

**ADDENDUM NO. 21
TO
PLANS AND SPECIFICATIONS
FOR
HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS
JOB NO. WW-4160
AT
HILO, HAWAI'I
COUNTY OF HAWAI'I**

NOTICE TO ALL PROSPECTIVE BIDDERS

The items listed below are made a part of the contract and shall govern the work, taking precedence over the previously issued plans and specifications governing the particular item of work mentioned.

BID OPENING DATE

The bid opening will be postponed from May 26, 2016 to July 14, 2016 at 2:00 p.m. Bids received after the time fixed for opening will not be considered.

PRE-BID CONFERENCE

All prospective bidders/offerors are invited to attend a pre-bid conference to be held on Tuesday, June 7, 2016, 9:00 a.m. at the Department of Environmental Management Conference Room, 345 Kekūanaō'a Street, Hilo, Hawai'i 96720. Attendance at the pre-bid conference is not a condition for submitting a bid; however, it is strongly encouraged. Subcontractors and union representatives are invited, but not required to attend. The conference is to provide bidders/offerors with an opportunity to ask questions about the contractual requirements and all technical aspects of the project. The conference will also address the minimum subcontractor listing requirements for the Project.

NOTICE TO PROVIDERS AND PROSPECTIVE PROVIDERS OF HAWAII PRODUCTS

DELETE Notice to Providers and Prospective Providers of Hawaii Products in its entirety and **REPLACE** with the attached revised Notice to Providers and Prospective Providers of Hawaii Products, (1 page total).

PROPOSAL

DELETE Proposal in its entirety and **REPLACE** with the attached revised Proposal, (15 pages total)

MINIMUM WAGE SCHEDULE

DELETE Minimum Wage Schedule dated 02/18/13 in its entirety and **REPLACE** with the attached Minimum Wage Schedule dated 02/15/16, (20 pages total)

SPECIAL PROVISIONS

DELETE Special Provisions dated 01/27/12 in its entirety and **REPLACE** with the attached revised Special Provisions dated 08/20/15, (23 pages total)

SECTION 01010 – SUMMARY OF WORK

DELETE Section 01010 – SUMMARY OF WORK in its entirety and **REPLACE** with the attached revised Section 01010 – SUMMARY OF WORK, (1 page total).

SECTION 01030 – PERMITS

DELETE Section 01030 – PERMITS in its entirety and **REPLACE** with the attached revised Section 01030 – PERMITS, (1 page total)

SECTION 01300 – SUBMITTALS

DELETE Section 01300 – SUBMITTALS in its entirety and **REPLACE** with the attached revised Section 01300 – SUBMITTALS, (10 pages total)

SECTION 01810 – INFORMATION AVAILABLE TO BIDDERS

DELETE Section 01810 – INFORMATION AVAILABLE TO BIDDERS in its entirety and **REPLACE** with the attached revised Section 01810 – INFORMATION AVAILABLE TO BIDDERS, (1 page total).

SECTION 02313 – CONCRETE FABRIC FORM

DELETE Section 02313 – CONCRETE FABRIC FORM in its entirety and **REPLACE** with the attached revised Section 02313 – CONCRETE FABRIC FORM, (5 pages total)

SECTION 02537 – DYE TESTING

DELETE Section 02537 – DYE TESTING in its entirety, (2 pages total)

SECTION 03312 – NON SHRINK HYDRAULIC CEMENT

DELETE Section 03312 – NON SHRINK HYDRAULIC CEMENT in its entirety, (2 pages total).

SECTION 03313 – GROUT INJECTION

ADD Section 03313 – GROUT INJECTION, (5 pages total).

DRAWINGS

DELETE Plan sheets 3 through 5 and **REPLACE** with the attached sheets 3 through 5.

PERMIT – SECTIONS 401 and 404

Copies of the Hawaii State Department of Health Section 401 Water Quality Certification and United States Army Corps of Engineers Nationwide Permits #12 and #16 pursuant to Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act, are included in this Addendum and shall be adhered to in their entirety as part of the Contract, (39 pages total).

BEST MANAGEMENT PRACTICES (BMP) PLAN

The attached BMP plan represents the minimum BMP measures required to be implemented in the construction of the Project. Upon approval by Department of Health – Clean Water Branch (DOH-CWB), the Contractor may furnish additional BMP measures as deemed necessary to comply with Section 401 and Section 404 permits, (37 pages total).

APPLICABLE MONITORING AND ASSESSMENT PLAN (AMAP)

The goal of the AMAP is to conduct water sampling and analysis sufficient to monitor the impact of the planned construction activities on water quality in Puhi Bay in the immediate vicinity of the project site. A Consultant will be hired by the County to manage the implementation of the AMAP, and it is therefore not a part of this contract.

It will be the responsibility of the Contractor to ensure that the work does not generate pollution that exceeds the numerical limits established in the AMAP. In the event that the pollution level exceeds the AMAP limits due to construction activity, the Contractor will be required to stop work until the cause of the pollution is determined. Work will resume after the BMP is corrected and numerical values of the pollutants no longer exceed the AMAP limits, (28 pages attached).

CORAL AVOIDANCE AND MINIMIZATION PLAN (CAMP)

The purpose of the CAMP is to provide a procedure to avoid and minimize the impact to existing corals located within the project area. A Consultant will be hired by the County to manage the implementation of the CAMP, and will monitor the Contractor to ensure that transplant activities by the Contractor are in accordance with the approved CAMP, (11 pages attached).

INVESTIGATION OF LEAKS IN THE HILO WASTEWATER TREATMENT PLANT OCEAN OUTFALL PIPE

For the Contractor's reference, a report summarizing the dye test conducted on the Hilo Wastewater Treatment Plant outfall pipe on October 24, 2014 is attached (18 pages total).

AN ASSESSMENT OF THE MARINE BIOLOGICAL COMMUNITY STRUCTURE AT THE SITE OF THE HILO WASTEWATER TREATMENT PLANT OCEAN OUTFALL REPAIRS

For the Contractor's reference, a report summarizing the marine biological community structure, dated May 14th, 2013 is attached (37 pages attached).

BARGE STAGING AREA

The Contractor shall provide adequate space on the construction barge for use by the endangered species monitoring and construction inspection teams. The space provided shall be used as an observation and dive platform, as well as a storage area for any necessary equipment, such as SCUBA gear, cameras and inspection tools. The Contractor shall also provide transportation of team personnel to and from the construction barge at the beginning and end of each work day, as well as on an as-needed basis throughout each day.

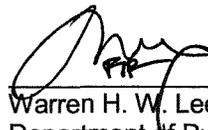
DYE TESTING

A consultant will be hired by the County to conduct a dye test prior to the start of construction in order to verify the number and location of leaks are consistent with information shown in the plan. In addition, a post construction dye test will be conducted by the Consultant to verify the leaks have been fixed, and such dye test will be considered the official determination of satisfactory leak repair. The post construction dye test shall be completed prior to the contractor beginning the demobilization process.

The Contractor may elect to use dye as a means to verify the status of the leak either during and/or after the repair is made. It is recommended the Contractor use a similar dye testing procedure as the Consultant to ensure similar results, refer to *Investigation of Leaks in the Hilo Wastewater Treatment Plant Ocean Outfall Pipe, December 26, 2014*, by Marine Research Consultants, Inc. The Contractor shall provide a submittal of the dye-test procedure prior to conducting the dye-test. The Contractor shall notify the public, Department of Health, local police and fire, civil defense departments, and the U.S. Coast Guard seven (7) calendar days prior to dye testing. The cost of all dye testing is considered incidental to the leak repair, and therefore no extra payment will be made for dye testing conducted by the Contractor.

Hilo Outfall Pipeline Inspection Observation Videos

The following link is being provided as supplemental information to the Bidders. The videos include outfall pipe inspections and dye testing. Bidders shall review the videos and make their own independent determination. (4 video clips total.) <ftp://ftp.hostedftp.com/~dpw/WW-4160>



Warren H. W. Lee, P.E., Director
Department of Public Works
County of Hawai'i

Date Issued: May 24, 2016

Please detach and execute receipt below. Return immediately via facsimile (808) 961-8630 or mail to the Administration Office, Department of Public Works, County of Hawai'i at Aupuni Center, 101 Pauahi Street, Suite 7, Hilo, HI 96720-4224.

Receipt of Addendum No. 21 via website for the HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS, Job No. WW-4160, Hilo, Hawai'i, is hereby acknowledged.

Signed _____ Title _____
Firm _____ Date _____

NOTICE TO PROVIDERS AND PROSPECTIVE PROVIDERS OF HAWAI'I PRODUCTS

In accordance with Section 103D-1002, Hawai'i Revised Statutes, the Hawai'i Products Preference is applicable to this bid. Hawai'i products may be available for certain work required for construction of this project. The Hawai'i products list is available on the State Procurement Office's ("SPO") website at <http://spo.hawaii.gov/for-vendors/hawaii-product-preferences/>. For further information about the manufacturer(s), click on the manufacturer(s) that is/are listed.

Any offeror desiring a Hawai'i product preference for a product not on the SPO's list shall submit an original, completed form SPO-38, *Certification for Hawaii Product Preference* to the Director, Department of Public Works, County of Hawai'i specifically for this project:

NO LATER THAN JUNE 13, 2016

Certification application form SPO-38, *Certification for Hawaii Product Preference* is available from the SPO's website at <http://spo.hawaii.gov/form-a/spo-038/>. Please note that the link provided for the form may have a 'revised date' included in the title; use the latest version.

Form SPO-38 shall be completed, signed and submitted by the company that is producing or manufacturing the product in Hawai'i and one form shall be submitted for each individual product – no exceptions. Certification applications received after the date stated above will NOT be considered; incomplete or inaccurate forms shall be rejected.

The Director shall review all submitted applications for *Certification for Hawaii Product Preference* and determine, at his sole discretion, if the product qualifies for the preference. The Director may request additional information deemed necessary to render said determination and it shall be the offeror's responsibility to provide such in a timely manner. Failure to adequately provide sufficient information in a timely manner prior to the bid shall result in rejection of the product.

The Director will issue an addendum upon certification of any Hawai'i products for this Bid. The Director will also notify the SPO of the approved *Certification for Hawaii Product Preference* for inclusion on its Hawaii Products List. If a product is disapproved by the Director, he will notify the offeror in writing of his determination.

The provider of any certified Hawai'i Product is solely responsible to notify the Director of any change(s) in the availability of its product(s). The Director shall then notify the SPO of any such changes for amendment of the Hawai'i Product List, if applicable.

All information submitted in the Certification for Hawaii Product Preference form shall be treated as confidential.

The SPO is responsible to reestablish and maintain the Hawaii Products List on its website and shall update the list when new products are approved or when notified of changes to products already on its list.

Offeror's attention is directed to the Special Provisions, Section 10 (Preferences), Subsection A (Preference for Hawai'i Products).

PROPOSAL
FOR
HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS
SOUTH HILO, HAWAI'I
COUNTY AND STATE OF HAWAI'I
JOB NO. WW-4160

The Honorable William P. Kenoi, Mayor
County of Hawai'i
Hilo, Hawai'i

Sir:

The undersigned Bidder hereby proposes to furnish and pay for all materials, tools, transportation, equipment, labor and other incidental work necessary to construct and complete in place the "HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS," Job No. WW-4160, South Hilo, Hawai'i, together with equipment and all necessary appurtenances and work incidental thereto in accordance with the true intent and meaning of the plans, Notice to Bidders, Proposal, Wage Rate Schedule, General Specifications, and Detail Specifications, made a part of these specifications; and Standard Specifications for Public Works Construction (September, 1986) and General Requirements and Covenants (July, 1972), made a part of these specifications by reference; and any other form of pertinent proposed contract documents which have been attached herein and hereby made a part of the project specifications and contract documents, which are on file in the Administration Office, Department of Public, Works, City of Hilo, County and State of Hawai'i, for the Total Basic Bid of:

_____ DOLLARS (\$_____).

The Bidder agrees to complete work within the time periods specified below including the date of commencement as specified in a written order by the Director, Department of Public Works, County of Hawai'i.

Public Meeting: No later than twenty (20) calendar days after Notice to Proceed, coordinate with the Keaukaha Community Meeting Schedule.

Procure Materials: Complete by October 26, 2016

Coral Mitigation: October 27, 2016 to November 7, 2016 (10 work days)

Outfall Repairs: November 8, 2016 to November 18, 2016 (10 work days)

Seal Joint Leaks: November 8, 2016 to November 18, 2016 (10 work days)

Project Complete: November 25, 2016

It is mutually agreed by and between the parties hereto that time shall be an essential part of this contract and that in case of the failure on the part of the Bidder to complete his work within the time specified and agreed upon, the Bidder hereby agrees to pay the County liquidated damages as set forth in this Proposal.

In the event that the Bidder encounters circumstances beyond his control that interfere with the ability to comply with the timelines specified above, the Bidder shall immediately notify the County. Such circumstances include, but are not limited to, delays caused by unsuitable weather, large tidal events, high surf conditions, acts of God, acts of the public enemy, fire, floods, epidemics, quarantine restrictions, strikes or walkouts, and freight embargos. If the County determines that the failure to comply with the timelines was due to circumstances beyond the control of the Bidder, the County may modify the timelines, taking into account the effect of the circumstances which were beyond the control of the Bidder.

Work Days and Work Hours for this project shall be Monday through Saturday, ten (10) hours per day. The Contractor shall be responsible for payment of overtime charges to the Department of Environmental Management. Overtime charges shall be based on \$66.00/hour.

It is understood that the award of the contract shall be based on the lowest Basic Bid.

PROPOSAL SCHEDULE
HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS
SOUTH HILO, HAWAI'I

BASIC BID

Item No.	Approx. Qty.	Unit	Description	Unit Bid Price	Amount Bid
1	2	EA	Public Meetings	\$_____	\$_____
2	1	LS	Project Photos	Lump Sum	\$_____
3	5	DAY	Relocate existing coral located within the work zones to an adjacent area, including all incidentals required to do the work.	\$_____	\$_____
4	1	LS	Repair of segment with undercutting, Sta. 41+54 to Sta. 41+92, including concrete fabric form, geotextile filter fabric, concrete, toe trench excavation, preparation of subgrade, per Detail 3/C-2 including all incidentals and appurtenances, complete in place.	Lump Sum	\$_____
5	4	EA	Concrete testing by 3rd party firm including sampling, specimen (set of 4 cylinders) and laboratory work.	\$_____	\$_____
6	1	LS	Repair of leak point at Sta. 8+55, including all incidentals and appurtenances, complete in place.	Lump Sum	\$_____
7	1	LS	Repair of leak point at Sta. 41+46, including all incidentals and appurtenances, complete in place.	Lump Sum	\$_____
8	1	LS	Work required to meet conditions of Permits from the Department of Army and State Department of Health.	Lump Sum	\$_____
9	1	LS	Mobilization/Demobilization, maximum allowed for this item is 6% of Items 1 to 8	Lump Sum	\$_____

TOTAL BASIC BID \$_____

Clarifications to Proposal Schedule.

1. All required and necessary items to complete the project which there are no specific pay items shall be considered incidental costs to the various pay items in the Proposal Schedule.

The Director also reserves the right, during construction, to decrease or increase the scope of work, because of limitations of funds, with no adjustment in unit prices other than that specified hereinabove.

It is also understood and agreed that the quantities for any item on which a Lump Sum bid is required in this proposal are approximate only and that payment will be made only for the item in place complete, regardless of the amount of material, equipment and labor necessary to complete the same in a proper and workmanlike manner and in accordance with the Plans and Specifications. No guaranty is given that the quantities in the Lump Sum items are more than approximately correct as the quantities shown distributed in the Lump Sum items are given only for the purpose of making monthly estimates. The Bidder and/or Contractor shall verify these quantities in any manner he deems necessary or expedient.

It is also understood and agreed that the estimated quantities shown for items for which a Unit Price is asked in this Proposal are only for the purpose of comparing on a uniform basis, bids offered for the work under this Contract, and the undersigned agrees that he is satisfied with and will at no time dispute said estimated quantities as a means of comparing the bids. It is understood and agreed that he will make no claims for anticipated profit or loss of profit because of a difference between the quantities of the various classes of work done or the materials and equipment actually installed and the said estimated quantities. On Unit Price bids, payment will be made only for the actual number of units accepted and incorporated in the finished product at the Unit Price bid.

It is also understood and agreed that if the product of the Unit Price bid by the number of units does not equal the total amount named by the Bidder for any item, it will be assumed that the error was made in computing the total amount and for the purpose of computing the lowest Bidder, the named Unit Price alone will be considered as representing the Bidder's intention and the total amount bid on such item shall be considered at the amount arrived by multiplying the Unit Price by the number of Units.

It is understood and agreed that the Director reserves the right to increase or decrease the quantities given in the Proposal in order that the award may be made within the funds allocated for this project.

It is understood and agreed that the liquidated damages shall be as set forth in the Requirements and Covenants of the County of Hawai'i (July, 1972) as amended per Special Provisions and determined for this Project to be as follows:

Basic Bid	\$4,000.00 per calendar day
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It is also understood and agreed that the Director reserves the right to accept or reject any and all bids and to waive any and all defects and informalities, when in his opinion, such rejection or waiver will be for the best interest of the County of Hawai'i.

It is also understood and agreed that the award of the contract hereunder shall be conditioned upon the Director having the right to hold all bids for a period of ninety (90) consecutive calendar days from the opening hereunder unless otherwise required by law, during which time no bid may be withdrawn.

The Bidder hereby agrees that if he is awarded this contract, he will enter into and execute the same within ten (10) days from the date of notice to award and furnish a bond in the amount and character required within the time specified by the specifications Section 103D-324, Hawai'i Revised Statutes.

The Bidder represents that he () has, () has not, participated in a previous contract or subcontract subject to the Equal Employment Opportunity Clause of Executive Order 11246 of September 24, 1965, as amended October 31, 1967; that he () has, () has not, filed all required compliance reports; that he () has, () has not, an affirmative action program on equal employment opportunity; that he will, if required, furnish a written Affirmative Action Program; and that representations including submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to the contract awards.

The Bidder further represents that he will, if required submit and require proposed subcontractors to submit a compliance report prior to the award of the contract or subcontract and a written Affirmative Action Program, if required, within a specified time after award.

The Bidder further agrees that if awarded the contract and if he FAILS to enter into and execute the contract and furnish the required bond within the specified time, the county may determine the bidder has abandoned the contract and thereupon forfeiture of the security accompanying his proposal shall operate and the same become property of the County of Hawai'i.

The Bidder further understands and agrees that by submitting this proposal, 1) he/she is declaring his/her proposal is not in violation of Chapter 84, Hawai'i Revised Statutes, concerning prohibited State contracts, and 2) he/she is certifying that the price(s) submitted was/were independently arrived at without collusion.

Substitution of Retainage. Pursuant to Section 103-32.2, Hawai'i Revised Statutes, the contracting officer may enter into agreement with the Contractor which will allow the Contractor to withdraw from time to time the whole or any portion of the sum retained under Section 103-32.1 upon depositing with the contracting officer any general obligation bond of the State of Hawai'i or counties of Hawai'i, Maui, Kauai or City and County of Honolulu with a market value of not less than the sum to be withdrawn. A certificate of market value from a bank or trust company or stock brokerage firm must be submitted with the bond. If registered bonds are used, they must be assigned irrevocably to the County of Hawai'i.

1. **All Bidders** shall submit Contractor's Key Staff Experience Form contained within the SECTION 01800 of the Specifications **with the bid package**. Failure to submit the required forms will result in a determination that the bid is a **NON-RESPONSIVE bid and rejection of the bid proposal**.

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Enclosed herewith is:

- | | | |
|-------|----|--------------------------------------------------------------------------------------------------------------------------------------|
| CROSS | 1. | Legal Tender |
| OUT | 2. | Certificate of Deposit |
| THREE | 3. | Certified Check |
| | 4. | Surety Bond according to Section 103D-323, Hawai'i Revised Statutes and Chapter 3-122, Subchapter 24, Hawai'i Administrative Rules.' |

for the sum of _____

_____ DOLLARS (\$ _____)

being not less than the sum required under Section 103D-323, Hawai'i Revised Statutes and Chapter 3-122, Subchapter 24, Hawai'i Administrative Rules, payable to County of Hawai'i, Director of Finance.

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The Bidder represents: **(Check \surd one only)**

A **Hawai'i business** incorporated or organized under the laws of the State of Hawai'i;

OR

A **Compliant Non-Hawai'i business** not incorporated or organized under the laws of the State of Hawai'i, but registered at the State of Hawai'i, Department of Commerce and Consumer Affairs Business Registration Division to do business in the State of Hawai'i.

State of incorporation: _____

Offeror is:

Sole Proprietor Partnership Corporation

Joint Venture Other _____

Federal I.D. No.: _____

Hawai'i General Excise Tax License I.D. No.: _____

Business street address: _____

City, State, Zip Code: _____

Payment address (if different than business street address above): _____

City, State, Zip Code: _____

Telephone No. _____

Facsimile No. _____

Email Address _____

Date: _____

Respectfully submitted,

Authorized (Original) Signature of Bidder

Print Name

Print Title

(If by Individual or Partner)

Name

(If by Corporation)

*Exact Legal Name of Company (Offeror)

*If Offeror is a “dba” or a “division” of a corporation, furnish the exact legal name of the corporation under which the awarded contract will be executed:

**President

(SEAL)

** Please attach to this page evidence of the authority of this officer to submit bid on behalf of the company, giving also his address and the names and addresses of the Vice-President and Secretary.

NOTE: Fill in all blank spaces with the information asked for or bid may be invalidated. Reference is made to Article 2.7 (Preparation of Proposal) of the General Requirements and Covenants (July, 1972).

HAWAI‘I APPRENTICESHIP PREFERENCE

Section 103-55.6, Hawai‘i Revised Statutes, as enacted by S.B. 19, Act 17, SLH 2009, provides for a Hawai‘i Apprenticeship Preference for public works construction projects with estimated values of \$250,000.00 or greater. The preference shall be in the form of a five percent (5%) bid adjustment applied to the Bidder’s bid amount.

Any Bidder seeking the Hawai‘i Apprenticeship Preference for the purpose of this bid shall:

- (1) be a party to an apprenticeship program registered with the State Department of Labor and Industrial Relations (DLIR) at the time of its bid for each apprenticeable trade the Bidder will employ to construct the public works project for which the bid is made; and
- (2) completely fill-in the Schedule of Project Apprenticeship Trades attached here to attesting to the trades the Bidder will employ to perform the work; and
- (3) for each apprenticeable trade the Bidder will employ for this project, submit with its bid fully executed and authorized CERTIFICATION OF BIDDER’S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17 (FORM 1) form(s) issued by the DLIR verifying participation in apprenticeship program(s) registered with DLIR; and
- (4) fully execute the certification below.

Failure to comply with ALL of the conditions noted above, without exception, shall disqualify the Bidder from qualifying for, and thus receiving, benefit of the Hawai‘i Apprenticeship Preference.

Subcontractors do not have to be a party to an apprenticeship agreement for the Bidder to obtain the preference.

