirements, if any, may be deferred until the emergency has been resolved. Once the emergency has ended, a maintenance baseline must be established expeditiously, and mitigation, including mitigation for maintenance conducted during the emergency, must be required as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer before any maintenance work is conducted (see general condition 32). The pre-construction notification may be for activity-specific maintenance or for maintenance of the entire flood control facility by submitting a five-year (or less) maintenance plan. The pre-construction notification must include a description of the maintenance baseline

and the disposal site for dredged or excavated material. (Authorities: Sections 10 and 404)

Note: If the maintenance baseline was approved by the district engineer under a prior version of NWP 31, and the district engineer imposed the one-time compensatory mitigation requirement on maintenance for a specific reach of a flood control project authorized by that prior version of NWP 31, during the period this version of NWP 31 is in effect, the district engineer will not require additional compensatory mitigation for maintenance activities authorized by this NWP in that specific reach of the flood control project.

32. Completed Enforcement Actions. Any structure, work, or discharge of dredged or fill material remaining in place or undertaken for mitigation, restoration, or environmental benefit in compliance with either:

(i) The terms of a final written Corps non-judicial settlement agreement resolving a violation of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899; or the terms of an EPA 309(a) order on consent resolving a violation of Section 404 of the Clean Water Act, provided that:

(a) The activities authorized by this NWP cannot adversely affect more than 5 acres of non-tidal waters or 1 acre of tidal waters;

(b) The settlement agreement provides for environmental benefits, to an equal or greater degree, than the environmental detriments caused by the unauthorized activity that is authorized by this NWP; and

(c) The district engineer issues a verification letter authorizing the activity subject to the terms and conditions of this NWP and the settlement agreement, including a specified completion date; or

(ii) The terms of a final Federal court decision, consent decree, or settlement agreement resulting from an enforcement action brought by the United States under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899; or

(iii) The terms of a final court decision, consent decree, settlement agreement, or non-judicial settlement agreement resulting from a natural resource damage claim brought by a trustee or trustees for natural resources (as defined by the National Contingency Plan at 40 CFR subpart G) under Section 311 of the Clean Water Act, Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act, Section 312 of the National Marine Sanctuaries Act, Section 1002 of the Oil Pollution Act of 1990, or the Park System Resource Protection Act at 16 U.S.C. 19jj, to the extent that a Corps permit is required.

Compliance is a condition of the NWP itself; non-compliance of the terms and conditions of an NWP 32 authorization may result in an additional enforcement action

(e.g., a Class I civil administrative penalty). Any authorization under this NWP is automatically revoked if the permittee does not comply with the terms of this NWP or the terms of the court decision, consent decree, or judicial/non-judicial settlement agreement. This NWP does not apply to any activities occurring after the date of the decision, decree, or agreement that are not for the purpose of mitigation, restoration, or environmental benefit. Before reaching any settlement agreement, the Corps will ensure compliance with the provisions of 33 CFR part 326 and 33 CFR 330.6(d)(2) and (e). (Authorities: Sections 10 and 404)

33. Temporary Construction, Access, and Dewatering. Temporary structures, work, and discharges of dredged or fill material, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites, provided that the associated primary activity is authorized by the Corps of Engineers or the U.S. Coast Guard. This NWP also authorizes temporary structures, work, and discharges of dredged or fill material, including cofferdams, necessary for construction activities not otherwise subject to the Corps or U.S. Coast Guard permit requirements. Appropriate measures must be taken to maintain near normal downstream flows and to minimize flooding. Fill must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. The use of dredged material may be allowed if the district engineer determines that it will not cause more than minimal adverse environmental effects. Following completion of construction, temporary fill must be entirely removed to an area that has no waters of the United States, dredged material must be returned to its original location, and the affected areas must be restored to pre-construction elevations. The affected areas must also be revegetated, as appropriate. This permit does not authorize the use of cofferdams to dewater wetlands or other aquatic areas to change their use. Structures left in place after construction is completed require a separate section 10 permit if located in navigable waters of the United States. (See 33 CFR part 322.)