Upon successful verification of the Bidder’s executed Form I documents submitted with its bid, the Director will apply the Hawai‘i Apprenticeship Preference and decrease the Bidder’s total bid amount by five percent (5%) for evaluation purposes only. The Hawai‘i Apprenticeship Preference will apply in conjunction with other statutory preferences (i.e., Hawai‘i Products Preference).

While preference for Hawai‘i Apprenticeship will be taken into consideration to determine the low bidder, the contract awarded shall be in the amount of the bid, exclusive of any preferences.

Upon applying for the Hawai‘i Apprenticeship Preference, the Contractor shall certify each month that work is being conducted on the project, that it continues to be a participant in the relevant apprenticeship program for each trade it employs. Said monthly certification shall be made on MONTHLY REPORT OF CONTRACTOR’S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17 (FORM 2) form issued by the DLIR. Failure or refusal of the contractor to submit its monthly certification forms, or at any time during the construction of the project, cease to be a party to a registered apprenticeship agreement for each apprenticeable trade the contractor employs, the contractor will be subject to the sanctions afforded by law, as determined by the Director.

This preference shall not apply if it will be in conflict with any Federal Law or if it would disqualify any County Agency from receiving federal funds or aid. FORM 1 and FORM 2 (referenced above) and the List of Construction Trades in Registered Apprenticeship Program and the List of Persons Authorized to Certify Contractor Participation in Apprenticeship Programs (Act 17) are available on DLIR’s Workforce Development Division’s website at: <http://labor.hawaii.gov/wdd/home/employers/apprenticeship/resources/>

I do hereby attest that it is our intention to apply for the Hawai‘i Apprenticeship Preference, that we satisfy all of the requirements to qualify for the preference, and that we shall comply with all applicable requirements conferred upon us by receiving this preference for the duration of the contract; and

I do hereby state that all of the information provided in the attached Schedule of Project Apprenticeship Trades is true and accurate:

Name: _____

Its: _____

Signed: _____

Date: _____

SCHEDULE OF PROJECT APPRENTICESHIP TRADES

APPRENTICEABLE TRADES (as of 03/20/13) Refer to : http://labor.hawaii.gov/wdd/home/employers/apprenticeship/resources/	Bidder intends to employ a person or persons of the following trades in the performance of this project: (Initial below accordingly)	
	YES	NO
Boilermaker		
Bricklayer-Mason		
Carpenter		
Cement Finisher		
Construction Craft Laborer		
Construction Equipment Operator		
Drywall		
Electrical Wireperson		
Electrician		
(Electrician) Wireperson		
Elevator Constructor		
Fire Sprinkler Fitter		
Floor Layer		
Glazier		
Heat and Frost Asbestos Insulator		
Heavy Duty Repairman and Welder		
Ironworker Shop Fabricator/Welder		
Ironworker (Reinforcing)		
Ironworker (Structural)		
Painter		

SCHEDULE OF PROJECT APPRENTICESHIP TRADES (cont'd)

APPRENTICEABLE TRADES (as of 03/20/13) Refer to : http://labor.hawaii.gov/wdd/home/employers/apprenticeship/resources/	Bidder intends to employ a person or persons of the following trades in the performance of this project: (Initial below accordingly)	
	YES	NO
Paving Equipment Operator		
Plasterer		
Plumber		
Pointer-Caulker-Weatherproofer		
Refrigeration Air-Conditioning		
Roofer		
Sheet Metal Worker		
Steamfitter/Welder		
Stone Mason		
Taper		
Telecommunication/CATV Installer Technician		
Tile Setter		
Truck Operator and Driver		

NOTE: The above listed trades are provided for the convenience of the Bidder and are based on the information available as of the date noted in the schedule's header. It shall be the Bidders responsibility to add, delete or appropriately amend the list to reflect the apprenticeable trades recognized by the State Department of Labor and Industrial Relations at the time Bidder's bid is made. Blank rows are provided in the above for this purpose.

HAWAI'I PRODUCT PREFERENCE

In accordance with Section 103D-1002, Hawai'i Revised Statutes, the Hawaii Products Preference is applicable to this bid. Hawaii products may be available for certain work required for construction of this project. The Hawaii products list is available on the State Procurement Office's ("SPO") website at <http://spo.hawaii.gov/for-vendors/hawaii-product-preferences/>. For further information about the manufacturer(s), click on the manufacturer(s) that is/are listed.

Bidders' attention is directed to the Special Provisions, Section 10 (Preferences), Subsection A (Preference for Hawai'i Products).

Bidders intending to include in their bids products that are NOT on the State Procurement Office's Hawaii Products List ("HPL") are directed to the section of these specifications titled "NOTICE TO PROVIDERS AND PROSPECTIVE PROVIDERS OF HAWAII PRODUCTS."

Determination of the low bidder will be based on the preference in effect at the time of bid opening. As of October 1, 2010, a ten percent (10%) preference is established for Class I Hawai'i products (provided that Hawai'i input exceeds 50%) and a fifteen percent (15%) preference is established for Class II Hawai'i products. The total bid, taking this preference into consideration and providing for additional bid criteria or preferences applicable to the project, shall be utilized in determining the apparent low bidder on the project. However, the contract amount shall be the amount of the bid offered exclusive of the preference.

Bidders shall completely fill-in the following SCHEDULE OF HAWAII PRODUCT PREFERENCE CLAIMS in accordance with the following instructions:

1. "Cost" shall be the total cost of furnishing the Hawaii product F.O.B. jobsite, unloaded, including applicable general excise tax and use taxes.
2. "Credit" shall be the quotient of the "Cost" and "%" values for each Hawaii product on this schedule. Where necessary, round up to the nearest penny.
3. Meanings of all other terms appearing on the Schedule shall be consistent with the SPO's HPL.
4. Fill-in all information neatly, legibly and completely. Abbreviations are acceptable provided no ambiguity is created by their use.

Bidders may copy the attached schedule and attach additional sheets as necessary.

The Director reserves the right to disqualify individual line item preferences claimed by the Bidder on the attached schedule due to use of non-certified Hawaii products; provision of inaccurate or incomplete information; or any other inconsistency or omission that may affect the award of the contract. The Bidder will be notified by the Director of any such disqualifications prior to award.

SCHEDULE OF HAWAII PRODUCT PREFERENCE CLAIMS									
CERTIFIED HAWAII PRODUCT							PREFERENCE		
Product Category	Class (I or II)	Manufacturer	Product & Description	Quantity	Unit	Cost (A)	% (B)	Credit (A x B)	
						\$ _____	_____	\$ _____	
						\$ _____	_____	\$ _____	
						\$ _____	_____	\$ _____	
						\$ _____	_____	\$ _____	
						\$ _____	_____	\$ _____	
						\$ _____	_____	\$ _____	
						\$ _____	_____	\$ _____	
TOTAL:									\$ _____

State of Hawai'i
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS
Princess Ruth Ke'elikolani Building
830 Punchbowl Street
Honolulu, Hawai'i 96813

February 15, 2016
WAGE RATE SCHEDULE BULLETIN NO. 487

This schedule of wage rates contained herein is recognized by the Director of Labor and Industrial Relations to be prevailing on public construction work for the purposes of Chapter 104, Hawai'i Revised Statutes. The schedule of wage rates determines the applicable wage determination for each classification and does not impose any staffing requirements for any classification. The schedule of wage rates is applicable only to those laborers and mechanics employed at the site of work.

As required by law, future wage rates for laborers and mechanics are incorporated into this bulletin based on available information and are subject to change. Whenever the Director determines that the prevailing wage has increased as shown in the wage rate schedule, the contractor must increase the wages accordingly during the performance of the contract. For addenda or additional wage rate schedules, please consult the Internet at <http://labor.hawaii.gov/rs>.

The Apprentice Schedule is available on the Internet or upon request from the Research and Statistics Office. Pursuant to Section 12-22-6 (1), Hawai'i Administrative Rules, the Apprentice Schedule is applicable only to apprentices who are parties to apprenticeship agreements registered with or recognized by the Department of Labor and Industrial Relations.

Questions on the schedule should be referred to the Research and Statistics Office at (808) 586-9005.

The next regular schedule will be issued on or about September 15, 2016.

LINDA CHU TAKAYAMA
Director



STATE OF HAWAII
DAVID Y. IGE, Governor

DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS
LINDA CHU TAKAYAMA, Director

RESEARCH AND STATISTICS OFFICE
PHYLLIS DAYAO, Research & Statistics Officer

OPERATIONS MANAGEMENT INFORMATION STAFF
Janet Kaya, Supervisor

In cooperation with:
WAGE STANDARDS DIVISION
PAMELA MARTIN, Administrator

WAGE RATE SCHEDULE BULLETIN NO. 487

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
ASPHALT PAVING GROUP:	9/21/15												
Asphalt Concrete Material Transfer	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Asphalt Raker	\$68.38	\$38.46	\$29.92	-	-	-	-	-	-	-	-	-	13
Asphalt Spreader Operator	\$69.86	\$39.94	\$29.92	-	-	-	-	-	-	-	-	-	13
Laborer, Hand Roller	\$65.61	\$35.69	\$29.92	-	-	-	-	-	-	-	-	-	13
Roller Operator (5 tons and under)	\$68.11	\$38.19	\$29.92	-	-	-	-	-	-	-	-	-	13
Roller Operator (over 5 tons)	\$69.54	\$39.62	\$29.92	-	-	-	-	-	-	-	-	-	13
Screed Person	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
EQUIPMENT OPERATOR:													
Combination Loader/Backhoe (over 3/4 cu. yd.)	\$68.38	\$38.46	\$29.92	-	-	-	-	-	-	-	-	-	13
Combination Loader/Backhoe (up to 3/4 cu. yd.)	\$67.40	\$37.48	\$29.92	-	-	-	-	-	-	-	-	-	13
Concrete saws and/or Grinder (self-propelled unit on streets, highways, airports and canals)	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Grader, Soil Stabilizer, Cold Planer	\$70.17	\$40.25	\$29.92	-	-	-	-	-	-	-	-	-	13
Loader (2-1/2 cu. yds. and under)	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Loader (over 2-1/2 cu. yds. to and including 5 cu. yds.)	\$69.66	\$39.74	\$29.92	-	-	-	-	-	-	-	-	-	13
TRUCK DRIVER:													
Assistant to Engineer	\$68.11	\$38.19	\$29.92	-	-	-	-	-	-	-	-	-	13
Oil Tanker (double), Hot Liquid Asphalt Tanker	\$69.66	\$39.74	\$29.92	-	-	-	-	-	-	-	-	-	13
Semi-Trailer, Semi-Dump, Asphalt Distributor	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Slip-in or Pup	\$69.66	\$39.74	\$29.92	-	-	-	-	-	-	-	-	-	13
Single or Rock Cans Tandem Dump Truck (8 cu. yds. & under, water level)	\$68.38	\$38.46	\$29.92	-	-	-	-	-	-	-	-	-	13
Single or Rock Cans Tandem Dump Truck (over 8 cu. yds., water level)	\$68.69	\$38.77	\$29.92	-	-	-	-	-	-	-	-	-	13
Tractor Trailer (hauling equipment)	\$69.77	\$39.85	\$29.92	-	-	-	-	-	-	-	-	-	13
Utility, Flatbed	\$68.11	\$38.19	\$29.92	-	-	-	-	-	-	-	-	-	13
BOILERMAKER	2/16/15												
	\$63.63	\$34.18	\$29.45	-	-	-	-	-	-	-	-	-	13
CARPENTER:	9/21/15			8/29/16			9/4/17			9/3/18			
Carpenter; Patent Scaffold Erector (Over 14 feet); Piledriver; Pneumatic Nailer	\$64.86	\$43.90	\$20.96	\$66.86	\$45.65	\$21.21	\$68.91	\$47.45	\$21.46	\$71.16	\$49.45	\$21.71	1,12,13
Millwright	\$65.11	\$44.15	\$20.96	\$67.11	\$45.90	\$21.21	\$69.16	\$47.70	\$21.46	\$71.41	\$49.70	\$21.71	1,12,13
Power Saw Operator (2 h.p. & above)	\$65.01	\$44.05	\$20.96	\$67.01	\$45.80	\$21.21	\$69.06	\$47.60	\$21.46	\$71.31	\$49.60	\$21.71	1,12,13
CEMENT FINISHER:	9/21/15			8/29/16			9/4/17			9/3/18			
Cement Finisher; Curb Setter; Precast Panel Setter; Manhole Builder	\$63.73	\$37.90	\$25.83	\$65.34	\$38.50	\$26.84	\$66.98	\$39.10	\$27.88	\$68.53	\$39.80	\$28.73	2,12,13
Trowel Machine Operator	\$63.88	\$38.05	\$25.83	\$65.49	\$38.65	\$26.84	\$67.13	\$39.25	\$27.88	\$68.68	\$39.95	\$28.73	2,12,13
CHAIN-LINK FENCE ERECTOR	10/5/15			10/3/16			10/2/17			10/1/18			
	\$32.40	\$20.10	\$12.30	\$34.45	\$21.30	\$13.15	\$36.55	\$22.60	\$13.95	\$38.75	\$24.00	\$14.75	10,13
CHLORINATOR	9/21/15												
	\$23.00	\$23.00	\$0.00	-	-	-	-	-	-	-	-	-	

WAGE RATE SCHEDULE BULLETIN NO. 487

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
DIVER:	9/21/15												
Diver (Aqua Lung) (Scuba) - Up to a depth of 30 feet	\$82.49	\$53.13	\$29.36	-	-	-	-	-	-	-	-	-	13
Diver (Aqua Lung) (Scuba) - Over a depth of 30 feet	\$91.86	\$62.50	\$29.36	-	-	-	-	-	-	-	-	-	13
Stand-By Diver (Aqua Lung) (Scuba)	\$73.11	\$43.75	\$29.36	-	-	-	-	-	-	-	-	-	13
Diver (Other than Aqua Lung)	\$91.86	\$62.50	\$29.36	-	-	-	-	-	-	-	-	-	3,13
Stand-By Diver (Other than Aqua Lung)	\$73.11	\$43.75	\$29.36	-	-	-	-	-	-	-	-	-	3,13
Tender (Other than Aqua Lung)	\$70.08	\$40.72	\$29.36	-	-	-	-	-	-	-	-	-	13
DRAPERY INSTALLER	9/21/15												
	\$19.68	\$16.82	\$2.86	-	-	-	-	-	-	-	-	-	
DRYWALL INSTALLER	9/21/15			8/29/16			9/4/17			9/3/18			
	\$65.11	\$44.15	\$20.96	\$67.11	\$45.90	\$21.21	\$69.16	\$47.70	\$21.46	\$71.41	\$49.70	\$21.71	12,13
*ELECTRICIAN	8/23/15			2/21/16									
Cable Splicer (inside/outside)	\$75.89	\$47.36	\$28.53	\$76.76	\$48.02	\$28.74	-	-	-	-	-	-	4,13
Ground Worker (outside)	\$66.22	\$32.29	\$23.93	\$66.22	\$32.29	\$23.93	-	-	-	-	-	-	4,13
Heavy Equipment Operator (outside)	\$64.66	\$38.75	\$25.91	\$65.36	\$39.29	\$26.07	-	-	-	-	-	-	4,13
Line Installer (outside); Wire Installer (inside)	\$70.27	\$43.05	\$27.22	\$71.06	\$43.65	\$27.41	-	-	-	-	-	-	4,13
Technician (inside/outside)	\$71.95	\$44.34	\$27.61	\$72.78	\$44.96	\$27.82	-	-	-	-	-	-	4,13
Telecommunication Worker	9/21/15			8/28/16			9/3/17						
Licensed Technician	\$39.49	\$27.68	\$11.81	\$40.78	\$28.79	\$11.99	\$42.13	\$29.94	\$12.19	-	-	-	13
Technician I / Splicer	\$37.87	\$26.30	\$11.57	\$39.09	\$27.35	\$11.74	\$40.38	\$28.44	\$11.94	-	-	-	13
*ELEVATOR CONSTRUCTOR MECHANIC	2/15/16												
	\$84.275	\$54.29	\$29.985	-	-	-	-	-	-	-	-	-	13
EQUIPMENT OPERATOR:	9/21/15												
Group 1	\$67.80	\$38.44	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 2	\$67.91	\$38.55	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 3	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 4	\$68.35	\$38.99	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 5	\$68.66	\$39.30	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 6	\$69.31	\$39.95	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 7	\$69.63	\$40.27	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 8	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 9	\$69.85	\$40.49	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 9A	\$70.08	\$40.72	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 10	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 10A	\$70.29	\$40.93	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 11	\$70.44	\$41.08	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 12	\$70.80	\$41.44	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 12A	\$71.16	\$41.80	\$29.36	-	-	-	-	-	-	-	-	-	5,13
FENCE ERECTOR (CHAIN-LINK TYPE)													
See Chain-Link Fence Erector	-	-	-	-	-	-	-	-	-	-	-	-	
FLOOR LAYER (CARPET, LINOLEUM & SOFT TILE)	3/1/15												
	\$56.90	\$31.15	\$25.75	-	-	-	-	-	-	-	-	-	13

WAGE RATE SCHEDULE BULLETIN NO. 487

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
GLAZIER	9/21/15												
	\$63.15	\$34.78	\$28.37	-	-	-	-	-	-	-	-	-	6,13
HELICOPTER WORK:	9/21/15												
Airborne Hoist Operator	\$71.66	\$42.30	\$29.36	-	-	-	-	-	-	-	-	-	13
Co-Pilot	\$71.80	\$42.44	\$29.36	-	-	-	-	-	-	-	-	-	13
Pilot	\$71.97	\$42.61	\$29.36	-	-	-	-	-	-	-	-	-	13
INSULATOR	9/21/15						9/3/17			9/2/18			
	\$63.15	\$39.65	\$23.50	-	-	-	\$64.40	\$40.50	\$23.90	\$65.10	\$41.00	\$24.10	7,13
IRONWORKER:	9/21/15			9/1/16									
Reinforcing, Structural	\$66.66	\$36.75	\$29.91	\$67.66	\$37.75	\$29.91	-	-	-	-	-	-	8,12,13
LABORER:	8/31/15			8/29/16			9/4/17			9/3/18			
Driller	\$52.86	\$35.35	\$17.51	\$54.76	\$36.35	\$18.41	\$56.66	\$37.40	\$19.26	\$58.66	\$38.40	\$20.26	1,13
Guniting Operator or Shotcrete Operator	\$52.36	\$34.85	\$17.51	\$54.26	\$35.85	\$18.41	\$56.16	\$36.90	\$19.26	\$58.16	\$37.90	\$20.26	1,13
High Scaler (Working Suspended)	\$52.36	\$34.85	\$17.51	\$54.26	\$35.85	\$18.41	\$56.16	\$36.90	\$19.26	\$58.16	\$37.90	\$20.26	13
Laborer I	\$51.86	\$34.35	\$17.51	\$53.76	\$35.35	\$18.41	\$55.66	\$36.40	\$19.26	\$57.66	\$37.40	\$20.26	1,13
Laborer II	\$49.26	\$31.75	\$17.51	\$51.16	\$32.75	\$18.41	\$53.06	\$33.80	\$19.26	\$55.06	\$34.80	\$20.26	1,13
Light/Final Clean-up (Janitorial) Laborer	\$39.09	\$25.75	\$13.34	\$41.04	\$26.75	\$14.29	\$42.94	\$27.80	\$15.14	\$44.92	\$28.80	\$16.12	1,13
Mason Tender/Hod Carrier	\$52.36	\$34.85	\$17.51	\$54.26	\$35.85	\$18.41	\$56.16	\$36.90	\$19.26	\$58.16	\$37.90	\$20.26	1,13
Powder Blaster	\$52.86	\$35.35	\$17.51	\$54.76	\$36.35	\$18.41	\$56.66	\$37.40	\$19.26	\$58.66	\$38.40	\$20.26	1,13
Window Washer (Outside) (On bosun's chair, cable-suspended scaffold or work platform)	\$51.36	\$33.85	\$17.51	\$53.26	\$34.85	\$18.41	\$55.16	\$35.90	\$19.26	\$57.16	\$36.90	\$20.26	13
* LANDSCAPER:	2/15/16			8/29/16			9/4/17			9/3/18			
Landscape & Irrigation Laborer A	\$34.37	\$23.70	\$10.67	\$35.52	\$24.25	\$11.27	\$36.82	\$24.85	\$11.97	\$38.18	25.50	\$12.68	
Landscape & Irrigation Laborer B	\$34.97	\$24.30	\$10.67	\$36.22	\$24.95	\$11.27	\$37.62	\$25.65	\$11.97	\$39.08	\$26.40	\$12.68	
Landscape & Irrigation Maintenance Laborer	\$30.62	\$19.95	\$10.67	\$31.52	\$20.25	\$11.27	\$32.62	\$20.65	\$11.97	\$33.78	\$21.10	\$12.68	
LATHER	9/21/15			8/29/16			9/4/17			9/3/18			
	\$65.11	\$44.15	\$20.96	\$67.11	\$45.90	\$21.21	\$69.16	\$47.70	\$21.46	\$71.41	\$49.70	\$21.71	12,13
MASON; Bricklayer;	9/16/13												
Cement Blocklayer; Stone Mason; Precast Sill Setter	\$60.32	\$36.85	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Pointer-Caulker-Weatherproofer	\$60.57	\$37.10	\$23.47	-	-	-	-	-	-	-	-	-	2,13
* PAINTER:	2/15/16												
Painter; Spray Painter; Sandblaster or Waterblaster	\$62.77	\$34.85	\$27.92	-	-	-	-	-	-	-	-	-	
PLASTERER:	9/21/15			8/29/16			9/4/17			9/3/18			
	\$64.87	\$39.04	\$25.83	\$66.63	\$39.79	\$26.84	\$68.42	\$40.54	\$27.88	\$70.07	\$41.34	\$28.73	2,12,13
PLUMBER: (Note: 2 increases per year starting in 2016)	1/3/16			7/3/16			1/1/17			1/7/18			
Plumber; Pipefitter; Refrigeration Fitter; Heating & Air Conditioning Fitter; Sprinkler Fitter; Steamfitter	\$65.08	\$40.35	\$24.73	\$65.83	\$40.85	\$24.98	\$66.60	\$41.35	\$25.25	\$68.12	\$42.35	\$25.77	9,13
							7/2/17			7/1/18			
Plumber; Pipefitter; Refrigeration Fitter; Heating & Air Conditioning Fitter; Sprinkler Fitter; Steamfitter	-	-	-	-	-	-	\$67.35	\$41.85	\$25.50	\$68.87	\$42.85	\$26.02	9,13

WAGE RATE SCHEDULE BULLETIN NO. 487

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
ROOFER:	9/21/15			9/4/16									
Shingle, Tile, Built-up Roofing	\$56.38	\$38.85	\$17.53	\$57.38	\$39.85	\$17.53	-	-	-	-	-	-	12
Coal Tar Pitch	\$95.23	\$77.70	\$17.53	\$97.23	\$79.70	\$17.53	-	-	-	-	-	-	12
SANDBLASTER OR WATERBLASTER:													
Use wages of craft to which sand or water blasting is incidental.													
SHEETMETAL WORKER (Note: 2 increases per year)	9/21/15			2/28/16			2/26/17			3/4/18			
	\$63.54	\$39.40	\$24.14	\$64.68	\$39.99	\$24.69	\$67.20	\$41.29	\$25.91	\$69.23	\$42.20	\$27.03	13
				8/28/16			9/3/17			9/2/18			
				\$65.91	\$40.59	\$25.32	\$68.33	\$41.80	\$26.53	\$69.99	\$42.55	\$27.44	13
TAPER	1/1/16						1/1/17						
	\$63.80	\$41.50	\$22.30	-	-	-	\$65.90	\$42.00	\$23.90	-	-	-	
TERMITE TREATER	9/21/15												
	\$18.99	\$14.74	\$4.25	-	-	-	-	-	-	-	-	-	
TERRAZZO:	9/16/13												
Terrazzo Setter	\$60.57	\$37.10	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Terrazzo Base Grinder	\$58.76	\$35.29	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Certified Terrazzo Floor Grinder and Tender	\$57.21	\$33.74	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Terrazzo Floor Grinder	\$55.71	\$32.24	\$23.47	-	-	-	-	-	-	-	-	-	2,13
TILE SETTER:	9/16/13												
Ceramic Hard Tile; Marble Setter	\$60.57	\$37.10	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Certified Ceramic Tile & Marble Helper	\$57.21	\$33.74	\$23.47	-	-	-	-	-	-	-	-	-	2,13
TRUCK DRIVER:	9/21/15												
Concrete Mixer	\$36.12	\$32.50	\$3.62	-	-	-	-	-	-	-	-	-	
Concrete Mixer/Booster	\$45.76	\$31.93	\$13.83	-	-	-	-	-	-	-	-	-	
Dump Truck, 8 cu. yds. & under (water level); Water Truck (up to & including 2,000 gallons)	\$68.35	\$38.99	\$29.36	-	-	-	-	-	-	-	-	-	13
Flatbed, Utility, etc.	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
End Dump, Unlicensed (Euclid, Mack, Caterpillar, or similar); Tractor Trailer (hauling equipment)	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Semi-Trailer, Rock Cans, or Semi-Dump	\$69.31	\$39.95	\$29.36	-	-	-	-	-	-	-	-	-	13
Slip-in or Pup	\$69.63	\$40.27	\$29.36	-	-	-	-	-	-	-	-	-	13
Tandem Dump Truck, over 8 cu. yds. (water level); Water Truck (over 2,000 gallons)	\$68.66	\$39.30	\$29.36	-	-	-	-	-	-	-	-	-	13

WAGE RATE SCHEDULE BULLETIN NO. 487

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
UNDERGROUND LABORER:	8/31/15			8/29/16			9/4/17			9/3/18			
Worker in a raise, shaft, or tunnel.													
Group 1	\$52.46	\$34.95	\$17.51	\$54.36	\$35.95	\$18.41	\$56.26	\$37.00	\$19.26	\$58.26	\$38.00	\$20.26	13
Group 2	\$53.96	\$36.45	\$17.51	\$55.86	\$37.45	\$18.41	\$57.76	\$38.50	\$19.26	\$59.76	\$39.50	\$20.26	13
Group 3	\$54.46	\$36.95	\$17.51	\$56.36	\$37.95	\$18.41	\$58.26	\$39.00	\$19.26	\$60.26	\$40.00	\$20.26	13
Group 4	\$55.46	\$37.95	\$17.51	\$57.36	\$38.95	\$18.41	\$59.26	\$40.00	\$19.26	\$61.26	\$41.00	\$20.26	13
Group 5	\$55.71	\$38.20	\$17.51	\$57.61	\$39.20	\$18.41	\$59.51	\$40.25	\$19.26	\$61.51	\$41.25	\$20.26	13
Group 6	\$55.81	\$38.30	\$17.51	\$57.71	\$39.30	\$18.41	\$59.61	\$40.35	\$19.26	\$61.61	\$41.35	\$20.26	13
Group 7	\$56.06	\$38.55	\$17.51	\$57.96	\$39.55	\$18.41	\$59.86	\$40.60	\$19.26	\$61.86	\$41.60	\$20.26	13
Group 8	\$56.51	\$39.00	\$17.51	\$58.41	\$40.00	\$18.41	\$60.31	\$41.05	\$19.26	\$62.31	\$42.05	\$20.26	13
WATER FRONT CONSTRUCTION (DREDGING):	9/21/15												
CLAMSHELL OR DIPPER DREDGES:													
Clamshell or Dipper Operator	\$70.80	\$41.44	\$29.36	-	-	-	-	-	-	-	-	-	11,13
Mechanic; Welder; Watch Engineer	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	13
Deckmate; Bargemate	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Fire Person; Oiler; Deckhand; Barge Worker	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
HYDRAULIC SUCTION DREDGES:													
Lever Operator	\$70.44	\$41.08	\$29.36	-	-	-	-	-	-	-	-	-	13
Mechanic; Welder	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	13
Watch Engineer (steam or electric)	\$70.29	\$40.93	\$29.36	-	-	-	-	-	-	-	-	-	13
Dozer Operator	\$70.08	\$40.72	\$29.36	-	-	-	-	-	-	-	-	-	13
Deckmate	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Winch Operator (stern winch on dredge)	\$69.63	\$40.27	\$29.36	-	-	-	-	-	-	-	-	-	13
Fire Person; Oiler; Deckhand (can operate anchor scow under direction of deckmate); Levee Operator	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
DERRICKS:													
Operator: Derrick, Piledriver, Crane	\$70.80	\$41.44	\$29.36	-	-	-	-	-	-	-	-	-	13
Deckmate; Saurman Type Dragline (up to & including 5 yds.)	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Saurman Type Dragline (over 5 cu. yds.)	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	13
Fire Person; Oiler; Deckhand	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
BOAT OPERATORS:													
Master Boat Operator	\$70.44	\$41.08	\$29.36	-	-	-	-	-	-	-	-	-	13
Boat Operator	\$70.29	\$40.93	\$29.36	-	-	-	-	-	-	-	-	-	13
Boat Deckhand	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
WATER WELL DRILLER:	9/21/15												
Water Well Driller	\$38.47	\$31.00	\$7.47	-	-	-	-	-	-	-	-	-	
Water Well Driller Helper	\$24.37	\$18.00	\$6.37	-	-	-	-	-	-	-	-	-	
WELDER:													
Use wages of craft to which welding is incidental, except for Chain-Link Fence Erector. See remark.													10

Comments: Overtime must be paid at one and one-half times the basic hourly rate plus the hourly cost of required fringe benefits.

* Indicates a wage, fringe benefit, remark, or title change from the previous bulletin.

REMARKS

1. Carpenter, Laborer (excluding High Scaler, Window Washer): \$.50 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
2. Cement Finisher, Mason, Plasterer, Terrazzo, Tile Setter: \$1.00 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
3. Diver (Other than Aqua Lung), Stand-By Diver (Other than Aqua Lung):
 - A. On any dive exceeding 50 feet, the diver shall, in addition, be paid the following amount of "depth money":

50 feet to 100 feet	\$1.50 per foot in excess of 50 feet
100 feet to 150 feet	\$100.00 plus \$2.00 per foot in excess of 100 feet
150 feet to 200 feet	\$200.00 plus \$3.00 per foot in excess of 150 feet
 - B. When it is necessary for a Diver to enter any pipe, tunnel or other enclosure, the said Diver shall, in addition to the hourly rate, receive a premium in accordance with the following schedule for distance traveled from the entrance of the pipe, tunnel or other enclosure:
 - 1) When able to stand erect, but in which there is no vertical ascent:

5 feet to 50 feet	\$5.00 per day
50 feet to 100 feet	\$7.50 per day
100 feet to 150 feet	\$12.50 per day
Greater than 150 feet	The premium shall be increased an additional \$7.50 for each succeeding 50 feet.
 - 2) When unable to stand erect and in which there is no vertical ascent:

5 feet to 50 feet	\$5.00 per day
50 feet to 100 feet	\$7.50 per day
100 feet to 150 feet	\$12.50 per day
150 feet to 200 feet	\$36.75 per day
200 feet to 300 feet	\$1.00 per foot
300 feet to 450 feet	\$1.50 per foot
450 feet to 600 feet	\$2.50 per foot
4. Electrician:
 - A. One and one-half times the straight-time rate while working in a tunnel under construction; under water with aqualung equipment; in a completed tunnel which has only one entrance or exit providing access to safety and where no other personnel are working; or in an underground structure having no access to safety or where no other personnel are working.
 - B. Double the straight-time rate shall be paid for the following types of hazardous work regardless if fall prevention devices are used:
 - 1) While working from poles, trusses, stacks, towers, tanks, bosun's chairs, swinging or rolling scaffolds, supporting structures, and open platforms, over 70 feet from the ground where the employee is subject to a free fall; provided, however, that when work is performed on stacks, towers or permanent platforms where the employees are on a firm footing within an enclosure, a hazardous condition does not exist regardless of height;
 - 2) While working outside of a railing or enclosure, or temporary platforms extending outside of a building, or from scaffolding or ladder within an enclosure where an employee's footing is within one foot of the top of such railing, and the employee is subject to a free fall of over 70 feet;
 - 3) Working on buildings while leaning over the railing or edge of the building, and is subject to a free fall of 70 feet; or
 - 4) Two hours minimum hazardous pay per day shall be paid while climbing to a stack, tower or permanent platform which exceeds 70 feet from the ground but where the employee is on a firm footing within an enclosure.
 - C. Five percent per hour shall be added to the hourly wage for height pay while working above 9,000 feet elevation.

REMARKS

5. Equipment Operator:

A. Operators and Assistants to Engineer (climbing a boom) of cranes (under 50 tons) with booms of eighty feet or more (including jib) or of cranes (under 50 tons) with leads of one hundred feet or more, shall receive additional premium according to the following schedule:

	Per Hour
Booms of 80 feet up to, or leads of 100 feet up to, but not including 130 feet	\$0.50
Booms and/or leads of 130 feet up to, but not including 180 feet	\$0.75
Booms and/or leads of 180 feet up to and including 250 feet	\$1.15
Booms and/or leads over 250 feet	\$1.50

Operators and Assistants to Engineer (climbing a boom) of cranes (50 tons and over) with booms of 180 feet or more (including jib) shall receive additional premium according to the following schedule:

	Per Hour
Booms of 180 feet up to and including 250 feet	\$1.25
Booms over 250 feet	\$1.75

Note: The boom shall be measured from the center of the heel pin to the center of the boom or jib point sheave.

B. \$1.25 per hour shall be added to the hourly wage while operating a rig suspended by ropes or cables or to perform work on a Yo-Yo Cat.

C. In a raise or shaft, a premium of \$.40 per hour will be paid in addition to the regular straight time wage.
 A raise is defined to be an underground excavation (lined or unlined) whose length exceeds its width and the inclination of the grade from the excavation is greater than 20 degrees from the horizontal.

A shaft is defined to be an excavation (lined or unlined) made from the surface of the earth, generally vertical in nature, but may decline up to 75 degrees from the vertical, and whose depth is greater than 15 feet and its largest horizontal dimension. Includes an underground silo.

D. In a tunnel, a premium of \$.30 per hour will be paid in addition to the regular straight time wages.
 A tunnel is defined to be an underground excavation (lined or unlined) whose length exceeds its width and the inclination of the grade from the excavation is no greater than 20 degrees from the horizontal.

6. Glazier: Effective 9/16/13 - \$1.00 per hour shall be added to the hourly wage for height pay for exterior glazing work performed in a walking/working surface with an unprotected side or edge 10 feet or more above a lower level which requires protection from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, position devise systems, fall restraint systems, perimeter safety cables or controlled decking zones.

7. Insulator: Six percent per hour shall be added to the hourly wage for hazardous pay while working from a boatswain chair, staging or free standing scaffolding erected from the ground up or mezzanine floor subject to a free fall and skyclimber suspended from a permanent structure and when working above 40 feet.

8. Ironworker: \$.50 per hour shall be added to the hourly wage while working in tunnels or coffer dams. \$1.00 per hour shall be added to the hourly wage while working under or covered with water (submerged), or on the summits of Mauna Kea, Mauna Loa or Haleakala.

9. Plumber: One and one-half times the straight-time rate for height pay while working from OSHA approved trusses, stacks, towers, tanks, bosun's chair, swinging or rolling scaffolding, supporting structures or on open platforms where the employee is subject to a direct fall of 40 feet or more. Provided, however, that when said work is performed where the employee is on a firm footing within an enclosure, a hazardous condition does not exist regardless of height. \$1.00 per hour shall be added to the straight-time rate while working with flame cutting or any type of welding equipment on any galvanized material or product for at least an hour.

10. Chain-Link Fence Erector: \$1.00 per hour shall be added to the hourly wage while performing welding services.

11. Water Front Construction: Clamshell or Dipper Operator: \$.50 per hour shall be added to the straight-time rate while working with boom (including jib) over 130 feet.

12. Possible wage/fringe option increases:

- Carpenter, Drywall and Lather: Effective 9/4/17 - \$0.20; 9/3/18 - \$0.25
- Cement Finisher, Plasterer: Effective WRS 488 - \$0.30; 9/4/17 - \$0.30; 9/3/18 - \$0.30
- Ironworker: Effective WRS 488 - \$1.00
- Roofer: Effective WRS 488 - \$0.40

REMARKS

13. Overtime/Holiday must be paid at one and one-half times the basic hourly rate plus the hourly cost of required fringe, with the following exceptions:

A. Two times the basic hourly rate plus the hourly cost of required fringe.

Asphalt Paving: Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Boilermaker: Sunday, New Year's Day, President's Day, Memorial Day, Kamehameha Day, July 4th, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Diver: Sunday, New Year's Day, Martin Luther King Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Electrician: Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

Elevator Constructor: Saturday, Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Equipment Operator: Sunday, New Year's Day, Martin Luther King Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Floor Layer: Labor Day.

Glazier: Sunday.

Helicopter Worker: Sunday, New Year's Day, Martin Luther King Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Ironworker: Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Plumber: Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Kamehameha Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Sheetmetal Worker: Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Kamehameha Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Telecommunication: Sunday, New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

Truck Driver, except Concrete Mixer & Concrete Mixer/Booster: Sunday, New Year's Day, Martin Luther King Day, Presidents' Day Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Water Front Construction (Dredging): Sunday, New Year's Day, Martin Luther King Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

B. Three times the basic hourly wage plus the hourly cost of required fringe on Labor Day.

- Carpenter
- Cement Finisher
- Chain Link Fence Erector
- Drywall
- Insulator
- Laborer
- Lather
- Mason
- Plasterer
- Terrazzo
- Tile Setter
- Underground Laborer

APPRENTICE SCHEDULE BULLETIN NO. 487 February 15, 2016

Rates are applicable only to apprentices who are parties to agreements registered with the Department of Labor and where the journeyworker to apprentice ratio is met.

Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total		
BOILERMAKER	1000	\$23.93	\$25.64	\$27.34	\$29.05	\$30.76	\$32.47						\$29.45	10
CARPENTER														
Indentured Prior to 9/1/02	1000	\$17.56											\$12.27	1,10
"	1000		\$19.76	\$21.95	\$26.34	\$30.73	\$35.12	\$39.51	\$41.71				\$20.96	1,10
Indentured After 9/1/02	1000	\$17.56											\$8.27	1,10
"	1000		\$19.76										\$12.26	1,10
"	1000			\$21.95	\$26.34								\$14.76	1,10
"	1000					\$30.73	\$35.12						\$16.76	1,10
"	1000							\$39.51	\$41.71				\$18.76	1,10
(Effective 8/29/16)														
* CARPENTER														
Indentured Prior to 9/1/02	1000	\$18.26											\$12.52	1,10
"	1000		\$20.54	\$22.83	\$27.39	\$31.96	\$36.52	\$41.09	\$43.37				\$21.21	1,10
Indentured After 9/1/02	1000	\$18.26											\$8.52	1,10
"	1000		\$20.54										\$12.51	1,10
"	1000			\$22.83	\$27.39								\$15.01	1,10
"	1000					\$31.96	\$36.52						\$17.01	1,10
"	1000							\$41.09	\$43.37				\$19.01	1,10
CEMENT FINISHER														
Indentured Prior to 9/1/03	1000	\$18.95											\$8.37	2,10
"	1000		\$20.85	\$22.74	\$26.53	\$28.43	\$30.32	\$32.22	\$34.11				\$25.83	2,10
Indentured On or After 9/1/03	1000	\$18.95	\$20.85	\$22.74	\$26.53	\$28.43	\$30.32	\$32.22	\$34.11				\$13.02	2,10
(Effective 8/29/16)														
* CEMENT FINISHER														
Indentured Prior to 9/1/03	1000	\$19.25											\$8.92	2,10
"	1000		\$21.18	\$23.10	\$26.95	\$28.88	\$30.80	\$32.73	\$34.65				\$26.84	2,10
Indentured On or After 9/1/03	1000	\$19.25	\$21.18	\$23.10	\$26.95	\$28.88	\$30.80	\$32.73	\$34.65				\$13.97	2,10

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		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total			
CONSTRUCTION CRAFT LABORER (LABORER I)															
Indentured On or After 9/3/02	1000	\$17.18											\$6.55	1,10	
"	1000		\$20.61	\$24.05	\$27.48								\$12.95	1,10	
* (Effective 8/29/16)															
CONSTRUCTION CRAFT LABORER (LABORER I)															
Indentured On or After 9/3/02	1000	\$17.68											\$7.05	1,10	
"	1000		\$21.21	\$24.75	\$28.28								\$13.60	1,10	
CONSTRUCTION EQUIPMENT OPERATOR															
Indentured On or After 9/1/02	1000	\$20.36											\$7.05	3,10	
"	1000		\$22.40										\$17.37	3,10	
"	1000			\$24.43									\$18.31	3,10	
"	1000				\$28.50								\$20.19	3,10	
"	1000					\$32.58							\$22.06	3,10	
"	1000						\$36.65						\$23.94	3,10	
DRYWALL INSTALLER															
Indentured Prior to 9/1/02	1000	\$17.66											\$12.27	10	
"	1000		\$19.87	\$22.08	\$26.49	\$30.91	\$35.32	\$39.74	\$41.94				\$20.96	10	
Indentured After 9/1/02	1000	\$17.66											\$8.27	10	
"	1000		\$19.87										\$12.26	10	
"	1000			\$22.08	\$26.49								\$14.76	10	
"	1000					\$30.91	\$35.32						\$16.76	10	
"	1000							\$39.74	\$41.94				\$18.76	10	
(Effective 8/29/16)															
* DRYWALL INSTALLER															
Indentured Prior to 9/1/02	1000	\$18.36											\$12.52	10	
"	1000		\$20.66	\$22.95	\$27.54	\$32.13	\$36.72	\$41.31	\$43.61				\$21.21	10	
Indentured After 9/1/02	1000	\$18.36											\$8.52	10	
"	1000		\$20.66										\$12.51	10	
"	1000			\$22.95	\$27.54								\$15.01	10	
"	1000					\$32.13	\$36.72						\$17.01	10	
"	1000							\$41.31	\$43.61				\$19.01	10	

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
ELECTRICIAN (WIRE & LINE INSTALLER)	1000	\$15.07										\$10.10	10
" "	1000		\$17.22									\$10.42	10
" "	1000			\$19.37								\$16.59	4,10
" "	1000				\$21.53							\$17.57	4,10
" "	1000					\$23.68						\$18.53	4,10
" "	1000						\$25.83					\$19.49	4,10
" "	1000							\$27.98				\$20.47	4,10
" "	1000								\$30.14			\$21.44	4,10
" "	1000									\$34.44		\$23.36	4,10
" "	1000										\$38.75	\$25.30	4,10
(Effective 2/21/16)													
* ELECTRICIAN (WIRE & LINE INSTALLER)	1000	\$15.28										\$9.38	10
" "	1000		\$17.46									\$9.70	10
" "	1000			\$19.64								\$16.28	4,10
" "	1000				\$21.83							\$17.27	4,10
" "	1000					\$24.01						\$18.30	4,10
" "	1000						\$26.19					\$19.31	4,10
" "	1000							\$28.37				\$20.31	4,10
" "	1000								\$30.56			\$21.33	4,10
" "	1000									\$34.92		\$23.36	4,10
" "	1000										\$39.29	\$25.38	4,10
* ELEVATOR CONSTRUCTOR	850	\$27.145										-	10
" "	850		\$29.86									\$29.985	10
" "	1700			\$35.29	\$38.00	\$43.43						\$29.985	10
FLOOR LAYER													
Indentured After 2/27/94	1000	\$12.46	\$14.02									\$16.75	10
" "	1000			\$15.58	\$17.13							\$21.75	10
" "	1000					\$18.69	\$20.25	\$23.36	\$26.48			\$25.75	10

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total		
GLAZIER														
Indentured On or After 7/1/99	1000	\$15.65											\$25.73	5,10
"	1000		\$17.39										\$25.97	5,10
"	1000			\$19.13									\$26.21	5,10
"	1000				\$20.87								\$26.45	5,10
"	1000					\$24.35							\$26.93	5,10
"	1000						\$26.09						\$27.17	5,10
"	1000							\$27.82					\$27.41	5,10
"	1000								\$29.56				\$27.65	5,10
"	1000									\$31.30			\$27.89	5,10
"	1000										\$33.04		\$28.13	5,10
HEAVY DUTY REPAIRER & WELDER (EQUIP. OPR 9A)														
Indentured On or After 9/1/02	1000	\$20.36											\$7.05	3,10
"	1000		\$22.40										\$17.37	3,10
"	1000			\$24.43									\$18.31	3,10
"	1000				\$28.50								\$20.19	3,10
"	1000					\$32.58							\$22.06	3,10
"	1000						\$34.61						\$23.01	3,10
"	1000							\$36.65					\$23.94	3,10
"	1000								\$38.68				\$24.89	3,10
INSULATOR														
Hired After 5/3/95	2000	\$19.83											\$7.70	6,10
"	2000		\$19.83										\$17.31	6,10
"	2000			\$23.79									\$17.59	6,10
"	2000				\$27.76								\$17.88	6,10
"	2000					\$31.72							\$18.16	6,10

APPRENTICE SCHEDULE BULLETIN NO. 487 February 15, 2016

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total		
IRONWORKER (REINFORCING & STRUCTURAL)														
Indentured After 10/31/93	1000	\$18.38											\$24.67	7,10
"	1000		\$20.21										\$25.19	7,10
"	1000			\$22.05									\$25.71	7,10
"	1000				\$25.73								\$26.76	7,10
"	1000					\$29.40							\$27.81	7,10
"	1000						\$33.08						\$28.86	7,10
(Effective 9/1/16)														
* IRONWORKER (REINFORCING & STRUCTURAL)														
Indentured After 10/31/93	1000	\$18.88											\$24.67	7,10
"	1000		\$20.76										\$25.19	7,10
"	1000			\$22.65									\$25.71	7,10
"	1000				\$26.43								\$26.76	7,10
"	1000					\$30.20							\$27.81	7,10
"	1000						\$33.98						\$28.86	7,10
MASON														
BRICKLAYER														
Indentured On or After 9/1/03	1000	\$18.43	\$20.27	\$22.11	\$25.80	\$27.64	\$29.48	\$31.32	\$33.17				\$10.87	2,10
STONE MASON														
Indentured On or After 9/1/03	1000	\$20.27	\$22.11	\$23.95	\$25.80	\$27.64	\$29.48	\$31.32	\$33.17				\$10.87	2,10
POINTER-CAULKER-WEATHERPROOFER														
Indentured On or After 9/1/03	1000	\$18.55	\$20.41	\$22.26	\$25.97	\$29.68	\$33.39						\$10.87	2,10
* PAINTER	1000	\$15.68											\$8.72	
"	1000		\$17.43	\$19.17	\$20.91	\$22.65							\$12.22	
"	1000						\$24.40						\$13.22	
"	1000							\$27.88	\$31.37				\$13.97	
* PAVING EQUIPMENT OPERATOR	1000	\$21.68											\$7.05	10
"	1000		\$27.59										\$17.83	10
"	1000			\$31.54									\$20.76	10
"	1000				\$35.48								\$24.68	10

APPRENTICE SCHEDULE BULLETIN NO. 487 February 15, 2016

Rates are applicable only to apprentices who are parties to agreements registered with the Department of Labor and where the journeyworker to apprentice ratio is met.

Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
PLASTERER Indentured On or After 9/1/03 (Effective 8/29/16)	1000	\$15.62	\$17.57	\$19.52	\$21.47	\$23.42	\$27.33	\$31.23	\$35.14			\$13.02	2,10
* PLASTERER Indentured On or After 9/1/03	1000	\$15.92	\$17.91	\$19.90	\$21.88	\$23.87	\$27.85	\$31.83	\$35.81			\$14.03	2,10
PLUMBER: PLUMBER; FIRE SPRINKLER FITTER; REFRIGERATION AIR CONDITIONING; STEAMFITTER-WELDER Indentured Prior to 9/2/85	1000	\$14.12										\$18.63	8,10
"	1000		\$16.14									\$19.10	8,10
"	1000			\$18.16								\$19.57	8,10
"	1000				\$20.18							\$20.04	8,10
"	1000					\$22.19						\$20.51	8,10
"	1000						\$24.21					\$20.98	8,10
"	1000							\$26.23				\$21.45	8,10
"	1000								\$28.25			\$21.92	8,10
"	1000									\$30.26		\$22.39	8,10
"	1000										\$32.28	\$22.85	8,10
PLUMBER: PLUMBER; FIRE SPRINKLER FITTER; REFRIGERATION AIR CONDITIONING; STEAMFITTER-WELDER Indentured On or After 9/2/85	1000	\$16.22										\$5.00	8,10
"	1000		\$16.22									\$5.05	8,10
"	1000			\$19.17								\$6.61	8,10
"	1000				\$19.17							\$6.61	8,10
"	1000					\$22.19						\$7.30	8,10
"	1000						\$22.19					\$7.30	8,10
"	1000							\$26.23				\$8.13	8,10
"	1000								\$26.23			\$8.13	8,10
"	1000									\$30.26		\$8.76	8,10
"	1000										\$30.26	\$8.76	8,10

PLUMBER: Continued on Next Page

APPRENTICE SCHEDULE BULLETIN NO. 487 February 15, 2016

Rates are applicable only to apprentices who are parties to agreements registered with the Department of Labor and where the journeyworker to apprentice ratio is met.

Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
(Effective 7/3/16)													
* PLUMBER:													
PLUMBER; FIRE SPRINKLER FITTER; REFRIGERATION AIR CONDITIONING; STEAMFITTER-WELDER													
Indentured Prior to 9/2/85													
	1000	\$14.30										\$18.88	8,10
"	1000		\$16.34									\$19.35	8,10
"	1000			\$18.38								\$19.82	8,10
"	1000				\$20.43							\$20.29	8,10
"	1000					\$22.47						\$20.76	8,10
"	1000						\$24.51					\$21.23	8,10
"	1000							\$26.55				\$21.70	8,10
"	1000								\$28.60			\$22.17	8,10
"	1000									\$30.64		\$22.64	8,10
"	1000										\$32.68	\$23.10	8,10
Indentured On or After 9/2/85													
	1000	\$16.42										\$5.00	8,10
"	1000		\$16.42									\$5.05	8,10
"	1000			\$19.40								\$7.12	8,10
"	1000				\$19.40							\$7.12	8,10
"	1000					\$22.47						\$7.83	8,10
"	1000						\$22.47					\$7.83	8,10
"	1000							\$26.55				\$8.68	8,10
"	1000								\$26.55			\$8.68	8,10
"	1000									\$30.64		\$9.32	8,10
"	1000										\$30.64	\$9.32	8,10
ROOFER													
Indentured Prior to 11/1/98													
	1000	\$17.48	\$19.43	\$23.31								\$13.28	9
"	1000				\$27.20	\$31.08	\$34.97	\$36.91				\$17.53	
Indentured On or After 11/1/98 and Prior to 11/4/12													
	1000	\$17.48	\$19.43	\$23.31								\$13.28	9
"	1000				\$27.20	\$31.08	\$33.02	\$34.97	\$36.91			\$17.53	
Indentured On or After 11/4/12													
	2000	\$17.48	\$23.31									\$13.28	9
"	2000			\$31.08	\$34.97							\$17.53	9

ROOFERS: Continued on Next Page

APPRENTICE SCHEDULE BULLETIN NO. 487 February 15, 2016

Rates are applicable only to apprentices who are parties to agreements registered with the Department of Labor and where the journeyworker to apprentice ratio is met.

Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11		
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total			
(Effective 9/4/16)															
* ROOFER															
Indentured Prior to 11/1/98	1000	\$17.93	\$19.93	\$23.91									\$13.28	9	
"	1000				\$27.90	\$31.88	\$35.87	\$37.86					\$17.53		
Indentured On or After 11/1/98 and Prior to 11/4/12	1000	\$17.93	\$19.93	\$23.91									\$13.28	9	
"	1000				\$27.90	\$31.88	\$33.87	\$35.87	\$37.86				\$17.53		
Indentured On or After 11/4/12	2000	\$17.93	\$23.91										\$13.28	9	
"	2000			\$31.88	\$35.87								\$17.53	9	
SHEETMETAL WORKER	1000	\$15.76											\$11.40	10	
"	1000		\$17.73										\$11.58	10	
"	1000			\$19.70									\$19.29	10	
"	1000				\$21.67								\$19.78	10	
"	1000					\$23.64							\$20.26	10	
"	1000						\$25.61						\$20.75	10	
"	1000							\$27.58					\$21.23	10	
"	1000								\$29.55				\$21.72	10	
"	1000									\$31.52			\$22.20	10	
"	1000										\$33.49		\$22.69	10	
(Effective 2/28/16)															
* SHEETMETAL WORKER	1000	\$16.00											\$11.52	10	
"	1000		\$18.00										\$11.70	10	
"	1000			\$20.00									\$19.78	10	
"	1000				\$21.99								\$20.26	10	
"	1000					\$23.99							\$20.75	10	
"	1000						\$25.99						\$21.26	10	
"	1000							\$27.99					\$21.75	10	
"	1000								\$29.99				\$22.23	10	
"	1000									\$31.99			\$22.72	10	
"	1000										\$33.99		\$23.22	10	

SHEETMETAL WORKER: Continued on the next page

APPRENTICE SCHEDULE BULLETIN NO. 487 February 15, 2016

Rates are applicable only to apprentices who are parties to agreements registered with the Department of Labor and where the journeyworker to apprentice ratio is met.

Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 10-11
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
(Effective 8/28/16)													
* SHEETMETAL WORKER	1000	\$16.24										\$11.65	10
"	1000		\$18.27									\$11.83	10
"	1000			\$20.30								\$20.30	10
"	1000				\$22.32							\$20.80	10
"	1000					\$24.35						\$21.30	10
"	1000						\$26.38					\$21.80	10
"	1000							\$28.41				\$22.30	10
"	1000								\$30.44			\$22.82	10
"	1000									\$32.47		\$23.31	10
"	1000										\$34.50	\$23.81	10
TAPER	1000	\$16.60	\$18.68	\$20.75	\$22.83	\$24.90						\$8.25	
	1000						\$26.98					\$8.75	
	1000							\$31.13	\$35.28			\$11.80	
TELECOMMUNICATION WORKER (TECHNICIAN I / SPLICER)	1000	\$15.78										\$9.78	10
"	1000		\$17.10									\$10.00	10
"	1000			\$18.41								\$10.24	10
"	1000				\$19.73							\$10.46	10
"	1000					\$21.04						\$10.67	10
"	1000						\$23.67					\$11.13	10
(Effective 8/28/16)													
* TELECOMMUNICATION WORKER (TECHNICIAN I / SPLICER)	1000	\$16.41										\$9.90	10
"	1000		\$17.78									\$10.12	10
"	1000			\$19.15								\$10.36	10
"	1000				\$20.51							\$10.59	10
"	1000					\$21.88						\$10.83	10
"	1000						\$24.62					\$11.28	10
* TILE SETTER CERAMIC & HARD TILE Indentured Prior to 9/1/03	1000	\$18.55										\$7.12	2,10
"	1000		\$20.41	\$22.26	\$25.97	\$27.83	\$29.68	\$31.54	\$33.39			\$23.47	2,10
Indentured On or After 9/1/03	1000	\$18.55	\$20.41	\$22.26	\$25.97	\$27.83	\$29.68	\$31.54	\$33.39			\$10.87	2,10

* Indicates a wage, fringe benefit, remark, or title change from the previous bulletin.

REMARKS:

1. Carpenter, Construction Craft Laborer: \$.50 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
2. Cement Finisher, Mason, Plasterer, Tile Setter: \$1.00 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
3. Construction Equipment Operator, Heavy Duty Repairer & Welder: \$1.25 per hour shall be added to the hourly wage while operating a rig suspended by ropes or cables or to perform work on a Yo-Yo Cat.
4. Electrician:
 - A. One and one-half times the straight-time rate while working in a tunnel under construction; under water with aqualung equipment; in a completed tunnel which has only one entrance or exit providing access to safety and where no other personnel are working; or in an underground structure having no access to safety or where no other personnel are working.
 - B. Double the straight-time rate shall be paid for the following types of hazardous work regardless if fall prevention devices are used:
 - 1) While working from poles, trusses, stacks, towers, tanks, bosun's chairs, swinging or rolling scaffolds, supporting structures, and open platforms, over 70 feet from the ground where the employee is subject to a free fall; provided, however, that when work is performed on stacks, towers or permanent platforms where the employees are on a firm footing within an enclosure, a hazardous condition does not exist regardless of height;
 - 2) While working outside of a railing or enclosure, or temporary platforms extending outside of a building, or from scaffolding or ladder within an enclosure where an employee's footing is within one foot of the top of such railing, and the employee is subject to a free fall of over 70 feet;
 - 3) Working on buildings while leaning over the railing or edge of the building, and is subject to a free fall of 70 feet; or
 - 4) Two hours minimum hazardous pay per day shall be paid while climbing to a stack, tower or permanent platform which exceeds 70 feet from the ground but where the employee is on a firm footing within an enclosure.
 - C. Five percent per hour shall be added to the hourly wage for height pay while working above 9,000 feet elevation.
5. Glazier: Effective 9/16/13 - \$1.00 per hour shall be added to the hourly wage for height pay for exterior glazing work performed in a walking/working surface with an unprotected side or edge 10 feet or more above a lower level which requires protection from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, position devise systems, fall restraint systems, perimeter safety cables or controlled decking zones.
6. Insulator: Six percent per hour shall be added to the hourly wage for hazardous pay while working from a boatswain chair, staging or free standing scaffolding erected from ground up or mezzanine floor subject to a free fall and skyclimber suspended from a permanent structure and when working above 40 feet.
7. Ironworker: \$.50 per hour shall be added to the hourly wage while working in tunnels or coffer dams. \$1.00 per hour shall be added to the hourly wage while working under or covered with water (submerged), or on the summits of Mauna Kea, Mauna Loa or Haleakala.
8. Plumber: One and one-half times the straight-time rate for height pay while working from OSHA approved trusses, stacks, towers, tanks, bosun's chair, swinging or rolling scaffolding, supporting structures or on open platforms where the employee is subject to a direct fall of 40 feet or more. Provided, however, that when said work is performed where the employee is on a firm footing within an enclosure, a hazardous condition does not exist regardless of height. \$1.00 per hour shall be added to the straight-time rate while working with flame cutting or any type of welding equipment on any galvanized material or product for at least an hour.
9. Roofer: When an apprentice has accumulated 2500 hours, \$4.25 will be added to his/her pension/annuity plan.
The apprenticeship program for apprentices indentured on or after November 4, 2012, consists of four steps with 2,000 hours for each step.

REMARKS:

10. Overtime/Holiday must be paid at one and one-half times the basic hourly rate plus the hourly cost of required fringe, with the following exceptions:

A. Two times the basic hourly rate plus the hourly cost of required fringe.

Boilermaker: Sunday, New Year's Day, President's Day, Memorial Day, Kamehameha Day, July 4th, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Construction Equipment Operator: Sunday, New Year's Day, Martin Luther King Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Electrician: Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

Elevator Constructor: Saturday, Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Floor Layer: Labor Day.

Glazier: Sunday.

Heavy Duty Repairer & Welder: Sunday, New Year's Day, Martin Luther King Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Ironworker: Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Paving Equipment Operator: Sunday, New Year's Day, Martin Luther King Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

Plumber: Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Kamehameha Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Sheetmetal Worker: Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Kamehameha Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

Telecommunication Worker: Sunday, New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

B. Three times the basic hourly wage plus the hourly cost of required fringe on Labor Day.

Carpenter

Cement Finisher

Drywall Installer

Insulator

Construction Craft Laborer

Mason

Plasterer

Tile Setter

SPECIAL PROVISIONS

1. GENERAL REQUIREMENTS AND COVENANTS:

The General Requirements and Covenants of the Department of Public Works, County of Hawai'i (July, 1972), shall be read by the Contractor, as they form a part of the agreement to be entered into between the Contractor and the County of Hawai'i. The General Requirements and Covenants are not physically included in these specifications, but are included by reference. Copies are available at the Department of Public Works.

Shall there be any conflict between the General Requirements and Covenants and Chapter 103D of the Hawai'i Revised Statutes, Chapter 103D of the Hawai'i Revised Statutes shall prevail.

2. SPECIFICATIONS SECTION:

Sections in these specifications conform roughly to the customary trade practice. They are used for convenience only. The Director is not bound to define the limits of any subcontract.

3. LINES AND LEVELS:

a. Established by the County of Hawai'i. Control points and bench marks shown on the drawings.

b. Established and maintained by the Contractor. All other lines, levels, and bench marks necessary for the execution of the work. Employ a competent surveyor to layout work; be responsible for its accuracy.

4. WATER AND ELECTRICITY:

The Contractor shall make all arrangements and pay for installation and use of all temporary water and electric power facilities as required for the construction work under this contract. At the completion of the work, the Contractor shall remove all such temporary facilities at its own expense.

5. NOTICE CONCERNING ECONOMIC STABILIZATION ACT OF 1970, AS AMENDED:

The bidder is reminded that mandatory provision of Federal measures promulgated under authority of the Economic Stabilization Act of 1970 (P.L. 91-379, 84 Stat. 799) including Executive Orders of the President, amendments thereto, and rules and regulations issued thereunder may be applicable to invitations to bid, bid proposals and contracts.

In addition, all bid proposals submitted shall, to the best of the bidder's knowledge and belief, be in accordance with applicable mandatory provisions of measures promulgated by authority of the Economic Stabilization Act of 1970, and where any provision of the contract specifications is inconsistent, such mandatory provisions shall control.

6. REVISIONS TO GENERAL REQUIREMENTS AND COVENANTS:

Section 2.1 - Competency of Bidder. Delete this section in its entirety and replace it with the following: "Each prospective bidder must file a written notice of its intention to bid 10 days prior to the day designated for opening offers in compliance with Section 103D-310, Hawai'i Revised Statutes., as such section may be amended or superseded from time to time. If the day that is ten (10) calendar days prior to the bid opening date is a Saturday, Sunday, or State holiday, the intent to bid shall be due on the next working day following the due date. The procurement officer may require any prospective offeror to submit answers to the standard qualification questionnaire form and may make a determination of nonresponsibility with respect to any offeror in accordance with Section 103D-310, Hawai'i Revised Statutes, as such section may be amended or superseded from time to time.

Section 2.5 - Addenda, Bulletins and Interpretations. Delete "not later than five (5) days," between the "comma" and the word "prior" in line 6 of the second paragraph. The corrected sentence shall read, "Any interpretation, if made, and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be posted on the State and County Procurement Website. All plan holders will be notified of any addendum issued.

Section 2.8 - Proposal Guaranty. Delete second sentence of first paragraph in its entirety and replace with the following. "The proposal guaranty shall be equal to five percent (5%) of the total amount of the bid submitted."

Add new paragraph after the first paragraph. "A certificate of deposit, cashier's check or certified check may be utilized only to a maximum of \$100,000 per issuing financial institution. The bid deposits shall conform to the requirements of HRS 103D-323, HAR 3-122-222 and HAR 3-122-233."

Section 3.5 - Requirement of Contract Bond. Add to first paragraph, "The performance and payment bonds shall each be in an amount equal to one hundred percent of the amount of the contract price including amounts estimated to be required for extra work, the bond amount shall be as designated in the bid documents, (Section 103D-324, Hawai'i Revised Statutes and Section 3-122-224 of the Hawai'i Administrative Rules."

Performance and Payment bonds will not be required if the successful bid is below the small purchase threshold amount of HRS Section 103D-324 and 103D-305 in effect at the time of award (currently the threshold is \$25,000), except as may otherwise be required by law to accommodate those cases where some federal requirement may apply.

Section 4 – Scope of Work. Amended to adopt and include by reference the language of Hawai'i Administrative Rules, Sections: 3-125-4, Changes for Construction Contracts; 3-125-10, Variations in Estimated Quantities for Construction Contracts; 3-125-13, Price Adjustment for Construction.

Section 5.4 – Coordination of Contract Documents. Last sentence of paragraph 2 of section 5.4 was actually highlighted. When copies were made over the years it inadvertently blacked out in the GRC. Add the following sentence as the last sentence to the second paragraph. "In case of discrepancy, figured dimensions shall govern over scaled dimensions; technical specifications shall govern over plans; special provisions and proposal shall govern over the General Requirements and Covenants."

Section 5.6 (a) - Plans and Specification. Delete Section 5.6 (a) in its entirety and replace with the following:

Plans and Specifications – The Contractor will be supplied with one (1) set of the plans and specifications for this project in electronic format (file types, media and means as determined appropriate by the County) upon successful execution of the contract. Physically printed sets of the plans and specification will not be provided. Likewise, all addendum, post contract documents and similar revision will be issued in electronic format only. When required by an applicable county or state permit (such as Building, Plumbing, Electrical, Grubbing, Grading, Work in the Right of Way, etc.), the requisite set(s) of plans and/or specifications will be furnished as required by the applicable permit(s).

The Contractor shall have available on the project site, at all times, one copy of each said plans and specifications and keep them in clean, neat and legible condition at all times. The Contractor shall maintain the plans and specifications at the project site current, incorporating all addenda, post-contract modifications, and supplemental information issued by the County.

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer and with other contractors in very possible way."

Section 5.6 (f) - Field Office. The Contractor shall furnish a field office only when specified in the proposal or construction plans.

Section 5.6 (g) - Project Sign. Delete Section 5.6(g) in its entirety and replace with the following:

“When specified in the proposal or construction plans, the Contractor shall furnish and install two (2) project signs. One sign shall contain the project information and the second sign shall contain a full color rendering of the proposed facility. In general, if the project is for a repair maintenance or renovation of an existing facility, then only one (1) project informational sign will be required. Sign(s) shall be constructed of 4' x 8' x 3/4" exterior grade plywood mounted at a minimum of 7 feet from grade to bottom edge of sign. Graphic content for each sign shall be provided by the owner to the contractor in digital format.

The Contractor shall submit a layout of the sign before proceeding with the work and shall make all requested changes. The approved project sign(s) shall be rigidly and firmly braced and securely attached to supports and shall be so constructed to withstand wind pressure of not less than 30 pounds per square foot of area subject to pressure.”

Section 6.2 - Substitution of Materials and Equipment. Line 9 of (a) Before Bid Opening: - Change “ten (10)” to “fourteen (14)”. Paragraph 6 shall be revised to read: “This addendum shall be posted no less than five (5) days before the opening date of bids, not including the date of bid opening.”

Section 7.1 - Laws to be Observed.

Delete 7.1(g) Preference for American Products (Section 103-24) its entirety.

Add the following to end of the introductory paragraph: “The following subsections are meant to summarize and incorporate the statutes referenced in their entirety. Contractor is responsible to check for any amendments to the statutes referenced, and comply with the statutes as amended.”

Add new subsections (m), (n), (o) and (p) to read:

“(m) Prompt payment - (Section 3-125-23, Hawai'i Administrative Rules)

(a) Any money paid to a contractor shall be disbursed to subcontractors within 10 days after receipt, in accordance with the subcontract; if the subcontractor has met all terms and conditions of the subcontract and there are no bona fide disputes on which the procurement officer has withheld payment.

(b) Upon final payment to the contractor, full payment to the subcontractor, including retainage, shall be made within 10 days after receipt of the money; if there are no bona fide disputes over the subcontractor's performance under the subcontract.

(c) Where a subcontractor has provided evidence to the contractor of satisfactorily completing all work under their subcontract and has provided a properly documented final payment request (as described in the next paragraph), and

(1) Has provided to the contractor an acceptable performance and payment bond for the project executed by a surety company authorized to do business in the state, as provided in HRS Section 103-32.1; or

(2) The following has occurred:

(A) 90 days has elapsed after the day on which the last of the labor was done, and the last of the material was furnished or supplied, and there has been no written notice of a claim given to contractor and surety under section 103D-324; and

(B) The subcontractor has provided the contractor

(i) an acceptable release of retainage bond, executed by a surety company authorized to do business in the state, for not more than twice the amount being retained or withheld by the contractor; or

(ii) Any other bond acceptable to the contractor; or

(iii) Any other form of mutually acceptable collateral,

THEN, All sums retained or withheld from a subcontractor and otherwise due to the subcontractor for satisfactory performance under the subcontract shall be paid by the procurement officer to the contractor and subsequently, upon receipt from the procurement officer, by the contractor to the subcontractor within the applicable time periods specified in subsection (b) and section 103-10. If the procurement officer or the contractor fails to pay in accordance with this section, a penalty of 1.5 % per month shall be imposed upon the outstanding amounts due that were not timely paid by the responsible party. The penalty may be withheld from future payment due to the contractor, if the contractor was the responsible party. If a contractor has violated subsection (b) 3 or more times within 2 years of the first violation, the contractor shall be referred by the procurement officer to the contractor license board for action under section 444-17(14).