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the activity is conducted in navigable waters of the United States (i.e., section 10 waters) (see general condition 32). The pre-construction notification must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. (Authorities: Sections 10 and 404)

34. Cranberry Production Activities. Discharges of dredged or fill material for dikes, berms, pumps, water control structures or leveling of cranberry beds associated with expansion, enhancement, or modification activities at existing cranberry production operations. The cumulative total acreage of disturbance per cranberry production operation, including but not limited to, filling, flooding, ditching, or clearing, must not exceed 10 acres of waters of the United States, including wetlands. The activity must not result in a net loss of wetland acreage. This NWP does not authorize any discharge of dredged or fill material related to other cranberry production activities such as warehouses, processing facilities, or parking areas. For the purposes of this NWP, the cumulative total of 10 acres will be measured over the period that this NWP is valid.

Notification: The permittee must submit a pre-construction notification to the district engineer once during the period that this NWP is valid, and the NWP will then authorize discharges of dredge or fill material at an existing operation for the permit term, provided the 10-acre limit is not exceeded. (See general condition 32.) (Authority: Section 404)

35. Maintenance Dredging of Existing Basins. The removal of accumulated sediment for maintenance of existing marina basins, access channels to marinas or boat slips, and boat slips to previously authorized depths or controlling depths for ingress/egress, whichever is less. All dredged material must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization. Proper sediment controls must be used for the disposal site. (Authority: Section 10)

36. Boat Ramps. Activities required for the construction, repair, or replacement of boat ramps, provided the activity meets all of the following criteria:

(a) The discharge of dredged or fill material into waters of the United States does not exceed 50 cubic yards of concrete, rock, crushed stone or gravel into forms, or in the form of pre-cast concrete planks or slabs, unless the district engineer waives the 50 cubic yard limit by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;

(b) The boat ramp does not exceed 20 feet in width, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;

(c) The base material is crushed stone, gravel or other suitable material;

(d) The excavation is limited to the area necessary for site preparation and all excavated material is removed to an area that has no waters of the United States; and,

(e) No material is placed in special aquatic sites, including wetlands.

The use of unsuitable material that is structurally unstable is not authorized. If dredging in navigable waters of the United States is necessary to provide access to the boat ramp, the dredging must be authorized by another NWP, a regional general permit, or an individual permit.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The discharge of dredged or fill material into waters of the United States exceeds 50 cubic yards, or (2) the boat ramp exceeds 20 feet in width. (See general condition 32.) (Authorities: Sections 10 and 404)

37. Emergency Watershed Protection and Rehabilitation. Work done by or funded by:

(a) The Natural Resources Conservation Service for a situation requiring immediate action under its emergency Watershed Protection Program (7 CFR part 624);

(b) The U.S. Forest Service under its Burned-Area Emergency Rehabilitation Handbook (FSH 2509.13);

(c) The Department of the Interior for wildland fire management burned area emergency stabilization and rehabilitation (DOI Manual part 620, Ch. 3);

(d) The Office of Surface Mining, or states with approved programs, for abandoned mine land reclamation activities under Title IV of the Surface Mining Control and Reclamation Act (30 CFR subchapter R), where the activity does not involve coal extraction; or

(e) The Farm Service Agency under its Emergency Conservation Program (7 CFR part 701).

In general, the permittee should wait until the district engineer issues an NWP verification or 45 calendar days have passed before proceeding with the watershed protection and rehabilitation activity. However, in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur, the emergency watershed protection and rehabilitation activity may proceed immediately and the district engineer will consider the information in the pre-construction notification and any comments received as a result of agency coordination to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

Notification: Except in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). (Authorities: Sections 10 and 404)

38. Cleanup of Hazardous and Toxic Waste. Specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Court ordered remedial action plans or related settlements are also authorized by this NWP. This NWP does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

Note: Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA as approved or required by EPA, are not required to obtain permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act.

39. Commercial and Institutional Developments. Discharges of dredged or fill material into non-tidal waters of the United States for the construction or expansion of commercial and institutional building foundations and building pads and attendant features that are necessary for the use and maintenance of the structures. Attendant features may include, but are not limited to, roads, parking lots, garages, yards, utility lines, storm water management facilities, wastewater treatment facilities, and recreation facilities such as playgrounds and playing fields. Examples of commercial developments include retail stores, industrial facilities, restaurants, business parks, and shopping centers. Examples of institutional developments include schools, fire stations, government office buildings, judicial buildings, public works buildings, libraries, hospitals, and places of worship. The construction of new golf courses and new ski areas is not authorized by this NWP.

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

Note: For any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission line, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

40. Agricultural Activities. Discharges of dredged or fill material into non-tidal waters of the United States for agricultural activities, including the construction of building pads for farm buildings. Authorized activities include the installation, placement, or construction of drainage tiles, ditches, or levees; mechanized land clearing; land leveling; the relocation of existing serviceable drainage ditches constructed in waters of the United States; and similar activities.

This NWP also authorizes the construction of farm ponds in non-tidal waters of the United States, excluding perennial streams, provided the farm pond is used solely for agricultural purposes. This NWP does not authorize the construction of aquaculture ponds.

This NWP also authorizes discharges of dredged or fill material into non-tidal jurisdictional waters of the United States to relocate existing serviceable drainage ditches constructed in non-tidal streams.

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 404)

Note: Some discharges of dredged or fill material into waters of the United States for agricultural activities may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4). This NWP authorizes the construction of farm ponds that do not qualify for the Clean Water Act section 404(f)(1)(C) exemption because of the recapture provision at section 404(f)(2).

41. Reshaping Existing Drainage and Irrigation Ditches. Discharges of dredged or fill material into non-tidal waters of the United States, excluding non-tidal wetlands adjacent to tidal waters, to modify the cross-sectional configuration of currently serviceable drainage and irrigation ditches constructed in waters of the United States, for the purpose of improving water quality by regrading the drainage or irrigation ditch with gentler slopes, which can reduce erosion, increase growth of vegetation, and increase uptake of nutrients and other substances by vegetation. The reshaping of the drainage ditch cannot increase drainage capacity beyond the original as-built capacity nor can it expand the area drained by the drainage ditch as originally constructed (i.e., the capacity of the drainage ditch must be the same as originally constructed and it cannot drain additional wetlands or other waters of the United States). Compensatory mitigation is not required because the work is designed to improve water quality.

This NWP does not authorize the relocation of drainage or irrigation ditches constructed in waters of the United States; the location of the centerline of the reshaped drainage or irrigation ditch must be approximately the same as the location of the centerline of the original drainage or irrigation ditch. This NWP does not authorize stream channelization or stream relocation projects. (Authority: Section 404)

42. Recreational Facilities. Discharges of dredged or fill material into non-tidal waters of the United States for the construction or expansion of recreational facilities. Examples of recreational facilities that may be authorized by this NWP include playing fields (e.g., football fields, baseball fields), basketball courts, tennis courts, hiking trails, bike paths, golf courses, ski areas, horse paths, nature centers, and campgrounds (excluding recreational vehicle parks). This NWP also authorizes the construction or expansion of small support facilities, such as maintenance and storage buildings and stables that are directly related to the recreational activity, but it does not authorize the construction of hotels, restaurants, racetracks, stadiums, arenas, or similar facilities.

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 404)

43. Stormwater Management Facilities. Discharges of dredged or fill material into non-tidal waters of the United States for the construction of stormwater management facilities, including stormwater detention basins and retention basins and other stormwater management facilities; the construction of water control structures, outfall structures and emergency spillways; the construction of low impact development integrated management features such as bioretention facilities (e.g., rain gardens), vegetated filter strips, grassed swales, and infiltration trenches; and the construction of pollutant reduction green infrastructure features designed to reduce inputs of sediments, nutrients, and other pollutants into waters, such as features needed to meet reduction targets established under Total Maximum Daily Loads set under the Clean Water Act.

This NWP authorizes, to the extent that a section 404 permit is required, discharges of dredged or fill material into non-tidal waters of the United States for the maintenance of stormwater management facilities, low impact development integrated management features, and pollutant reduction green infrastructure features. The maintenance of stormwater management facilities, low impact development integrated management features, and pollutant reduction green infrastructure features that are not waters of the United States does not require a section 404 permit.

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. This NWP does not authorize discharges of dredged or fill material for the construction of new stormwater management facilities in perennial streams.

Notification: For discharges of dredged or fill material into non-tidal waters of the United States for the construction of new stormwater management facilities or pollutant reduction green infrastructure features, or the expansion of existing stormwater management facilities or pollutant reduction green infrastructure features, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) Maintenance activities do not require pre-construction notification if they are limited to restoring the original design capacities of the stormwater management facility or pollutant reduction green infrastructure feature. (Authority: Section 404)

44. Mining Activities. Discharges of dredged or fill material into non-tidal waters of the United States for mining activities, except for coal mining activities, provided the activity meets all of the following criteria:

(a) For mining activities involving discharges of dredged or fill material into non-tidal jurisdictional wetlands, the discharge must not cause the loss of greater than 1/2-acre of non-tidal jurisdictional wetlands;

(b) For mining activities involving discharges of dredged or fill material in non-tidal jurisdictional open waters (e.g., rivers, streams, lakes, and ponds) or work in non-tidal navigable waters of the United States (i.e., section 10 waters), the mined area, including permanent and temporary impacts due to discharges of dredged or fill material into jurisdictional waters, must not exceed 1/2-acre; and

(c) The acreage loss under paragraph (a) plus the acreage impact under paragraph (b) does not exceed 1/2-acre.