(d) A properly documented final payment request from a subcontractor under subsection (c) shall include:

(1) Substantiation of the amounts requested;

(2) A certification by the subcontractor, to the best of the subcontractor's knowledge and belief, that:

(a) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the subcontract;

(b) The subcontractor has made payments due to its subcontractors and suppliers from previous payments received under the subcontract and will make timely payments from the proceeds of the payment covered by the certification, in accordance with their subcontract agreements and the requirements of this section; and

(c) The payment request does not include any amounts that the subcontractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of their subcontract; and

(3) The submission of documentation confirming that all other terms and conditions required under the subcontract agreement have been fully satisfied.

The procurement officer shall return any final payment request that is defective to the contractor within seven days after receipt, with a statement identifying the defect.

(e) In the case of a construction contract, a payment request made by a contractor to the procurement officer that includes a request for sums that were withheld or retained from a subcontractor and are due to a subcontractor may not be approved under subsection (c) unless the payment request includes:

(1) Substantiation of the amounts requested;

(2) A certification by the contractor, to the best of the contractor's knowledge and belief, that:

(a) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;

(b) The subcontractor has made payments due to its subcontractors and suppliers from previous payments received under the contract and will make timely payments from the proceeds of the payment covered by the certification, in accordance with their subcontract agreements and the requirements of this section; and

(c) The payment request does not include any amounts that the contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of their subcontract.

The procurement officer shall return any final payment request that is defective to the contractor within seven days after receipt, with a statement identifying the defect.

(f) This section shall not be construed to impair the right of a contractor or a subcontractor at any tier to negotiate and to include in their respective subcontracts provisions that provide for additional terms and conditions that are requested to be met before the subcontractor shall be entitled to receive final payment under subsection (c) of this section; provided that any such payments withheld shall be withheld by the procurement officer.”

“(n) Contract Clauses and their Administration - (Section 103-10.5, Hawai'i Revised Statutes) - Adjustments in price permitted by rules adopted under HRS Section 103D-501(a) shall be computed in one or more of the following ways:

(1) By agreement on a fixed price adjustment before commencement of the pertinent performance;

(2) By unit prices specified in the contract or subsequently agreed upon before commencement of the pertinent performance;

(3) By the costs attributable to the events or situations under such clauses with adjustment of profit or fee, all as specified in the contract or subsequently agreed upon before commencement of the pertinent performance;

(4) In any other manner as the contracting parties may mutually agree upon before commencement of the pertinent performance; or

(5) In the absence of agreement by the parties:

(A) For change orders with value not exceeding \$50,000, by documented actual costs of the work, allowing for 20% of the actual costs for overhead and profit on work done directly by the contractor and 10% on any subcontractor's billing to the contractor for the contractor's overhead and profit. There shall be no cap on the total cost of the work if this method is used. A change order shall be issued within 15 days of submission by the contractor of proper documentation of completed force account work, whether periodic (conforming to the applicable billing cycle) or final. The procurement officer shall return any documentation that is defective to the contractor within 15 days after receipt, with a statement

identifying the defect; or

(B) For change orders with value exceeding \$50,000 by a unilateral determination by the governmental body of the costs attributable to the events or situations under clauses with adjustment of profit or fee, all as computed by the governmental body in accordance with applicable sections of the rules adopted under section 103D-601 and subject to the provisions of Part VII of HRS Chapter 103D. When a unilateral determination has been made, a unilateral change order shall be issued within 10 days. Costs included in the unilateral change order shall allow for 20% of the actual costs for overhead and profit on work done directly by the contractor and 10% on any subcontractor's billing to the contractor for the contractor's overhead and profit. Upon receipt of the unilateral change order, if the contractor does not agree with any of the terms or conditions, or the adjustment or nonadjustment of the contract time or contract price, the contractor shall file a notice of intent to claim within 30 days after the receipt of the written unilateral change order. Failure to file a protest within the time specified shall constitute agreement on the part of the contractor with the terms, conditions, amounts, and adjustment or nonadjustment of the contract price set forth in the unilateral change order.

A contractor shall be required to submit cost or pricing data if any adjustment in contract price is subject to the provisions of HRS Section 103D-312. A fully executed change order or other document permitting billing for the adjustment in price under any method listed in paragraphs (1) through (4) above shall be issued within 10 days after agreement on the method of adjustment.”

“(o) Hawai'i Apprenticeship Preference (Section 103-55.6, Hawai'i Revised Statutes) - In order to comply with the intent of this law the Bidder must complete the form provided in the specifications which lists the trades the Bidder will employ to perform the work. The Contractor must also submit monthly certifications of compliance.”

“(p) Employment of State Residents on Construction Procurement Contracts, Chapter 103B, Hawai'i Revised Statutes, as Amended by Act 192, Session Laws of Hawai'i [SLH] 2011 (eff. July 1, 2011).

In accordance with State of Hawai'i, Department of Accounting and General Services' COMPTROLLER'S MEMORANDUM NO. 2011-18, dated July 25, 2011, the following is hereby incorporated:

(1) Definitions for terms used in HRS Chapter 103B as amended by Act 192, SLH 2011:

- (A) "Contract" means contracts for construction under 103D, HRS.
- (B) "Contractor" has the same meaning as in Section 103D-104, HRS, provided that "contractor" includes a subcontractor where applicable.
- (C) "Construction" has the same meaning as in Section 103D-104, HRS.
- (D) "General Contractor" means any person having a construction contract with a governmental body.
- (E) "Procurement Officer" has the same meaning as in Section 103D-104, HRS.
- (F) "Resident" means a person who is physically present in the State of Hawai'i at the time the person claims to have established the person's domicile in the State of Hawai'i and shows the person's intent is to make Hawai'i the person's primary residence.
- (G) "Shortage trade" means a construction trade in which there is a shortage of Hawai'i residents qualified to work in the trade as determined by the Department of Labor and Industrial Relations.

(2) HRS Chapter 103B as amended by Act 192, SLH 2011 – Employment of State Residents Requirements:

- (A) A Contractor awarded a contract shall ensure that Hawai'i residents comprise not less than 80% of the workforce employed to perform the contract work on the project. The 80% requirement shall be determined by dividing the total number of hours worked on the contract by Hawai'i residents, by the total number of hours worked on the contract by all employees of the Contractor in the performance of the contract. The hours worked by a Subcontractor of the Contractor shall count toward the calculation for this section. The hours worked by employees within shortage trades, as determined by the Department of Labor and Industrial Relations (DLIR), shall not be included in the calculation for this section.
- (B) Prior to award of a contract, an Offeror/Bidder may withdraw an offer/bid without penalty if the Offeror/Bidder finds that it is unable to comply with HRS Chapter 103B as amended by Act 192, SLH 2011.
- (C) Prior to starting any construction work, the Contractor shall submit the subcontract dollar amount for each of its Subcontractors, in a form and manner acceptable to the Director.

(D) The requirements of this section shall apply to any subcontract of \$50,000 or more in connection with the Contractor; that is, such Subcontractors must also ensure that Hawai'i residents comprise not less than 80% of the Subcontractor's workforce used to perform the subcontract.

(E) The Contractor, and any Subcontractor whose subcontract is \$50,000 or more, shall comply with the requirements of HRS Chapter 103B as amended by Act 192, SLH 2011.

i. Certification of compliance shall be made in writing under oath by an officer of the General Contractor and applicable Subcontractors and submitted with the final payment. The Certificate shall be as provided by the Director.

ii. The certification of compliance shall be made under oath by an officer of the company by completing a "Certification of Compliance for Employment of State Residents" form and execute the Certificate before a licensed notary public.

iii. In addition to the certification of compliance as indicated above, the Contractor and Subcontractors shall maintain records such as certified payrolls for laborers and mechanics who performed work at the site and time sheets for all other employees who performed work on the project. These records shall include names, addresses and number of hours worked on the project by all employees of the Contractor and Subcontractor who performed work on the project to validate compliance with HRS Chapter 103B as amended by Act 192, SLH 2011. The Contractor and Subcontractors shall retain these records and provide access to the County and State for a minimum period of four (4) years after the final payment, except that if any litigation, claim, negotiation, investigation, audit or other action involving the records has been started before the expiration of the four-year period, the Contractor and Subcontractors shall retain the records until completion of the action and resolution of all issues that arise from it, or until the end of the four-year period, whichever occurs later. Furthermore, it shall be the Contractor's responsibility to enforce compliance with this provision by any Subcontractor.

(F) A General Contractor or applicable Subcontractor who fails to comply with this section shall be subject to any of the following sanctions:

i. With respect to the General Contractor, withholding of payment on the contract until the Contractor or its Subcontractor complies with HRS Chapter 103B as amended by Act 192, SLH 2011.

ii. Proceedings for debarment or suspension of the Contractor or Subcontractor under Hawai'i Revised Statutes §103D-702.

(3) Conflict with Federal Law: This section shall not apply if the application of this section is in conflict with any federal law, or if the application of this section will disqualify the County from receiving federal funds or aid.”

Section 7.8 - Contractor's Responsibility for Work. Amend the entire section to read: “7.8 CONTRACTOR'S RESPONSIBILITY FOR WORK – Until acceptance by the Director of any part of all the construction as provided for in these specifications, the construction shall be under the charge and care of the Contractor, who shall take every necessary precaution against injury or damage to any part of the work by the action of the elements or from any other cause whatsoever whether arising from the execution or from the non-execution of the work. Before its completion and acceptance by the Director, the Contractor shall rebuild, repair, restore and make good at its own expense all injuries or damage to any portion of the work occasioned by any of the above causes; provided, however, the Contractor shall not be responsible for any injury or damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to, war, blockage, revolution, insurrection, civil commotion, riot, mobilization, strike, plague, epidemic, fire, flood, Act of Government or public enemy and Acts of God, such as earthquakes, tsunami and lava flows. The Contractor shall be responsible for coordinating the work of all trades on the job and shall be liable for the acts of subcontractors as the prime Contractor on the project.”

Section 7.12 - Insurance. Revise (c) Minimum Coverage to read, “Public Liability and Property Damage - Not less than \$500,000 public liability (Bodily Injury) and not less than \$100,000 property damage insurance during the life of this contract.”

Section 7.12(c) of the General Requirements and Covenants of the Department of Public Works, County of Hawai'i, relating to Insurance is amended to read as follows:

“(c) Public Liability and Property Damage Insurance - The Contractor shall take out adequate public liability and property damage insurance as determined by the Director to protect such Contractor and all of his subcontractors from claims for damages for personal injury and accidental death which may arise from operations under this contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by either of them. The policies shall not contain any clause to the effect that the insurer is not liable on account of any accident out of work performed by subcontractors or their employees. In addition to the above requirements, the policies shall name the County of Hawai'i as an additional

insured.”

Add new subsection (d) to read:

“(d) Modifications or Cancellations of Insurance Policy – The Contractor is required to notify the County at least sixty (60) days prior to the Contractor seeking to modify or cancel any of the insurance policies required by this contract. The Contractor is also required to notify the County immediately of any modification or cancellation of any required insurance policy that is initiated by the insurance carrier.”

Section 8 – Prosecution & Progress. Amended to adopt and include by reference the language of Hawai'i Administrative Rules, Sections: 3-125-7, Suspension of Work for Construction Contracts; 3-125-11, Differing Site Conditions for Construction Contracts; 3-125-13, Price Adjustment for Construction Contracts; 3-125-14, Novation or Change of Name; 3-125-16, Claims Based on Oral Directives; 3-125-18, Default, Delay, and Time Extensions for Construction Contracts; 3-125-20, Liquidated Damages for Construction Contracts; 3-125-22, Termination for Convenience of Construction Contracts; 3-125-23, Prompt Payment by Contractors to Subcontractors; 3-125-24, Remedies; 3-126-31, Disputes Clause.

Section 8.11 – Failure to Complete the Work on Time. Replace this section, in its entirety, with the following:

“It is mutually agreed by and between the parties hereto that time shall be an essential part of this contract and that in the case of the failure on the part of the Contractor to complete its contract within the time specified and agreed upon, in the contract and in all supplements thereto, in addition to all other remedies for breach that may be available to the County of Hawai'i, the County of Hawai'i will be damaged thereby and the Contractor shall pay liquidated damages to the County in the amount specified in the Contract. The amount of said damages, being difficult to determine definitely, shall be the sum set determined by the County as appropriate for the scope of the project and the projected extent of damages as set forth in the Proposal for every calendar day's delay in finishing the work in excess of the contract duration agreed to. The Contractor hereby agrees that said sum shall be deducted from monies due the Contractor under the contract, or, if no money is due the Contractor, the Contractor hereby agrees to pay to the County of Hawai'i as liquidated damages, and not by way of penalty, such total sum as shall be due for such delay, computed as aforesaid.

a. Liquidated Damages for Failure to Complete Portion(s) of the Work within a Project with Predetermined Time Constraints: The Contractor shall complete the specific portions of work within the Contract that have predetermined completion dates or time periods

separate from the overall contract's duration. When the Contractor fails to complete such portion(s) of work, the Contractor shall pay liquidated damages to the County of Hawai'i of one hundred percent (100%) of the amount of liquidated damages established for failure to substantially complete the work within the contract time.

b. Liquidated Damages for Failure to Complete the Punchlist: The Contractor shall complete the work identified on all punchlists created after substantial completion, within the contract time and any extensions thereof.

When the Contractor fails to complete the work of such punchlists within the contract time or any extension thereof, the Contractor shall pay liquidated damages to the County of Hawai'i of fifty percent (50%) of the amount of liquidated damages established for failure to substantially complete the work within the contract time. Liquidated damages shall not be assessed for the period between:

i. The Project Inspector's verification of the work being at a state ready for Final Inspection, (also referred to as "Substantial Completion of the work") and the time the punchlist is delivered to the Contractor; and

ii. The date of the Final Inspection that results in Final Acceptance and the receipt by the Contractor of the written Notice of the Final Acceptance.

c. Liquidated Damages Upon Termination: If the county terminates the contract on account of the contractor's default, liquidated damages shall be assessed against the defaulting Contractor and its Surety until final completion of the work is accomplished by whatever alternate means selected or enacted by the County of Hawai'i.

d. Actual Damages Recoverable if Liquidated Damages Deemed Unenforceable: In the event a court of competent jurisdiction holds that any liquidated damages assessed pursuant to this contract are unenforceable, the County of Hawai'i will be entitled to recover its actual damages for the Contractor's failure to complete the work, or any designated portion thereof within the time set by the contract."

Section 8.12 - Termination of Contract. Add new paragraph to the end of the section as follows:

"It is understood and agreed that any services to be provided in accordance with the terms of this contract may be terminated immediately, in whole or in part, upon a finding by the County or any court of competent jurisdiction that these services must be provided by public employees pursuant to Civil Service or other law. It is further understood, that should such a

finding be made, the County will not be liable under this contract for any resulting damages, and such a termination will not be considered a breach of this contract.”

Section 9.4 - Payment for Additional Work. Revise (b) Force-Account Work,

item 1, delete "15%" in line nine and replace with "20%.”

item 2, delete "15%" in line five and replace with "20%.”

item 3, paragraph one to read: "For any machinery or special equipment other than small hand operated, unautomatic tools shall be paid for at the rental rates agreed upon in writing prior to any work being done. The rental rates are specified in the current edition of 'Rental Rate Blue Book for Construction Equipment' published by EquipmentWatch with the following modifications:"

item 3, paragraph six, delete "15%" in line two and replace with "20%.”

Section 9.6 - Partial Payments. Delete the last two sentences, and add: “

It is provided, however, that after 50% of the contract is completed and progress is satisfactory, no additional sum shall be withheld; provided further that if progress is not satisfactory, the procurement officer may continue to withhold, as retainage, sums not exceeding 5% of the amount due the contractor. The retainage shall not include sums deducted as liquidated damages from moneys due or that may be come due the contractor under the contract.

Where a subcontractor has provided evidence to the contractor of:

- (1) A valid performance and a payment bond for the project that is acceptable to the contractor and executed by a surety company authorized to do business in this State;
- (2) Any other bond acceptable to the contractor; or
- (3) Any other form of collateral acceptable to the contractor, the retention amount withheld by the contractor from its subcontractor shall be not more than the same percentage of retainage as that of the contractor. This subsection shall also apply to the subcontractors who subcontract work to other subcontractors.

Contractors or subcontractors at any tier have the right to negotiate, and include in their subcontract, provisions that:

- (1) Permit the contractor or subcontractor to retain, without cause, a specified percentage of no more than 10% of each progress payment otherwise due to a subcontractor for

satisfactory performance under the subcontract, without incurring any obligation to pay a late payment interest penalty, in accordance with terms and conditions agreed to by the parties to the subcontract, giving such recognition as the parties deem appropriate to the ability of a subcontractor to furnish a performance bond and a payment bond, subject however to the limitations of the previous paragraph; and

(2) Permit the contractor or subcontractor to make a determination that part or all of the subcontractor's payment request may be withheld by the procurement officer in accordance with the subcontract agreement, without incurring any obligation to pay interest or a late payment penalty if:

(A) A notice conforming to the standards of the next paragraph has been previously furnished to the subcontractor; and

(B) A copy of said notice has been furnished to the procurement officer.

A written notice of any withholding shall be issued to a subcontractor, with a copy to the procurement officer, specifying the following:

(1) The amount to be withheld;

(2) The specific causes for the withholding under the terms of the subcontract; and

(3) The remedial actions to be taken by the subcontractor to receive payment of the amounts withheld.

A contractor may not request payment from the procurement officer of any amount withheld or retained in accordance with the foregoing subcontract retainage provisions until the contractor has certified to the procurement officer that the subcontractor is entitled to the payment of that amount.

The foregoing shall not be construed to require payment to subcontractors of retainage released to a contractor pursuant to an agreement with the procurements officer pursuant to HRS Section 103-32.2."

Section 9.7 - Final Payment. Add the following paragraph:

"Where Federal funds are involved, it is covenanted and agreed by and between the parties that the Federal share of funds for this project will be paid the Contractor only out of the Federal funds when the payment share of the Federal funds shall be received from the Federal

Government, and that this contract shall not be construed to be a general agreement by the County of Hawai'i to pay said portions of the Federal payment share at all events out of any funds other than those which may be so received from the Federal Government; provided that if the Federal share of the cost of the project is not immediately forthcoming from the Federal Government, the County may advance the Contractor such share of the cost of the completed portions of the work for which funds have been appropriated and allotted by the County."

7. NONDISCRIMINATION IN COUNTY CONTRACTS (County Executive Order No. 142 of February 11, 2005):

During the performance of this contract, the Contractor agrees as follows:

a. The Contractor shall comply with all requirements set forth in Federal and State laws and regulations relative to Title VI of the Civil Rights Act of 1964, as amended, which provide for nondiscrimination in Federally assisted programs.

b. The Contractor shall not discriminate against any employee or applicant for employment because of race, ancestry/national origin, religion, color, disability, age, marital status, military status, veteran's status, sexual orientation, lactation, arrest and court record, citizenship, or any other classification protected by state or federal law. The Contractor shall assure that applicants are employed and that employees are treated during employment without regard to race, ancestry/national origin, religion, color, disability, age, marital status, veteran's status, sexual orientation, lactation, arrest and court record, citizenship, or any other classification protected by state or federal law. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training. The Contractor agrees to post in conspicuous places notices to be provided by the contracting officer setting forth the provisions of the nondiscrimination clause.

c. The Contractor shall in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants shall receive consideration for employment without regard to race, ancestry/national origin, religion, color, disability, age, marital status, military status, veteran's status, sexual orientation, lactation, arrest and court record, citizenship, or any other classification protected by state or federal law.

d. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract, this contract may be canceled or suspended in whole or in part and the Contractor may be declared ineligible for further County contracts until such time that the Contractor by satisfactory evidence, in good faith, ceases such discriminatory practices or

procedures.

e. The Contractor who subcontracts any portion of the contract shall assure the County that such subcontractor shall abide by the nondiscrimination provisions stated herein and agrees that any subcontractor who is found in violation of such provisions shall subject the principal Contractor's contract with the County to be terminated or suspended pursuant to Subsection d. above.

f. The County may direct any bidder, prospective Contractor or subcontractor to submit a statement in writing signed by an authorized officer, agent, or employee of the contracting party that the signer's practices and policies do not discriminate on the grounds of race, ancestry/national origin, religion, color, disability, age, marital status, military status, veteran's status, sexual orientation, lactation, arrest and court record, citizenship, or any other classification protected by state or federal law, and that the terms and conditions of employment under the proposed contract shall be in accordance with the purposes and provisions stated herein.

8. REFERENCES:

Specifications or standard plans used as reference include but are not limited to the following:

- a. Standard Specifications for Public Works Construction (September, 1986).
- b. County of Hawai'i, Standards for Water System, 2002.
- c. County of Hawai'i, Department of Public Works Standard Details (September, 1984).

9. PRICE ADJUSTMENT CLAUSE:

The Director will not consider price adjustments for this project.

10. PREFERENCES:

(A) Preference for Hawai'i Products. The bidder's attention is directed to Hawai'i Revised Statutes, Sections 103D-1001, 103D-1001.5, 103D-1002 and 103D-1002.5, and Hawai'i Administrative Rules, Title 3 (Department of Accounting and General Services), Subtitle 11 (Procurement Policy Board), Chapter 124 (Preferences), Subchapter 1 (Hawai'i Products) which provide for a preference to be applied for the incorporation of certified Hawai'i products, meeting the project's specifications, in its bid.

When a product, certified as a Hawai'i Product, is available and meets the project's specifications (prequalified or as an approved substitution request, as applicable), such product may be used in the performance of the project.

Bidders shall declare their intention(s) to claim the preference for Hawai'i Products on forms furnished by the County for each individual project being bid. When certified Hawai'i products will be used in its bid, the Bidder shall clearly designate the product(s), its(their) corresponding supplier and other information on the form furnished by the County. It is the Bidder's sole responsibility to ensure the form is completely and accurately filled-out prior to submittal.

Any Bidder that claims the preference for Hawai'i products in its bid and is awarded a contract are required to immediately notify the Director in writing of any change that materially affects its ability to supply the Hawai'i products incorporated in its bid. The parties shall enter into discussions for the purposes of revising the contract or terminating the contract for convenience.

At any time during the performance of the work of the Project, the Director may request, and the Contractor shall immediately provide, satisfactory proof of the incorporation of the Hawai'i Products it claimed preference for in its Bid. Proof shall be provided in the form of invoices, bills of lading or other forms satisfactory to the Director. The burden of proof shall rest solely with the Contractor and all costs associated with furnishing such shall be borne by the Contractor at no additional cost to the County. If the Director finds that, in the performance of the contract, there has been a failure to comply with the HRS Sections noted above, the contract shall be voidable and the findings shall be referred for debarment or suspension proceedings under section 103D-702, H.R.S.

Any contract awarded or executed in violation of Section 103D-1002, HRS, shall be void and no payment shall be made on account of such contract.

The preference for Hawai'i products shall not apply whenever its application is in conflict with conditions for the County, or any subdivision thereof, to receive federal funds or aid.

(B) Preference for Bidders in Apprenticeship Programs. The Bidder's attention is directed to Section 103-55.6 of the Hawai'i Revised Statutes, as enacted by S.B. 19, Act 17, SLH 2009, which provides for a preference for bidders who participate in registered apprenticeship programs. This preference is in the form of a five percent (5%) bid adjustment applied to the Bidder's bid amount and is applicable on public works construction projects with estimated values of \$250,000 or greater, unless it is in conflict with any Federal Law or if it would

disqualify any County Agency from receiving federal funds or aid.