This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) If reclamation is required by other statutes, then a copy of the final reclamation plan must be submitted with the pre-construction notification. (Authorities: Sections 10 and 404)

45. Repair of Uplands Damaged by Discrete Events. This NWP authorizes discharges of dredged or fill material, including dredging or excavation, into all waters of the United States for activities associated with the restoration of upland areas damaged by storms, floods, or other discrete events. This NWP authorizes bank stabilization to protect the restored uplands. The restoration of the damaged areas, including any bank stabilization, must not exceed the contours, or ordinary high water mark, that existed before the damage occurred. The district engineer retains the right to determine the extent of the pre-existing conditions and the extent of any restoration work authorized by this NWP. The work must commence, or be under contract to commence, within two years of the date of damage, unless this condition is waived in writing by the district engineer. This NWP cannot be used to reclaim lands lost to normal erosion processes over an extended period.

This NWP does not authorize beach restoration or nourishment.

Minor dredging is limited to the amount necessary to restore the damaged upland area and should not significantly alter the pre-existing bottom contours of the waterbody.

Notification: The permittee must submit a pre-construction notification to the district engineer (see general condition 32) within 12 months of the date of the damage; for major storms, floods, or other discrete events, the district engineer may waive the 12-month limit for submitting a pre-construction notification if the permittee can demonstrate funding, contract, or other similar delays. The pre-construction notification

must include documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration. (Authorities: Sections 10 and 404)

Note: The uplands themselves that are lost as a result of a storm, flood, or other discrete event can be replaced without a Clean Water Act Section 404 permit, if the uplands are restored to the ordinary high water mark (in non-tidal waters) or high tide line (in tidal waters). (See also 33 CFR 328.5.) This NWP authorizes discharges of dredged or fill material into waters of the United States associated with the restoration of uplands.

46. Discharges in Ditches. Discharges of dredged or fill material into non-tidal ditches that are (1) constructed in uplands, (2) receive water from an area determined to be a water of the United States prior to the construction of the ditch, (3) divert water to an area determined to be a water of the United States prior to the construction of the ditch, and (4) determined to be waters of the United States. The discharge of dredged or fill material must not cause the loss of greater than one acre of waters of the United States.

This NWP does not authorize discharges of dredged or fill material into ditches constructed in streams or other waters of the United States, or in streams that have been relocated in uplands. This NWP does not authorize discharges of dredged or fill material that increase the capacity of the ditch and drain those areas determined to be waters of the United States prior to construction of the ditch.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 404)

48. Commercial Shellfish Mariculture Activities. Structures or work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States necessary for new and continuing commercial shellfish mariculture operations (i.e., the cultivation of bivalve molluscs such as oysters, mussels, clams, and scallops) in authorized project areas. For the purposes of this NWP, the project area is the area in which the operator is authorized to conduct commercial shellfish mariculture activities, as identified through a lease or permit issued by an appropriate state or local government agency, a treaty, or any easement, lease, deed, contract, or other legally binding agreement that establishes an enforceable property interest for the operator.

This NWP authorizes the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the United States. This NWP also authorizes discharges of dredged or fill material into waters of the United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities. Rafts and other floating structures must be securely anchored and clearly marked.

This NWP does not authorize:

(a) The cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody;

(b) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990; or

(c) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas, or the deposition of shell material back into waters of the United States as waste.

Notification: The permittee must submit a pre-construction notification to the district engineer if the activity directly affects more than 1/2-acre of submerged aquatic vegetation. If the operator will be conducting commercial shellfish mariculture activities in multiple contiguous project areas, he or she can either submit one PCN for those contiguous project areas or submit a separate PCN for each project area. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: The permittee should notify the applicable U.S. Coast Guard office regarding the project.

Note 2: To prevent introduction of aquatic nuisance species, no material that has been taken from a different waterbody may be reused in the current project area, unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan.

Note 3: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines "aquatic nuisance species" as "a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters."

49. Coal Remining Activities. Discharges of dredged or fill material into non-tidal waters of the United States associated with the remining and reclamation of lands that were previously mined for coal. The activities must already be authorized, or they must currently be in process by the Department of the Interior Office of Surface Mining Reclamation and Enforcement, or by states with approved programs under Title IV or Title V of the Surface Mining Control and Reclamation Act of 1977 (SMCRA). Areas previously mined include reclaimed mine sites, abandoned mine land areas, or lands under bond forfeiture contracts.

As part of the project, the permittee may conduct new coal mining activities in conjunction with the remining activities when he or she clearly demonstrates to the district engineer that the overall mining plan will result in a net increase in aquatic resource functions. The Corps will consider the SMCRA agency's decision regarding the amount of currently undisturbed adjacent lands needed to facilitate the remining and reclamation of the previously mined area. The total area disturbed by new mining must

not exceed 40 percent of the total acreage covered by both the remined area and the additional area necessary to carry out the reclamation of the previously mined area.

Notification: The permittee must submit a pre-construction notification and a document describing how the overall mining plan will result in a net increase in aquatic resource functions to the district engineer and receive written authorization prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

50. Underground Coal Mining Activities. Discharges of dredged or fill material into non-tidal waters of the United States associated with underground coal mining and reclamation operations provided the activities are authorized, or are currently being processed by the Department of the Interior, Office of Surface Mining Reclamation and Enforcement, or by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977.

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. This NWP does not authorize coal preparation and processing activities outside of the mine site.

Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.) If reclamation is required by other statutes, then a copy of the reclamation plan must be submitted with the pre-construction notification. (Authorities: Sections 10 and 404)

51. Land-Based Renewable Energy Generation Facilities. Discharges of dredged or fill material into non-tidal waters of the United States for the construction, expansion, or modification of land-based renewable energy production facilities, including attendant features. Such facilities include infrastructure to collect solar (concentrating solar power and photovoltaic), wind, biomass, or geothermal energy. Attendant features may include, but are not limited to roads, parking lots, and stormwater management facilities within the land-based renewable energy generation facility.

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the discharge results in the loss of greater than 1/10-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Electric utility lines constructed to transfer the energy from the land-based renewable energy generation facility to a distribution system, regional grid, or other facility are generally considered to be linear projects and each separate and distant crossing of a waterbody is eligible for treatment as a separate single and complete

linear project. Those electric utility lines may be authorized by NWP 57 or another Department of the Army authorization.

Note 2: If the only activities associated with the construction, expansion, or modification of a land-based renewable energy generation facility that require Department of the Army authorization are discharges of dredged or fill material into waters of the United States to construct, maintain, repair, and/or remove electric utility lines and/or road crossings, then NWP 57 and/or NWP 14 shall be used if those activities meet the terms and conditions of NWPs 57 and 14, including any applicable regional conditions and any case-specific conditions imposed by the district engineer.

Note 3: For any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission line, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

52. Water-Based Renewable Energy Generation Pilot Projects. Structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States for the construction, expansion, modification, or removal of water-based wind, water-based solar, wave energy, or hydrokinetic renewable energy generation pilot projects and their attendant features. Attendant features may include, but are not limited to, land-based collection and distribution facilities, control facilities, roads, parking lots, and stormwater management facilities.

For the purposes of this NWP, the term "pilot project" means an experimental project where the water-based renewable energy generation units will be monitored to collect information on their performance and environmental effects at the project site.

The discharge must not cause the loss of greater than 1/2-acre of waters of the United States. The placement of a transmission line on the bed of a navigable water of the United States from the renewable energy generation unit(s) to a land-based collection and distribution facility is considered a structure under Section 10 of the Rivers and Harbors Act of 1899 (see 33 CFR 322.2(b)), and the placement of the transmission line on the bed of a navigable water of the United States is not a loss of waters of the United States for the purposes of applying the 1/2-acre limit.

For each single and complete project, no more than 10 generation units (e.g., wind turbines, wave energy devices, or hydrokinetic devices) are authorized. For floating solar panels in navigable waters of the United States, each single and complete project cannot exceed 1/2-acre in water surface area covered by the floating solar panels.