Upon applying for the Hawai'i Apprenticeship Preference, the Contractor shall certify each month that work is being conducted on the project, that it continues to be a participant in the relevant apprenticeship program for each trade it employs. Said monthly certification shall be made on MONTHLY REPORT OF CONTRACTOR'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17 (FORM 2) form issued by the DLIR. Failure or refusal of the contractor to submit its monthly certification forms, or at any time during the construction of the project, cease to be a party to a registered apprenticeship agreement for each apprenticeable trade the contractor employs, the Contractor will be subject to the sanctions afforded by law, as determined by the Director."

(C) Preference for Recycled Products. Recycled Products shall not apply to this project.

(D) Evaluation Procedures and Contract Award. For bid evaluation, the Director will evaluate the bids by applying the applicable preferences selected by the bidders according to the contract. The Director will base the calculations for adjustments upon the original bid prices offered. If more than one preference applies, the evaluated bid price shall be the sum of the original bid price plus applicable preference adjustments.

The Director will award the contract to the responsible bidder submitting the responsive bid with the lowest evaluated bid price.

The amount of the contract awarded shall be the original bid price offered exclusive of any preference.

11. FORUM SELECTION CLAUSE:

No action or proceeding involving this contract shall be commenced by either party except in the Circuit or District Courts of the Third Circuit, County of Hawai'i, State of Hawai'i; nor shall any action commenced in such court be removed or transferred to any other state or federal court.

12. RESPONSIBILITY OF OFFERORS

Offeror is advised that if awarded a contract under this solicitation, Offeror shall, upon award of the contract, furnish proof of compliance with the requirements of §103D-310(c), HRS:

1. Chapter 237, tax clearance;
2. Chapter 383, unemployment insurance;

3. Chapter 386, workers' compensation;
4. Chapter 392, temporary disability insurance;
5. Chapter 393, prepaid health care; and
6. One of the following:
 - a. Be registered and incorporated or organized under the laws of the State, hereinafter referred to as a "Hawai'i business"; **or**
 - b. Be registered to do business in the State, hereinafter referred to as a "compliant non-Hawai'i business."

Refer to the Award of Contract provision herein for instructions on how to comply with the above requirements.

BID PREPARATION

Proposal. Offeror is requested to submit its offer using Offeror's exact legal name as registered with the Department of Commerce and Consumer Affairs, if applicable; and to indicate exact legal name in the appropriate space on the Proposal. Failure to do so may delay proper execution of the contract.

The authorized signature shall be an original signature in ink. If unsigned or the affixed signature is a facsimile or a photocopy, the offer shall be automatically rejected unless accompanied by other material, containing an original signature, indicating the Offeror's intent to be bound.

Hawai'i business. A business entity referred to as a "Hawai'i business" is registered and incorporated or organized under the laws of the State of Hawai'i.

Compliant non-Hawai'i business. A business entity referred to as a "compliant non-Hawai'i business" is not incorporated or organized under the laws of the State of Hawai'i but is registered to do business in the State.

AWARD OF CONTRACT

Method of Award. Award, under an IFB, shall be to the responsive, responsible offeror submitting the lowest bid. If an award is made for an RFP, it shall be to the responsive, responsible Offeror whose proposal is determined in writing to provide the best value to the County taking into consideration price and the evaluation criteria of the RFP.

Responsibility of Lowest Responsive Bidder.

Reference §3-122-112, HAR, Responsibility of Offerors. If compliance documents have not been submitted to the purchasing agency prior to award, the lowest responsive Offeror shall produce documents to the procurement officer to demonstrate compliance with this section.

HRS Chapter 237 tax clearance requirement for award. Instructions are as follows:

Pursuant to §103D-328, HRS, lowest responsive Offeror shall be required to submit a tax clearance certificate issued by the Hawai'i State Department of Taxation (DOTAX) and the Internal Revenue Service (IRS). The certificate shall have an original green certified copy stamp and shall be valid for six (6) months from the most recent approval stamp date on the certificate. It must be valid on the date it is received by the purchasing agency.

The tax clearance certificate shall be obtained on the State of Hawai'i, DOTAX *TAX CLEARANCE APPLICATION* Form A-6 (Rev. 2014) which is available at the DOTAX and IRS offices in the State of Hawai'i or the DOTAX website, and by mail or fax: DOTAX Website (Forms & Information): http://tax.hawaii.gov/forms/a1_1alphalist/

DOTAX Forms by Fax/Mail: (808) 587-4242 or toll free 1-800-222-3229

Completed tax clearance applications may be mailed, faxed, or submitted in person to the Department of Taxation, Taxpayer Services Branch, to the address listed on the application. Facsimile numbers are:

DOTAX: (808) 587-1488

IRS: (808) 524-5950

The application for the clearance is the responsibility of the Offeror, and must be submitted directly to the DOTAX or IRS and not the purchasing agency. However, the tax clearance certificate shall be submitted to the purchasing agency.

HRS Chapters 383 (Unemployment Insurance), 386 (Workers' Compensation), 392 (Temporary Disability Insurance), and 393 (Prepaid Health Care) requirements for award. Instructions are as follows:

Pursuant to §103D-310(c), HRS, the lowest responsive Offeror shall be required to submit a certificate of compliance issued by the Hawai'i State Department of Labor and Industrial Relations (DLIR). The certificate is valid for six (6) months from the date of issue and must be valid on the date it is received by the purchasing agency. A photocopy of the certificate is acceptable to the purchasing agency.

The certificate of compliance shall be obtained on the State of Hawai'i, *DLIR APPLICATION FOR CERTIFICATE OF COMPLIANCE WITH SECTION 3-122-112, HAR*, Form LIR#27 which is available at <http://labor.hawaii.gov/ui/ui-forms/>. The DLIR will return the form to the Offeror who in turn shall submit it to the purchasing agency.

The application for the certificate is the responsibility of the Offeror, and must be submitted directly to the DLIR and not to the purchasing agency. However, the certificate shall be submitted to the purchasing agency.

Compliance with Section 103D-310(c), HRS. Pursuant to section

3-122-112, HAR, the lowest responsive Offeror shall be required to submit a *CERTIFICATE OF GOOD STANDING* (Certificate) issued by the State of Hawai'i Department of Commerce and Consumer Affairs, Business Registration Division (BREG). The Certificate is valid for six months from the date of issue and must be valid on the date it is received by the purchasing agency. A photocopy of the certificate is acceptable to the purchasing agency.

To obtain the Certificate, the Offeror must first be registered with the BREG. A sole proprietorship, however, is not required to register with the BREG, and therefore not required to submit the certificate. On-line business registration and the Certificate are available at <http://cca.hawaii.gov/breg/online/>. To register or to obtain the Certificate by phone, call (808) 586-2727 (M-F 7:45 to 4:30 HST). Offerors are advised that there are costs associated with registering and obtaining the Certificate.

Timely Submission of all Certificates. The above certificates should be applied for and submitted to the purchasing agency as soon as possible. If a valid certificate is not submitted on a timely basis for award of a contract, an offer otherwise responsive and responsible may not receive the award.

In lieu of the three (3) certificates referenced above, Offeror may make available proof of compliance through the State of Hawai'i, State Procurement Office. To obtain the Certificate, the Offeror must first be registered with the State of Hawai'i, Department of Accounting and General Services. The Certificate of Vendor Compliance document current within six (6) months from the date of issuance must be valid on the date it is received by the purchasing agency will also be accepted. On-line business registration and the certificate are available at <http://vendors.ehawaii.gov/hce/splash/welcome.html>

To register, go to the SPO home page at <http://www.spo.hawaii.gov> or go to <http://vendors.ehawaii.gov/hce/splash/welcome.html>. Follow the steps to register. If you have questions during the registration process, call the Hawai'i Information Consortium (HIC) staff at (808) 695-4620. Offerors are advised that there is an annual registration fee associated with registering and obtaining the Certificate.

Final Payment Requirements. Contractor is required to submit a tax clearance certificate for final payment on the contract. The State of Hawai'i, DOTAX *TAX CLEARANCE APPLICATION* Form A-6 A tax clearance certificate, not over two months old, with an original green certified copy stamp, State of Hawai'i, *DLIR APPLICATION FOR CERTIFICATE OF COMPLIANCE WITH SECTION 3-122-112, HAR*, Form LIR#27, and the *CERTIFICATE OF GOOD STANDING* (Certificate) issued by the State of Hawai'i Department of Commerce and Consumer Affairs, Business Registration Division (BREG). The Form LIR #27 and Certificate of Good Standing are valid for six months from the date of issue and must be valid on the date it is received by the purchasing agency. These three (3) certificates must accompany the invoice for final payment on the contract. In lieu of the three(3) certificates referenced above, Offeror may make available proof of compliance through the State of Hawai'i, State Procurement Office. The Certificate of Vendor Compliance document current within two (2) months from the date of issuance must be valid on the date it is received by the purchasing agency will also be accepted.

Contractor is hereby placed on notice that the State of Hawai'i may no longer be providing paper copies of the certifications listed and required herein. In light of this, the County of Hawai'i strongly suggests that Contractor register with Hawai'i Compliance Express if Contractor is not already so registered. To register for the Hawai'i Compliance Express Program go to the following website: <https://vendors.ehawaii.gov/hce/splash/welcome.html>.

Revised: 08/20/2015

SECTION 01010

SUMMARY OF WORK

1.01 PROJECT DESCRIPTION

The project includes all required labor, equipment, materials, and services related to the Hilo Wastewater Treatment Plant Outfall Repairs. Work includes the following general scope of work and it is not intended as a complete listing of all work to be performed. The Contractor shall refer to detailed plans and specifications for all work to be performed. The work includes, but is not limited to:

1. Relocate existing coral within the areas of leak repairs and pipe segment undercutting repairs.
2. Repair leak points at Sta. 8+55 and Sta. 41+46.
3. Repair segment with undercutting at Sta. 41+54 to Sta. 41+92.

Contractor shall hold two (2) public meetings to provide information to the general public of the upcoming work.

Public Meeting shall be coordinated by the Contractor. Contractor shall provide listing of proposed attendees, secure written comments from the County, prior to mailing and notification. Contractor on site project personnel (minimum project manager or superintendent and foreman) shall attend the public meeting. Major subcontractors are encouraged, but not required, to attend.

As part of the notification, the Contractor shall arrange and pay for a total of four (4) notices in the Hawaii Tribune Herald.

County will provide the meeting room at no charge to the Contractor. Contractor shall be responsible for all handouts, visual aids and other equipment needed to conduct the meeting.

Public meeting shall be paid in accordance with the Proposal Schedule.

****END OF SECTION****

SECTION 01030

PERMITS

1.01 DESCRIPTION

The Contractor shall comply with all conditions of all permits issued by regulatory agencies in connection with all work under the contract. The following permits have been received by the County and are included as part of the Contract Documents.

1. Hawaii Department of Health Section 401 Water Quality Certification.
2. United States Army Corps of Engineers Nationwide Permits #12 and #16 issued pursuant to Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act.

1.02 PAYMENT

The cost of the work associated with the compliance of the permit conditions including materials, necessary labor and equipment, relocation of coral, and all incidentals necessary to complete all work in place shall be paid on a Lump Sum basis.

****END OF SECTION****

SECTION 01300

SUBMITTALS

1.01 GENERAL

- A. Where required by the Standard Specifications for Public Works Construction, September 1986 and/or the Detailed Specifications, the Contractor shall submit descriptive information which will enable the Engineer to advise the County whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the drawings and specifications.
- B. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the specifications.

2.01 CONTRACTOR'S RESPONSIBILITIES

A. GENERAL

1. The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. Submittals shall contain all required information, including satisfactory identification of items, units, and assemblies in relation to the contract drawings and specifications. The Contractor shall verify that the material and equipment described in each submittal conform to the requirements of the specifications and drawings.
2. Unless otherwise approved by the Engineer, submittals shall be made only by the Contractor, who shall indicate by a signed stamp on the submittals, that it (the Contractor) has checked the submittals, and that the work shown conforms to contract requirements and has been checked for dimensions and relationship with work of all other trades involved.
3. If the information shows deviations from the specifications or drawings, the Contractor, by statement in writing accompanying the information shall identify the deviations and state the reason(s) for the deviation(s).
4. The Contractor shall insure that there is no conflict with other submittals and shall notify the Engineer in each case where its submittal may affect the work of another contractor or the County. The Contractor shall insure coordination of submittals among the related crafts and subcontractors.

5. The Contractor may authorize in writing a material or equipment supplier to deal directly with the Engineer or with the County with regard to a submittal. The Contractor, however, shall be responsible for the accuracy and completeness of information contained in all submittals.
6. All equipment and manufacturer's instruction submittals, including follow-up submittals, shall be submitted no later than 30 days following the Notice to Proceed nor later than necessary to procure the item or avoid schedule delays as established in the Contractor's construction schedule.

2.02 SUBMITTAL SCHEDULE

- A. The Contractor shall provide a submittal schedule to allow coordination of review of the submittals in order that work may be accomplished within the specified contract time. Submittal Schedule shall be provided within ten calendar (10) days after award of the Contract.
- B. A list of submittals required for this project is found in Appendix A herein. The list is provided as a guide for the Contractor and does not relieve the Contractor from providing any additional submittals which may be required to be provided in accordance with the Standard Specifications for Public Works Construction, September 1986 and/or the Detailed Specifications.

2.03 TRANSMITTAL PROCEDURE

A. GENERAL

1. Submittals regarding material shall be accompanied by Transmittal Form.
2. A separate form shall be used for each specific item, class of material, and items specified in separate, discrete sections, for which the submittal is required.
3. Submittals of various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.
4. A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XXX"; where "XXX" is the sequential number assigned by the Contractor.
5. Re-submittals shall have the following format:

"XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for re-submittals, i.e., A, B, or C being the 1st, 2nd, and 3rd re-submittals, respectively. Submittal 25B, for example, is the second re-submittal of submittal 25.

- B. Submittals shall be sent to the following address:

County of Hawaii
Department of Environmental Management
Wastewater Division
108 Railroad Avenue
Hilo, HI 96720

Attention: Ms. Dora Beck, P.E., Division Chief

- C. DEVIATION FROM CONTRACT

1. If the Contractor proposes to provide material which does not conform to the specifications and drawings, it shall indicate so under "deviations" on the submittal transmittal form accompanying the submittal copies. The Contractor shall prepare its reason for a change, including cost and time differential.

- D. SUBMITTAL COMPLETENESS

1. Submittals which do not have all the information required to be submitted, including deviations, shall be considered as not complying with the intent of the contract and are not acceptable and will be returned without review.

2.04 SUBMITTAL REQUIREMENTS

- A. Submit shop drawings, manufacturers' data and certificates for equipment, materials, finish and pertinent details for each system and have them approved before procurement, fabrication or delivery of the items to the job site.
- B. Partial submittals will not be acceptable and will be returned without review.
- C. Submittals shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable industry and technical society publication references and other information necessary to establish contract compliance of each item the Contractor proposes to furnish.

D. Contractor Authority:

1. Submit a written certificate, dated and signed by an authorized corporate officer of the Contractor who is either a full-time employee, principal, or a full-time partner delegated with the authority to bind the Contractor in all matters relating to its professional work of the Contractor, evidencing the performance of any portion of the work, or any testing; as a condition precedent to the acceptance of any work or the result of any test.
2. Corporate credentials shall be furnished concurrently with applicable written certificates.

E. SHOP DRAWINGS

Drawings shall be ANSI D (22 inches by 34 inches) in size, except as specified otherwise.

1. Drawings shall include floor plans, sectional views, installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, accessories, piping and other items that must be shown to assure a coordinated installation.
2. Drawings shall indicate adequate clearance for operation, maintenance and replacement of operating equipment devices. If equipment is disapproved, drawings shall be revised to show acceptable equipment and be resubmitted.
3. The Contractor shall review, stamp with his approval and submit, all Shop Drawings required by the Contract Documents or subsequently by the Engineer as covered by modifications. By approving and submitting Shop Drawings, the Contractor certifies that he has determined and verified all field measurements and obstructions, field construction criteria, materials, catalog numbers and similar data, that he has checked and coordinated each Shop Drawing with the requirements of the work and of the Contract Documents and that all equipment fits within designated spaces.
4. At the time of submission, the Contractor shall inform the Engineer in writing of any deviation in the Shop Drawings from the requirements of the Contract Documents.

F. MANUFACTURER'S DATA

1. Submittals for each manufactured item shall be manufacturers' descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves and catalog cuts.

G. STANDARDS COMPLIANCE

1. When materials or equipment must conform to the standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA) and Underwriters Laboratories (UL), proof of such conformance shall be submitted to the Engineer for approval.
2. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections.
3. For materials and equipment whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance, a certificate of compliance from the manufacturer shall be submitted for approval. The certificate shall identify the manufacturer, the product and the referenced standard and shall simply state that the manufacturer certifies that the product conforms to all requirements of the project specification and of the referenced standards listed.

H. CERTIFIED TEST REPORTS

1. Before delivery of materials and equipment, certified copies of all test reports specified in the individual section shall be submitted for approval.
2. Whenever a regulatory agency performs inspections or tests of any portion of the work, a written certificate shall be furnished by the Contractor to validate the results from the respective inspection test.

I. CERTIFICATES OF CONFORMANCE OR COMPLIANCE

1. A certification from the manufacturer attesting that materials and equipment to be furnished for this project comply with the requirements of this specification and of the reference publications shall be provided.
2. Preprinted certifications will not be acceptable; certifications shall be in the original.
3. The certification shall not contain statements that could be interpreted to imply that the product does not meet all requirements specified, such as "as good as"; "achieve the same end use and result as materials formulated in accordance with the referenced publication," "equal or exceed the service and performance of the specified material."

4. The certification shall clearly state that the product conforms to all of the requirements specified.
5. Whenever a regulatory agency performs inspections or tests of any portion of the work, a written certificate shall be furnished by the Contractor to validate the results from the respective inspection test.

J. SAMPLES AND TESTING

1. Where required in the Specifications, and as determined necessary by the Engineer, samples of materials, appliances, and fittings to be used or offered for use in connection with the work shall be submitted to the Engineer at the Contractor's expense, with information as to their sources, with all cartage charges prepaid, and in such quantities and sizes as may be required for proper examination to establish the quality or equality thereof, as applicable.
2. All samples shall be submitted in ample time to enable the Engineer to make any examinations necessary, without delay to the work. The Contractor will be held responsible for any loss of time due to his neglect or failure to deliver the required samples to the Engineer, as specified.
3. Samples also shall be taken during the course of the work, as required by the Engineer.
4. Laboratory tests and examinations that the County elects to make in its own laboratory will be made at no cost to the Contractor, except that, if a sample of any material or equipment proposed for use by the Contractor fails to meet the Specifications, the cost of testing subsequent samples shall be borne by the Contractor.
5. All tests required by the Specifications to be performed by an independent laboratory shall be made at the sole expense of the Contractor.
6. Material used in the work shall conform with the submitted samples and test certificates as approved by the Engineer.

3.01 CATEGORIES OF SUBMITTALS

A. GENERAL:

Submittals fall into two general categories; submittals for review and comment, and submittals which are primarily for information only. Submittals which are for information only are generally specified as PRODUCT DATA in Part 2 of applicable specification sections.

B. SUBMITTALS FOR REVIEW AND COMMENT:

All submittals except where specified to be submitted as product data for information only shall be submitted by the Contractor to the Officer-in-Charge for review and comment.

C. SUBMITTALS (PRODUCT DATA) FOR INFORMATION ONLY:

Where specified, the Contractor shall furnish submittals (product data) to the Officer-in-Charge for information only.

3.02 REVIEW PROCEDURE

Submittals are specified for those features and characteristics of materials, equipment, and methods of operation which can be selected based on the Contractor's judgment of their conformance to the specified requirements. Other features and characteristics are specified in a manner which enables the Contractor to determine acceptable options without submittals. The review procedure is based on the Contractor's guarantee that all features and characteristics not requiring submittals conform as specified. Review shall not extend to means, methods, techniques, sequences or procedures of construction, or to verifying quantities, dimensions, weights or gages, or fabrication processes (except where specifically indicated or required by the project manual) or to safety precautions or programs incident thereto. Review of a separate item, as such, will not indicate approval of the assembly in which the item functions.

A. When the contract requires a submittal, the Contractor shall submit the specified information as follows to the Engineer for review:

1. One reproducible original of all the submitted information.
2. Five (5) copies of all the submitted information.
3. Two (2) sets of sample materials need be submitted, unless otherwise directed by the Engineer.
4. Two (2) CD-ROMs of all submittal data shall be provided in Electronic Format (Adobe Acrobat and/or AutoCAD format) prior to final payment for the project. The electronic copy shall include all correspondence regarding the submittal and shall include signatures approving or disapproving the submittal.
 - a. Each submittal item shall be cataloged separately identified by the Submittal Number and a Brief Description of the submittal item.

B. Unless otherwise specified, within fifteen (15) calendar days after receipt of the submittal by the Engineer, the submittal shall be reviewed and the Engineer shall return two (2) copies of the marked-up reproducible original noted in A.1 above.

The reproduction original will be retained by the Engineer. The returned submittal shall indicate one of the following actions:

1. If the review indicates that the material, or work method is in general conformance with the design concept and complies with the drawings and specifications, submittal copies will be marked "NO EXCEPTIONS TAKEN". In this event the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
 2. If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED". The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. A corrected copy of the submittal shall be provided.
 3. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "AMEND AND RESUBMIT". Except at his own risk, the Contractor shall not undertake work covered by this submittal until the submittal has been revised, resubmitted and returned and marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED".
 4. If the review indicates that the material, equipment, or work method is not in general conformance with the design concept or in compliance with the drawings and specifications, copies of the submittal will be marked "REJECTED - SEE REMARKS". Submittals with deviations which have not been identified clearly may be rejected. Except at its own risk, the Contractor shall not undertake work covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED".
- C. No changes shall be made by the Contractor on re-submittals other than those changes indicated on the reviewed submittals, unless such changes are clearly described in a letter accompanying the re-submittal.

4.01 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

- A. The Engineer's review of drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of its responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Engineer or the County, or by any officer, employee, or subcontractor thereof, and the Contractor shall have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed.

- B. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" shall mean that the County has no objection to the Contractor, upon its own responsibility, using the plan or method of work proposed, or providing the material or equipment proposed.

APPENDIX A
MINIMUM SUBMITTAL LIST

Submittals for Review and Comment	
Section	Submittal Description
01000 – General Requirements	Letter delegating Responsible Agent(s) for the Contractor
01010 – Summary of Work	Public Meeting Notifications
01030 - Permits	Copy of All Permits
01060 – Safety and Health General	Copy of Drug Free Policy
01060 – Safety and Health General	Confined Entry, as required
01061 – Safety Requirement Diving	Dive Operations Plan
01310 – Construction Schedule	Construction Schedule
01380 - Photographs	Photographs
01900 – Coast Guard Regulations	Copy of Correspondence for project files
02311 – Geotextile Filter Fabric	Product Data, Certificate of Compliance, Samples
02313 – Concrete Fabric Forms	Product Data, Certificate of Compliance, Samples, Concrete Mix Design, Reinforcing Bars, Concrete Pumping Equipment
03313 – Grout Injection	Product Data, Certificate of Compliance

Above list is provided as a guide for the Contractor and does not relieve the Contractor from providing any additional submittals which may be required to be provided in accordance with the Standard Specifications for Public Works Construction, September 1986 and/or the Detailed Specifications.