This NWP does not authorize activities in coral reefs. Structures in an anchorage area established by the U.S. Coast Guard must comply with the requirements in 33 CFR 322.5(l)(2). Structures may not be placed in established danger zones or restricted areas designated in 33 CFR part 334, Federal navigation channels, shipping safety fairways or traffic separation schemes established by the U.S. Coast Guard (see 33

CFR 322.5(l)(1)), or EPA or Corps designated open water dredged material disposal areas.

Upon completion of the pilot project, the generation units, transmission lines, and other structures or fills associated with the pilot project must be removed to the maximum extent practicable unless they are authorized by a separate Department of the Army authorization, such as another NWP, an individual permit, or a regional general permit. Completion of the pilot project will be identified as the date of expiration of the Federal Energy Regulatory Commission (FERC) license, or the expiration date of the NWP authorization if no FERC license is required.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Electric utility lines constructed to transfer the energy from the land-based collection facility to a distribution system, regional grid, or other facility are generally considered to be linear projects and each separate and distant crossing of a waterbody is eligible for treatment as a separate single and complete linear project. Those electric utility lines may be authorized by NWP 57 or another Department of the Army authorization.

Note 2: An activity that is located on an existing locally or federally maintained U.S. Army Corps of Engineers project requires separate review and/or approval from the Corps under 33 U.S.C. 408.

Note 3: If the pilot project generation units, including any transmission lines, are placed in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, copies of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration, National Ocean Service, for charting the generation units and associated transmission line(s) to protect navigation.

Note 4: Hydrokinetic renewable energy generation projects that require authorization by the Federal Energy Regulatory Commission under the Federal Power Act of 1920 do not require separate authorization from the Corps under section 10 of the Rivers and Harbors Act of 1899.

Note 5: For any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission line, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

53. Removal of Low-Head Dams. Structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States associated with the removal of low-head dams.

For the purposes of this NWP, the term "low-head dam" is generally defined as a dam or weir built across a stream to pass flows from upstream over all, or nearly all, of the width of the dam crest and does not have a separate spillway or spillway gates, but it may have an uncontrolled spillway. The dam crest is the top of the dam from left abutment to right abutment. A low-head dam may have been built for a range of purposes (e.g., check dam, mill dam, irrigation, water supply, recreation, hydroelectric, or cooling pond), but in all cases, it provides little or no storage function.

The removed low-head dam structure must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

Because the removal of the low-head dam will result in a net increase in ecological functions and services provided by the stream, as a general rule compensatory mitigation is not required for activities authorized by this NWP. However, the district engineer may determine for a particular low-head dam removal activity that compensatory mitigation is necessary to ensure that the authorized activity results in no more than minimal adverse environmental effects.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

Note: This NWP does not authorize discharges of dredged or fill material into waters of the United States or structures or work in navigable waters to restore the stream in the vicinity of the low-head dam, including the former impoundment area. Nationwide permit 27 or other Department of the Army permits may authorize such activities. This NWP does not authorize discharges of dredged or fill material into waters of the United States or structures or work in navigable waters to stabilize stream banks. Bank stabilization activities may be authorized by NWP 13 or other Department of the Army permits.

54. Living Shorelines. Structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States for the construction and maintenance of living shorelines to stabilize banks and shores in coastal waters, which includes the Great Lakes, along shores with small fetch and gentle slopes that are subject to low- to mid-energy waves. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural "soft" elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface, and retain or enhance shoreline ecological processes. Living shorelines must have a substantial biological component, either tidal or lacustrine fringe wetlands or oyster or mussel reef structures. The following conditions must be met:

(a) The structures and fill area, including sand fills, sills, breakwaters, or reefs, cannot extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes, unless the district engineer waives this criterion by making a written determination concluding that the activity will result in no more than minimal adverse environmental effects;

(b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the activity will result in no more than minimal adverse environmental effects;

(c) Coir logs, coir mats, stone, native oyster shell, native wood debris, and other structural materials must be adequately anchored, of sufficient weight, or installed in a manner that prevents relocation in most wave action or water flow conditions, except for extremely severe storms;

(d) For living shorelines consisting of tidal or lacustrine fringe wetlands, native plants appropriate for current site conditions, including salinity and elevation, must be used if the site is planted by the permittee;

(e) Discharges of dredged or fill material into waters of the United States, and oyster or mussel reef structures in navigable waters, must be the minimum necessary for the establishment and maintenance of the living shoreline;

(f) If sills, breakwaters, or other structures must be constructed to protect fringe wetlands for the living shoreline, those structures must be the minimum size necessary to protect those fringe wetlands;

(g) The activity must be designed, constructed, and maintained so that it has no more than minimal adverse effects on water movement between the waterbody and the shore and the movement of aquatic organisms between the waterbody and the shore; and

(h) The living shoreline must be properly maintained, which may require periodic repair of sills, breakwaters, or reefs, or replacing sand fills after severe storms or erosion events. Vegetation may be replanted to maintain the living shoreline. This NWP authorizes those maintenance and repair activities, including any minor deviations necessary to address changing environmental conditions.