END OF SECTION

SECTION 01810

INFORMATION AVAILABLE TO BIDDERS

1.01 The following information have been made available to Bidders as reference documents:

- A. Hilo Outfall Pipeline Inspection Report, April 20, 2012.
- B. Hilo Outfall Pipeline Inspection Observation Video, April 20, 2012.
- C. An Assessment of the Marine Biological Community Structure at the Site of the Hilo Wastewater Treatment Plant Ocean Outfall Repairs, May 14, 2013.
- D. Investigation of Leaks in the Hilo Wastewater Treatment Plant Ocean Outfall Pipe, December 26, 2014.

1.02 Bidders are advised that the above listed information is being provided to the Bidders as reference materials only for their use in formulating their bids. Bidders shall be solely responsible in making their own independent determination and interpretation regarding the condition of the existing outfall.

****END OF SECTION****

SECTION 02313

CONCRETE FABRIC FORM

PART 1 - GENERAL

1.01 DESCRIPTION

The work shall consist of installing a concrete fabric form and fabric form mattress structure by positioning specially woven, double-layer synthetic fabric forms on the surface to be protected and filling them with a pumpable, fine aggregate concrete (structural grout) in such a way as to form armor units of required thickness, weight and configuration.

1.02 SCOPE OF WORK

The Contractor shall furnish all labor, materials, equipment, and incidentals required to perform all operations in connection with the installation of the Concrete Fabric Form and Concrete Fabric Form Mattress in accordance with the lines, grades, design, and dimensions shown on the Plans and as specified herein.

1.03 SUBMITTALS

Submit the following in accordance with Section 01300:

- A. At least two weeks prior to shipment, submit manufacturer's certificate of compliance and physical property data sheet indicating that requirements for materials and manufacture are in conformance as specified.
- B. For informational purposes only, submit manufacturer's printed installation instructions.

PART 2 - PRODUCTS

2.01 FINE AGGREGATE CONCRETE

Fine aggregate concrete shall consist of a proportioned mixture of Portland cement, fine aggregate (sand) and water. Fine aggregate concrete shall conform to the requirements of Section 39, "Portland Cement Concrete" of the STANDARD SPECIFICATIONS. The consistency of the fine aggregate concrete delivered to the concrete pump shall be proportioned and mixed as to have an efflux time of 9-12 seconds when passed through the 0.75 inch orifice of the standard flow cone that is described in ASTM C 939. Pozzolan, fluidifier or pumping aid conforming to this Specification may be used at the option of the Contractor. The mix shall exhibit a compressive strength of minimum 2,000 psi at 28 days, when made and tested in accordance with ASTM C 31 and C 39.

- A. Portland cement shall conform to ASTM C 150, Type I or Type II.

- B. Fine aggregate shall conform to ASTM C 33, except as to grading. Aggregate grading shall be reasonably consistent and shall not exceed the maximum size which can be conveniently handled with available pumping equipment.
- C. Water for mixing shall be clean and free from injurious amounts of oil, acid, salt, alkali, organic matter or other deleterious substances.
- D. Pozzolan, if used, shall conform to ASTM C 618, Class C, F or N.
- E. Plasticizing and air entraining admixtures, if used, shall conform to ASTM C 494 and ASTM C 260, respectively.
- F. Anti-washout admixture shall be used for underwater concrete to prevent washout of cement during placement and shall conform to ASTM WK52430.

2.02 FABRIC FORMS

The fabric forms shall be as specified, TEXICON, Fabriform, Tele Textiles or pre-approved equal. The fabric forms shall be composed of synthetic yarns formed into a woven double-layered fabric. Yarns used in the manufacture of the fabric shall be composed of nylon and/or polyester. Forms shall be woven with a minimum of 50% textured yarns (by weight) to improve adhesion to fine aggregate concrete and to improve filtration. Each layer of fabric shall conform to the physical, mechanical and hydraulic requirements referenced herein. The fabric forms shall be free of defects or flaws which significantly affect their physical, mechanical, or hydraulic properties.

Table 1. PROPERTY REQUIREMENTS – CONCRETE BAGS FABRIC ^{1,2}			
Property	Test Method	Units	Values
Physical Properties			
Composition of Yarns			Nylon/ Polyester
Mass Per Unit Area (double-layer)	ASTM D 5261	oz/yd ²	13
Thickness	ASTM D 5199	mils	20
Mechanical Properties			
Wide-Width Strip Tensile Strength	ASTM D 4595		
Machine Direction		lbs	300
Cross Direction		lbs	300
Elongation at Break	ASTM D 4595		
Machine Direction		%	10-15
Cross Direction		%	10-15
Grab Tensile Strength	ASTM D 4632		
Machine Direction		lbs/in	300
Cross Direction		lbs/in	300
Grab Tensile Elongation	ASTM D 4632		
Machine Direction		%	10-25
Cross Direction		%	10-25
Trapezoidal Tear Strength	ASTM D 4533		
Machine Direction		lbs	100
Cross Direction		lbs	100

Hydraulic Properties			
Apparent Opening Size (AOS)	ASTM D 4751	US STD Sieve	40-60
Permittivity	ASTM D 4491	Sec ⁻¹	0.30
Flow Rate	ASTM D 4491	Gal/min/ft ²	30

Notes:

1. *Conformance of fabric to specification property requirements shall be based on ASTM D 4759, "Practice for Determining the Specification Conformance of Geotextiles."*

2. *All numerical values represent minimum average roll values (i.e., average of test results from any sample roll in a lot shall meet or exceed the minimum values).*

Lots shall be sampled according to ASTM D 4354, "Practice for Sampling of Geosynthetics for Testing."

- A. Fabric forms shall consist of two layers of woven fabric sewn together. When filled with fine aggregate concrete they shall form a concrete armor unit. The finished average unit dimensions shall be determined by the contractor.
- B. Self-sealing filling valves, suitable for use with an injection pipe at the end of a pump hose for fine aggregate concrete, shall be installed at predetermined locations.
- C. Mill widths of fabric shall be a minimum of 76 inches. Each selvage edge of the top and bottom layers of fabric shall be reinforced for a width of not less than 1.35 inches by adding a minimum of 6 warp yarns to each selvage construction. Mill width rolls shall be cut to the length required, and the two layers of fabric separately joined, bottom layer to bottom layer and top layer to top layer, by means of sewing thread, to form multiple mill width panels.
- D. All seams sewn in the factory shall be not less than 90 lbf/in when tested in accordance with ASTM D 4884. All sewn seams and zipper attachments shall be made using a double line of U.S. Federal Standard Type 401 stitch. All stitches shall be sewn simultaneously and be parallel to each other, spaced between 0.25 inches to 0.75 inches apart. Each row of stitching shall consist of 4 to 7 stitches per inch. Thread used for seaming shall be nylon and/or polyester.
- E. Fabric Form Shipment and Storage: The fabric forms shall be kept dry and wrapped such that they are protected from the elements during shipping and storage. If stored outdoors, they shall be elevated and protected with a waterproof cover that is opaque to ultraviolet light. The fabric forms shall be labeled as per ASTM D 4873, "Guide for Identification, Storage and Handling of Geosynthetics Rolls."
- F. The Contractor shall submit a manufacturer's certificate that the supplied fabric forms meet the criteria of these Specifications, as measured in full accordance with the test methods and standards referenced herein. The certificates shall include the following information about each fabric form delivered:
 - Manufacturer's name and current address;
 - full product name;
 - style and product code number;
 - form number(s);

- composition of yarns;
- and manufacturer's certification statement.

PART 3 - EXECUTION

3.01 SITE PREPARATION

- A. Areas on which concrete fabric forms are to be placed shall be constructed to the lines, grades, contours, and dimensions shown on the Plans. Prior to placing concrete bags, Geotextile Filter fabric shall be placed on the graded surface in accordance with SECTION 02311, "GEOTEXTILE FILTER FABRIC."
- B. Immediately prior to placing the fabric forms, the prepared area shall be inspected by the Officer-in-Charge, and no forms shall be placed thereon until the area has been approved.

3.02 FABRIC FORM PLACEMENT

- A. A fabric forms shall be placed within the limits shown on the Plans. Anchoring of the fabric forms shall be accomplished through the use of anchor, terminal and toe trenches.
- B. Immediately prior to filling with fine aggregate concrete, the assembled fabric forms shall be inspected by the Officer-in-Charge, and no fine aggregate concrete shall be pumped therein until the fabric form placement has been approved. At no time shall the fabric forms be exposed to ultraviolet light (including direct sunlight) for a period exceeding five days.
- C. Adjacent fabric form panels shall be joined before filling with fine aggregate concrete by field sewing or zippering the two bottom layers of fabric together and the two top layers of fabric together. All field seams shall be made using two lines of U.S. Federal Standard Type 101 stitches. All sewn seams shall be downward facing, and zipper seams shall be fastened as specified on the manufacturer's documents, except with the approved of the Office-in-Charge.
- D. When conventional joining of fabric forms is impractical or where called for in the Contract Drawings, adjacent forms may be overlapped a minimum of three feet to form a lap joint, pending approval by the Office-in-Charge. Based on the predominant flow direction, the downstream edge of the form shall overlap the upstream edge of the next form. In no case shall simple butt joints between forms be permitted.

3.03 FINE AGGREGATE CONCRETE PLACEMENT

- A. Following the placement of the fabric form, the filling pipe at the end of the fine aggregate concrete pump hose shall be inserted through the self-sealing filling valve. Fine aggregate concrete shall be pumped between the top and bottom layers of fabric, filling the forms to the recommended thickness and configuration.

- B. Fine aggregate concrete shall be pumped in such a way that excessive pressure on the fabric forms is avoided.
- C. Foot traffic on the filled armor units shall be restricted to an absolute minimum for one hour after filling.
- D. Abutting fabric form units, if placed laterally, may be installed immediately after placement of the preceding unit(s). If a fabric form unit is to bear on previously installed units, the lower units must be allotted a minimum of four hours of cure time before beginning installation of a succeeding, vertically adjacent course of armor units.
- E. Adjacent fabric form units shall be joined by inserting reinforcement bar dowels or staples into the fabric form units, as shown on the Plans. Dowels or staples shall be inserted into the filled unit(s) not less than one half hour and not more than one hour after filling of the unit, unless directed otherwise by the Officer-in-Charge. In the event that a unit will be vertically adjacent to another unit, reinforcing dowels or staples shall be driven into the lower unit in the time frames specified in this paragraph. The vertically adjacent fabric form will then be placed over the reinforcing dowels or staples. The dowels or staples will be forced through the bottom layer of the vertically adjacent fabric form prior to filling that form.
 - 1. Reinforcing Bars shall be Epoxy-Coated Grade 420. The epoxy coating material shall be an organic, powdered-epoxy resin that is applied by electronic methods. Cut ends shall be coated.
- F. After the fine aggregate concrete has set, all anchor, terminal and toe trenches shall be backfilled and compacted, as specified in the Plans.

PART 4 - MEASUREMENT AND PAYMENT

Payment for fabric form includes fabric form, fine aggregate concrete, reinforcing bars, overlaps, and anchor, terminal, or toe trenches, tools, equipment, labor, containment and disposal of all waste concrete and excess spoils, and incidentals necessary to complete all work in place will not be paid separately but will be considered as incidental item to the various pay items in the Proposal.

Payment for fabric form mattress includes fabric form, fine aggregate concrete, overlaps, and anchor, terminal, or toe trenches, tools, equipment, labor, containment and disposal of all waste concrete and excess spoils, and incidentals necessary to complete all work in place will not be paid separately but will be considered as incidental item to the various pay items in the Proposal.

END OF SECTION

SECTION 03313
GROUT INJECTION

PART 1 - GENERAL

1.01 PURPOSE

To make a waterproof barrier by injection of a polyurethane grout around the point of leak of ocean outfall pipe.

1.02 SCOPE OF WORK

The Contractor shall furnish all labor, materials, equipment, and incidentals required to perform all operations in connection with the repair of the cracks in accordance with the location and dimensions shown on the Plans and as specified herein.

1.03 SUBMITTALS

Submit the following in accordance with Section 01300:

- A. At least two weeks prior to shipment, submit manufacturer's certificate of compliance and physical property data sheet indicating that requirements for materials and manufacture are in conformance as specified.
- B. For informational purposes only, submit manufacturer's printed installation instructions.

1.04 QUALITY ASSURANCE

- A. The manufacturer shall have been in the business of manufacturing similar products for over ten years, maintain a strict quality assurance program, offer technical services and provide a representative at the jobsite for product training, prior to product installation, upon written request.
- B. All contractor personnel involved in the grouting operation, including divers, shall be trained by the manufacturer prior to the grouting operation.
- C. A manufacturer's representative shall be available on the barge during all grouting operations to monitor the work being performed as well as to provide technical assistance to the contractor.

1.05 Delivery, storage and handling

- A. All materials shall be delivered to the jobsite in their original, unopened packages, clearly labeled with the manufacturer's identification, printed instructions and batch code.
- B. Store and condition the specified product as per the appropriate product data sheet.
- C. For handling instructions, refer to the Material Safety Data Sheet.

- D. Immediately upon receipt at the site of the work, all chemical grout materials shall be stored in a secured, dry, weather tight structure. A sufficient quantity of basic chemical and other components shall be stored at or near the site of the work to ensure that grouting operations will not be delayed by shortages.

1.06 PROPER DOCUMENTS

- A. At commencement of work the manufacturer's Product Data Sheets and Safety Data Sheets (SDS) should be on file at the site; for reference and to demonstrate compliance with the specified requirements, such as OSHA, and/or local, state, and national VOC regulations. Locate and highlight manufacturers' medical emergency response telephone numbers from supplied SDS, other documents, or web site. Be aware of other required documents such as confined space permits.

PART 2 - PRODUCTS

2.01 CHEMICAL GROUT

- A. The grouting compounds shall be hydrophilic polymers. The grout shall be mixed with the appropriate amount of catalyst to achieve the desired gel time.
- B. An acceptable product:
 - 1. Avanti AV 202
 - 2. Or approved substitute.

2.02 ACCELERATOR

- A. An accelerator may be required. Ambient temperatures will have an effect on the gel time of the grout.

PART 3 – EXECUTION

3.01 MITIGATION OF CORALS IN THE VICINITY OF LEAKS

- A. Several colonies of living corals are attached to the outfall pipe and adjacent reef in close proximity to the leak point. The contractor shall exercise extreme caution during repair work. By exercising care, grout injection shall be performed with minimal or no damage to surrounding coral colonies.

3.02 SURFACE PREPARATION

- A. Completely remove all loose, delaminated and weak concrete, oil, grease, laitance and other contaminants. Prepare concrete using acceptable mechanical means as

necessary to obtain clean, sound and rough surfaces. Coarse aggregate shall be exposed.

- B. All cracks shall be brought to the attention of the Officer-in-Charge and a determination made of whether the cracks are subject to movement. The cracks shall be repaired as directed prior to application of the repair material.

3.03 MIXING AND HANDLING

- A. Handling of the chemical grout and the accelerator shall be in accordance with the recommendation of the manufacturer and all applicable safety codes. They shall be handled in such a manner as to minimize hazards to personnel. It is the responsibility of the contractor to provide appropriate protective measures to ensure that chemicals or foam produced are under control of the contractor at all times. Mixing of grouts with accelerator at the time of injection shall take place on site no more than 30 minutes before injection. Mixing of grout and with desired percentage of accelerator shall be performed by applicator. Be sure not to entrain air into the grout.

3.04 EQUIPMENT

- A. All chemical grouting equipment shall be of a type, capacity, and mechanical condition suitable for doing the work. The chemical grout pump shall be capable of supplying adequate volumes ($\frac{1}{2}$ to 1 gallon per minute) and pressures (up to 3000 psi). The pump shall be compatible with the chemicals to be handled and shall be maintained in operating condition at all times. The contractor shall have a separate water pump. Caulk guns are appropriate for grout cartridges

3.05 SAFETY EQUIPMENT

- A. All necessary personal protective gear including: safety glasses face shields, rubber gloves, Tyvek suites, and hard hats, etc.; should be utilized by installation and inspection personnel.

3.06 SAFETY PROTOCOL

- A. Prior to application a safety meeting with all appropriate personnel should be held. Since injection area is under water all local and federal regulations regarding installation, diving, safety equipment and documentation must be followed.

3.07 METHOD

- A. The Contractor shall submit for approval by the Officer-in-Charge a detailed grouting plan showing the spacing, orientation and depth of the grout holes, as well as type of polyurethane grout to be used, range of gel times, equipment, mixing procedures,

recommended injection pressure, technique for monitoring grout travel and any other pertinent information. The grouting plan shall be in accordance with the provisions set forth in this section.

- B. The drilled holes on the concrete pipe as per Detail 5/C-3 shall be produced by a drill appropriate for underwater use using an appropriate bit size for installation of the grout packer for injection of the grout directly into the pipe joint. Extreme care shall be used in placement of the packer hole to ensure that the existing gasket is not damaged and that the drilled hole does not penetrate the bottom lap joint.
- C. The drilled holes on the ocean floor as per Detail 5/C-3 shall be produced by a drill appropriate for underwater use using an appropriate bit with a minimum diameter of 3/8" to a maximum diameter of 1/2". Bits need to be sharp and straight as not to produce out-of-round holes.

3.08 PROCEDURE

- A. Use injection equipment as recommended by the urethane resin manufacturer's representative.
- B. The Contractor shall follow all instructions of the urethane manufacturer's representative for proper preparation and injection.
- C. The chemical grouts are water active. Ensure they can be kept water free until installation at the pipe. AV 202 and oakum will be premixed and placed in ziplock bags to allow them to be submerged without activating.
- D. Injection Step 1. (STA 8+55 and 41+46)

Joints should be free of all loose materials prior to injection of any material. Pack joint exposed with Oakum and AV 202. Injection ports should be drilled into joint at the 3 and 9 o'clock positions as shown in detail 5/C-3. Ports shall be injected first with water to flush the joint. Do not excavate around the pipe / joint. The grout will travel in the joint.

- E. Injection Step 2. (STA 8+55 and 41+46)

Injection can be confirmed by either visual inspection or by pumping a specific amount of grout into each hole. Amount of grout is to be field determined by a consensus between contractor, applicator, and manufacturer's technical representative. The joint may require plugging to prevent uncontrolled grout flow out of the joint. Use AV 202 and Oakum to minimize material wash out and waste. Depending on the leak packing AV 202 and Oakum may be all that is required. Depending on the joint width pumping may not be required. Wide joints will be packed with AV 202 and oakum.

F. Injection Step 3. (STA 41+46)

In the event that stopping of the leak at Sta. 41+46 by direct injection of grout into the joint is unsuccessful, injection ports should be drilled on the ocean floor close to the outfall with 45 degree angle and minimum 2' depth as shown in detail 5/C-3.

AV 202 can be pumped into the sand that is below or beside the pipe. It will incorporate the sand / substrate into its matrix and bond to the pipe.

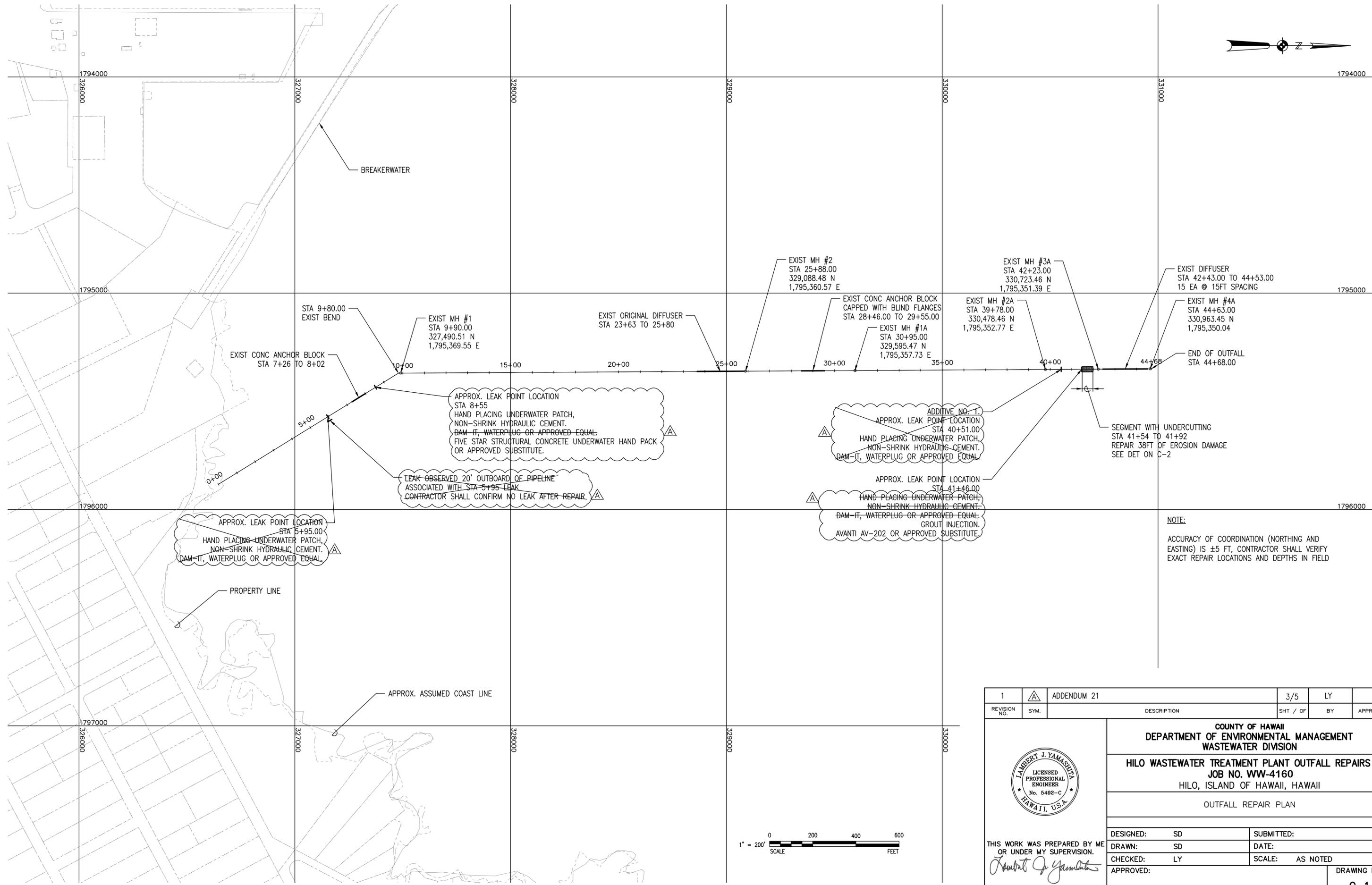
3.09 ENVIRONMENTAL CONDITIONS

- A. Do not commence with installation of chemical grout when air and/or substrate temperature is below 35°F (2°C) and falling unless approved by the material Manufacturer. Ambient temperature will effect cure times of the grout.