This NWP does not authorize beach nourishment or land reclamation activities.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the construction of the living shoreline. (See general condition 32.) The pre-construction notification must include a delineation of special aquatic sites (see paragraph (b)(4) of general condition 32). Pre-construction notification is not required for maintenance and repair activities for living shorelines unless required by applicable NWP general conditions or regional conditions. (Authorities: Sections 10 and 404)

Note: In waters outside of coastal waters, nature-based bank stabilization techniques, such as bioengineering and vegetative stabilization, may be authorized by NWP 13.

55. Seaweed Mariculture Activities. Structures in marine and estuarine waters, including structures anchored to the seabed in waters overlying the outer continental shelf, for seaweed mariculture activities. This NWP also authorizes structures for bivalve shellfish mariculture if shellfish production is a component of an integrated multi-trophic mariculture system (e.g., the production of seaweed and bivalve shellfish on the same structure or a nearby mariculture structure that is part of the single and complete project).

This NWP authorizes the installation of buoys, long-lines, floats, anchors, rafts, racks, and other similar structures into navigable waters of the United States. Rafts, racks and other floating structures must be securely anchored and clearly marked. To the maximum extent practicable, the permittee must remove these structures from navigable waters of the United States if they will no longer be used for seaweed mariculture activities or multi-trophic mariculture activities.

Structures in an anchorage area established by the U.S. Coast Guard must comply with the requirements in 33 CFR 322.5(l)(2). Structures may not be placed in established danger zones or restricted areas designated in 33 CFR part 334, Federal navigation channels, shipping safety fairways or traffic separation schemes established by the U.S. Coast Guard (see 33 CFR 322.5(l)(1)), or EPA or Corps designated open water dredged material disposal areas.

This NWP does not authorize:

(a) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 or the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody; or

(b) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas.

Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.)

In addition to the information required by paragraph (b) of general condition 32, the preconstruction notification must also include the following information: (1) a map showing the locations and dimensions of the structure(s); (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; and (3) general water depths in the project area(s) (a detailed survey is not required). No more than one pre-construction notification per structure or group of structures should be submitted for the seaweed mariculture operation during the effective period of this NWP. The pre-

construction notification should describe all species and culture activities the operator expects to undertake during the effective period of this NWP. (Authority: Section 10)

Note 1: The permittee should notify the applicable U.S. Coast Guard office regarding the project.

Note 2: To prevent introduction of aquatic nuisance species, no material that has been taken from a different waterbody may be reused in the current project area, unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan.

Note 3: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines "aquatic nuisance species" as "a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters."

56. Finfish Mariculture Activities. Structures in marine and estuarine waters, including structures anchored to the seabed in waters overlying the outer continental shelf, for finfish mariculture activities. This NWP also authorizes structures for bivalve shellfish mariculture and/or seaweed mariculture if the structures for bivalve shellfish and/or seaweed production are a component of an integrated multi-trophic mariculture structure (e.g., the production of bivalve shellfish or seaweed on the structure used for finfish mariculture, or a nearby mariculture structure that is part of the single and complete project).

This NWP authorizes the installation of cages, net pens, anchors, floats, buoys, and other similar structures into navigable waters of the United States. Net pens, cages, and other floating structures must be securely anchored and clearly marked. To the maximum extent practicable, the permittee must remove these structures from navigable waters of the United States if they will no longer be used for finfish mariculture activities or multi-trophic mariculture activities.

This NWP does not authorize the construction of land-based fish hatcheries or other attendant features.

Structures in an anchorage area established by the U.S. Coast Guard must comply with the requirements in 33 CFR 322.5(l)(2). Structures may not be placed in established danger zones or restricted areas designated in 33 CFR part 334, Federal navigation channels, shipping safety fairways or traffic separation schemes established by the U.S. Coast Guard (see 33 CFR 322.5(l)(1)), or EPA or Corps designated open water dredged material disposal areas.

This NWP does not authorize:

(a) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 or the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody; or

(b) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas.

Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.)

In addition to the information required by paragraph (b) of general condition 32, the pre-construction notification must also include the following information: (1) a map showing the locations and dimensions of the structure(s); (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; and (3) general water depths in the project area(s) (a detailed survey is not required). No more than one pre-construction notification per structure or group of structures should be submitted for the finfish mariculture operation during the effective period of this NWP. The pre-construction notification should describe all species and culture activities the operator expects to undertake during the effective period of this NWP. (Authority: Section 10)

Note 1: The permittee should notify the applicable U.S. Coast Guard office regarding the finfish mariculture activity.

Note 2: To prevent introduction of aquatic nuisance species, no material that has been taken from a different waterbody may be reused in the current project area, unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan.

Note 3: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines “aquatic nuisance species” as “a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.”

57. Electric Utility Line and Telecommunications Activities. Activities required for the construction, maintenance, repair, and removal of electric utility lines, telecommunication lines, and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Electric utility lines and telecommunication lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of electric utility lines and telecommunication lines. There must be no change in pre-construction contours of waters of the United States. An “electric utility line and telecommunication line” is defined as any cable, line, fiber optic line, or

wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and internet, radio, and television communication.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the electric utility line or telecommunication line crossing of each waterbody.

Electric utility line and telecommunications substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with an electric utility line or telecommunication line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead electric utility line or telecommunication line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead electric utility line or telecommunication line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of electric utility lines or telecommunication lines, including overhead lines and substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize electric utility lines or telecommunication lines in or affecting navigable waters of the United States even if there is no associated discharge of

dredged or fill material (see 33 CFR part 322). Electric utility lines or telecommunication lines constructed over section 10 waters and electric utility lines or telecommunication lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing electric utility lines or telecommunication lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing electric utility lines or telecommunication lines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the electric utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) a section 10 permit is required; or (2) the discharge will result in the loss of greater than 1/10-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Where the electric utility line is constructed, installed, or maintained in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the electric utility line to protect navigation.

Note 2: For electric utility line or telecommunications activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Electric utility line and telecommunications activities must comply with 33 CFR 330.6(d).

Note 3: Electric utility lines or telecommunication lines consisting of aerial electric power transmission lines crossing navigable waters of the United States (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i).

Note 4: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the electric utility line or telecommunication line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 5: This NWP authorizes electric utility line and telecommunication line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

Note 6: For overhead electric utility lines and telecommunication lines authorized by this NWP, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

Note 7: For activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

58. Utility Line Activities for Water and Other Substances. Activities required for the construction, maintenance, repair, and removal of utility lines for water and other substances, excluding oil, natural gas, products derived from oil or natural gas, and electricity. Oil or natural gas pipeline activities or electric utility line and telecommunications activities may be authorized by NWPs 12 or 57, respectively. This NWP also authorizes associated utility line facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines for water and other substances, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. Examples of activities authorized by this NWP include utility lines that convey water, sewage,

stormwater, wastewater, brine, irrigation water, and industrial products that are not petrochemicals. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for above-ground utility lines: This NWP authorizes the construction or maintenance of foundations for above-ground utility lines in all waters of the United States, provided the foundations are the minimum size necessary.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that

are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) a section 10 permit is required; or (2) the discharge will result in the loss of greater than 1/10-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Where the utility line is constructed, installed, or maintained in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d).

Note 3: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 4: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to the General Bridge Act of 1946. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

Note 5: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

Note 6: For activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

59. Water reclamation and reuse facilities. Discharges of dredged or fill material into non-tidal waters of the United States for the construction, expansion, and maintenance of water reclamation and reuse facilities, including vegetated areas enhanced to improve water infiltration and constructed wetlands to improve water quality.

The discharge of dredged or fill material must not cause the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

This NWP also authorizes temporary fills, including the use of temporary mats, necessary to construct the water reuse project and attendant features. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Structures and Fills. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued.

Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR

402.02 for the definition of "effects of the action" for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding "activities that are reasonably certain to occur" and "consequences caused by the proposed action."

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take"

provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR

330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106

consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only

after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the

required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency

to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank

stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____
(Transferee)

_____
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) *Timing*. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee

cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification*: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible

inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

(c) *Form of Pre-Construction Notification*: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) *Agency Coordination*: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were

considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource

functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is

required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

Nationwide Permit Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a "water of the United States." If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).