PART 4 - MEASUREMENT AND PAYMENT

The cost of the work covered under this section, including material, necessary labor and equipment, and all incidentals necessary to complete all work in place shall be paid at the lump sum price bid for Repair of the leak point as scheduled in the Proposal.

END OF SECTION



PLOT DATE: May 16, 2018 @ 08:13:55 am
LAST UPDATE: May 16, 2018 @ 08:13:57 am
PATH: \\ENR\ENR\Projects\USDC\Wastewater\0041192-Hilo Outfall\DWG\Info Outfall_Addendum21.dwg

APPROX. LEAK POINT LOCATION
STA 8+55
HAND PLACING UNDERWATER PATCH,
NON-SHRINK HYDRAULIC CEMENT.
DAM-IT, WATERPLUG OR APPROVED EQUAL.
FIVE STAR STRUCTURAL CONCRETE UNDERWATER HAND PACK
OR APPROVED SUBSTITUTE.

LEAK OBSERVED 20' OUTBOARD OF PIPELINE
ASSOCIATED WITH STA 5+95 LEAK
CONTRACTOR SHALL CONFIRM NO LEAK AFTER REPAIR

APPROX. LEAK POINT LOCATION
STA 5+95.00
HAND PLACING UNDERWATER PATCH,
NON-SHRINK HYDRAULIC CEMENT.
DAM-IT, WATERPLUG OR APPROVED EQUAL

ADDITIVE NO. 1
APPROX. LEAK POINT LOCATION
STA 40+51.00
HAND PLACING UNDERWATER PATCH,
NON-SHRINK HYDRAULIC CEMENT.
DAM-IT, WATERPLUG OR APPROVED EQUAL

APPROX. LEAK POINT LOCATION
STA 41+46.00
HAND PLACING UNDERWATER PATCH,
NON-SHRINK HYDRAULIC CEMENT.
DAM-IT, WATERPLUG OR APPROVED EQUAL.
GROUT INJECTION.
AVANTI AV-202 OR APPROVED SUBSTITUTE

SEGMENT WITH UNDERCUTTING
STA 41+54 TO 41+92
REPAIR 38FT OF EROSION DAMAGE
SEE DET ON C-2

NOTE:
ACCURACY OF COORDINATION (NORTHING AND
EASTING) IS ±5 FT, CONTRACTOR SHALL VERIFY
EXACT REPAIR LOCATIONS AND DEPTHS IN FIELD



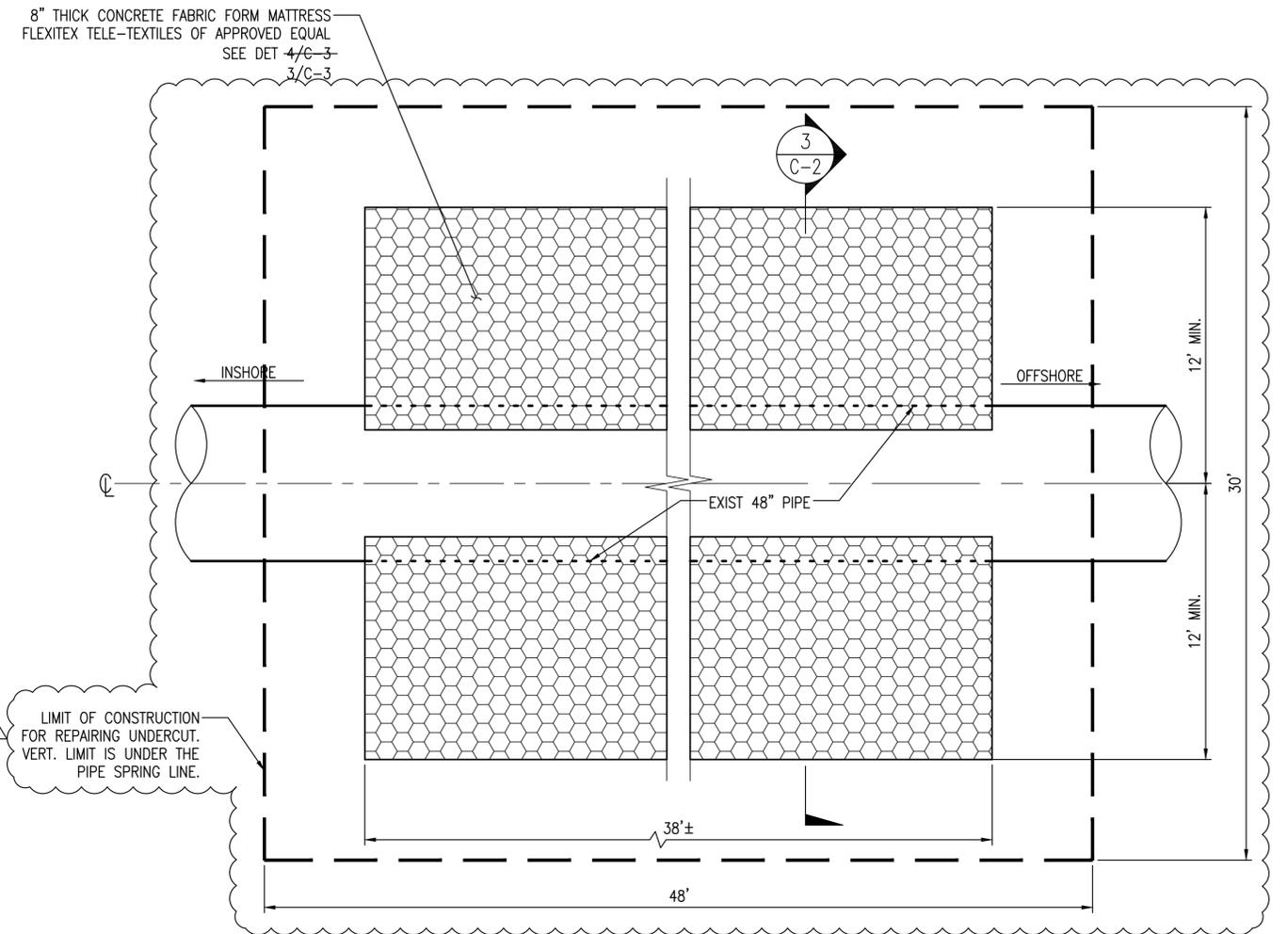
1	ADDENDUM 21	3/5	LY		
REVISION NO.	SYM.	DESCRIPTION	SHT / OF	BY	APPROVED
COUNTY OF HAWAII DEPARTMENT OF ENVIRONMENTAL MANAGEMENT WASTEWATER DIVISION HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS JOB NO. WW-4160 HILO, ISLAND OF HAWAII, HAWAII OUTFALL REPAIR PLAN					
DESIGNED: SD		SUBMITTED:			
DRAWN: SD		DATE:			
CHECKED: LY		SCALE: AS NOTED			
APPROVED:		CHIEF ENGINEER		DATE	
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. <i>Lambert J. Yamashita</i> EXP: 4/30/18		DATE _____		C-1	



1 VIEW WEST OF SCOUR STA 41+54 TO 41+92
C-2 SCALE : NTS



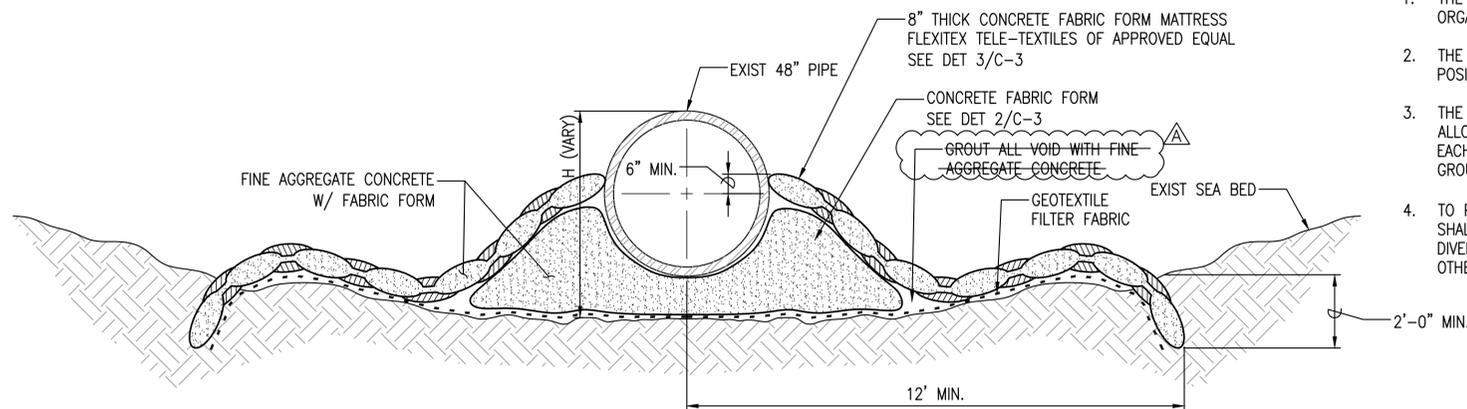
2 VIEW EAST OF SCOUR STA 41+54 TO 41+92
C-2 SCALE : NTS



4 CONCRETE FABRIC FORM MATTRESS- PLAN
C-2 SCALE : NTS

NOTE:

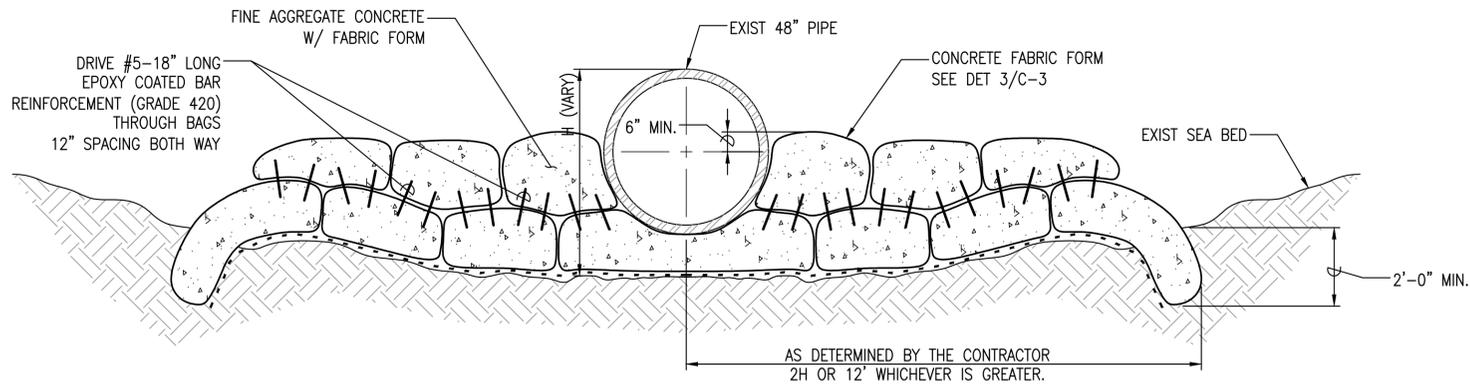
1. THE AREA SHALL BE FREE OF ALL OBSTRUCTION AND ORGANIC MATERIAL, AND SHARP ROCKS.
2. THE FABRIC FORMS AND ARTICULATING BLOCK SHALL BE POSITIONED OVER A GEOTEXTILE FILTER FABRIC.
3. THE CONTRACTOR SHALL MAKE THE APPROPRIATE ALLOWANCE FOR CONTRACTION OF THE FABRIC FORM IN EACH DIRECTION WHICH WILL OCCUR AS A RESULT OF GROUT INJECTION.
4. TO PREVENT INTERLOCKING PROBLEM, FABRIC FORM (BAGS) SHALL BE FILLED BETWEEN 50 AND 70% TO PERMIT THE DIVER TO PLACE THEM WITH GOOD CONTACT WITH EACH OTHER AND WITH EXISTING PIPE.



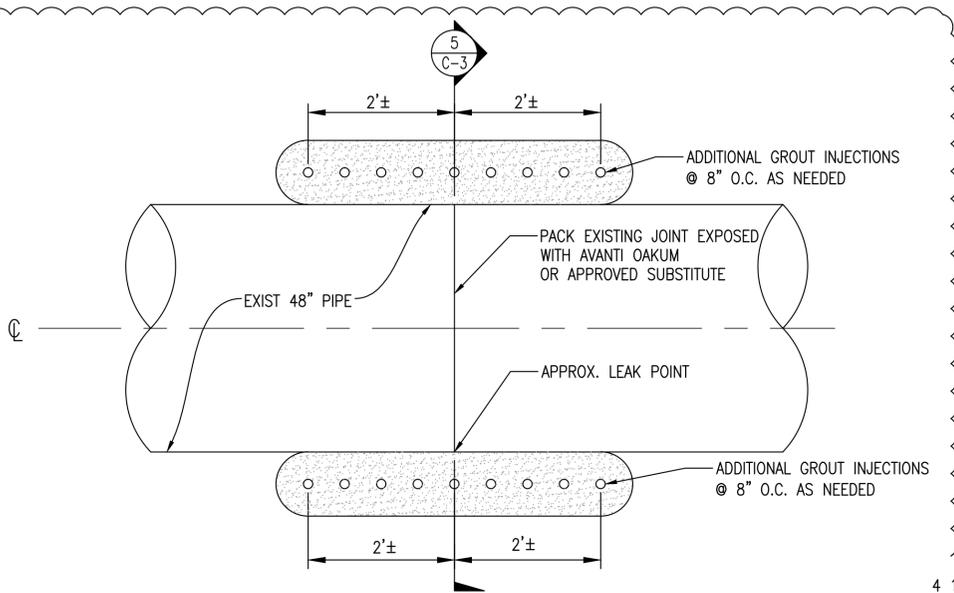
3 CONCRETE FABRIC FORM MATTRESS- TYP. SECTION
C-2 SCALE : NTS

1	ADDENDUM 21	4/5	LY		
REVISION NO.	SYM.	DESCRIPTION	SHT / OF	BY	APPROVED
COUNTY OF HAWAII DEPARTMENT OF ENVIRONMENTAL MANAGEMENT WASTEWATER DIVISION HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS JOB NO. WW-4160 HILO, ISLAND OF HAWAII, HAWAII SECTIONS AND DETAILS					
DESIGNED: SD DRAWN: SD CHECKED: LY APPROVED:			SUBMITTED: DATE: SCALE: AS NOTED		
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. EXP: 4/30/18			CHIEF ENGINEER		DRAWING NO. C-2

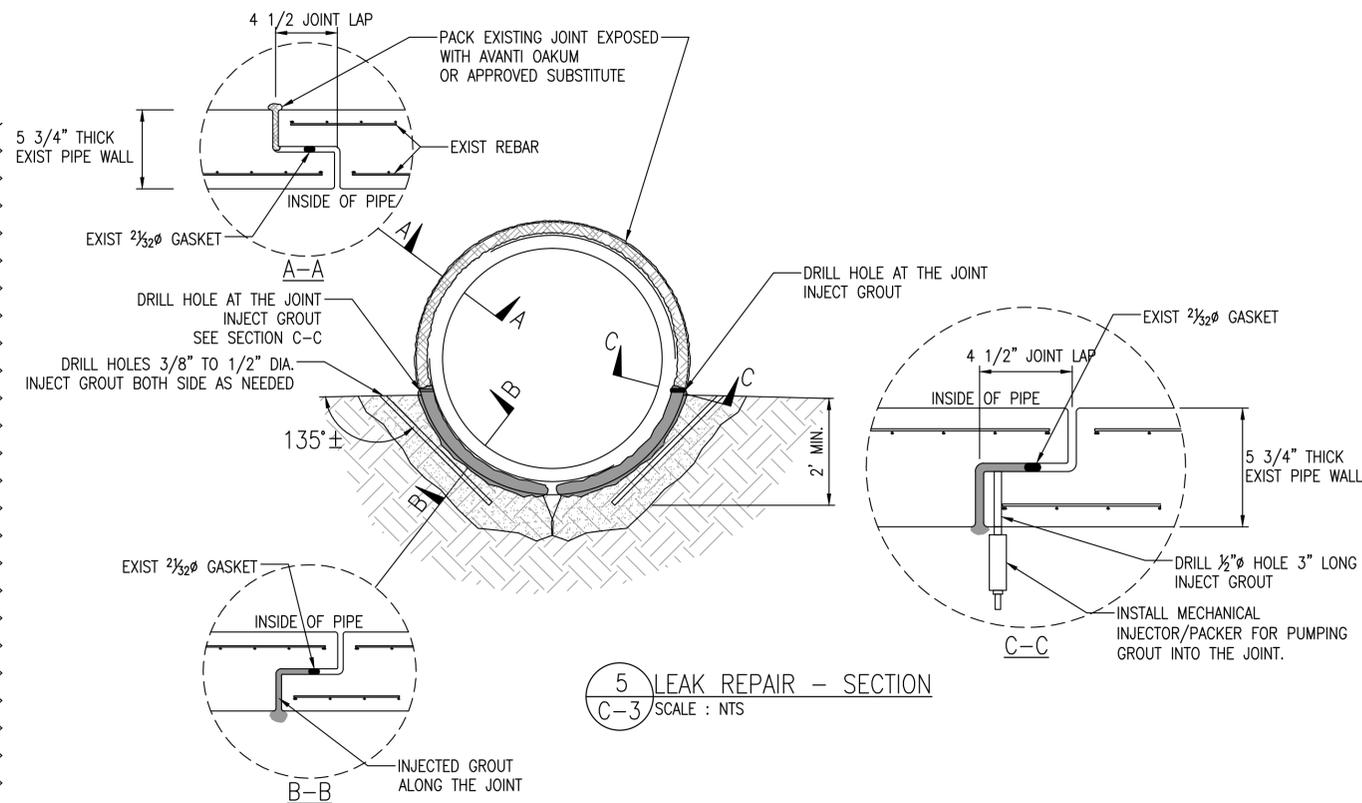
PLOT DATE: May 16, 2018 @ 08:17:59 am
 LAST UPDATE: May 16, 2018 @ 08:18:51 am
 P:\PROJECTS\USDO\Wastewater\0924192-Hilo Outfall\Addendum 21.dwg



1 CONCRETE FABRIC FORM - TYP. SECTION - ALTERNATIVE 1
 C-3 SCALE : NTS

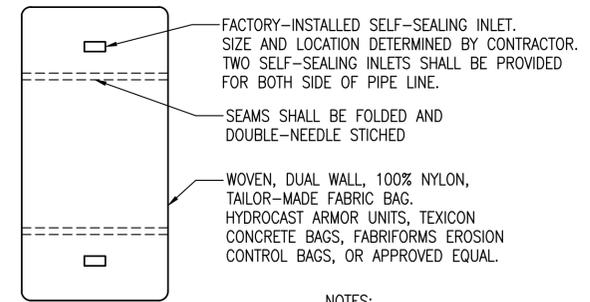


4 LEAK REPAIR - PLAN
 C-3 SCALE : NTS



5 LEAK REPAIR - SECTION
 C-3 SCALE : NTS

- NOTE:
1. THE AREA SHALL BE FREE OF ALL OBSTRUCTION AND ORGANIC MATERIAL, AND SHARP ROCKS.
 2. THE FABRIC BAGS SHALL BE POSITIONED OVER A GEOTEXTILE FILTER FABRIC.
 3. THE CONTRACTOR MUST MAKE THE APPROPRIATE ALLOWANCE FOR CONTRACTION OF THE FABRIC BAG IN EACH DIRECTION WHICH WILL OCCUR AS A RESULT OF GROUT INJECTION.
 4. THE BAGS SHALL BE POSITIONED AND FILLED IN SUCH A WAY THEY ABUT TIGHTLY. JOINTS BETWEEN BAGS IN SUCCESSIVE TIERS SHALL BE STAGGERED.
 5. TO PREVENT INTERLOCKING PROBLEM, BAGS SHALL BE FILLED BETWEEN 50 AND 70% TO PERMIT THE DIVER TO PLACE THEM WITH GOOD CONTACT WITH EACH OTHER AND WITH EXISTING PIPE.
 6. THE REBARS ARE FIRST INSERTED THROUGH THE FABRIC AND THEN INTO THE BAG CONTAINING FRESH CONCRETE. THE SUCCEEDING LAYER OF BAGS IS THREADED OVER THESE REBARS AND FILLED WITH CONCRETE IN A STAGGERED PATTERN.
 7. THE EPOXY COATING MATERIAL SHALL BE AN ORGANIC, POWDERED-EPOXY RESIN THAT IS APPLIED BY ELECTRONIC METHODS.



2 CONCRETE FABRIC FORM
 C-3 SCALE : NTS

- NOTES:
1. SHAPE, SIZE AND THE NUMBER OF BAGS TO BE USED SHALL BE SPECIFIED BY THE CONTRACTOR.
 2. LOCATION OF INLET VALVES AND OUTSIDE DIAMETER OF INJECTION HOSE TO BE USED SHALL BE DETERMINED BY THE CONTRACTOR.



3 FABRIC FORM - MATTRESS
 C-3 SCALE : NTS

- NOTES:
1. SIZE AND THE CONFIGURATION OF MATTRESS TO BE USED SHALL BE SPECIFIED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

1	ADDENDUM 21	5/5	LY	
REVISION NO.	SYM.	DESCRIPTION	SHT / OF	BY
COUNTY OF HAWAII DEPARTMENT OF ENVIRONMENTAL MANAGEMENT WASTEWATER DIVISION HILO WASTEWATER TREATMENT PLANT OUTFALL REPAIRS JOB NO. WW-4160 HILO, ISLAND OF HAWAII, HAWAII SECTIONS AND DETAILS - ALTERNATIVES				
DESIGNED:	SD	SUBMITTED:		
DRAWN:	SD	DATE:		
CHECKED:	LY	SCALE:	AS NOTED	
APPROVED:			DRAWING NO.	
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. <i>Lambert J. Yamashita</i> EXP: 4/30/18			CHIEF ENGINEER DATE	C-3



STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
EMD/CWB

WQC0876.FNL.15

December 3, 2015

Ms. BJ Leithead Todd
Director
Department of Environmental Management
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Attention: Ms. Dora Beck
Wastewater Division Chief

Dear Ms. Leithead Todd:

**Subject: Section 401 Water Quality Certification (WQC)
Hilo Wastewater Treatment Plant Outfall Repairs
Puhi Bay, Hilo, Island of Hawaii, Hawaii
File No. WQC0876/DA File No. POH-2011-00282**

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of an Application (signed and dated on September 4, 2014, hereafter the "Application") submitted with a transmittal form, dated September 11, 2014, from Mr. Lambert Yamashita, Project Manager at AECOM Technical Services, Inc. for a Section 401 WQC for the subject project. The Application was received by DOH-CWB on September 11, 2014.

DOH received a revised application on May 7, 2015 with transmittal form (dated May 8, 2015) from Mr. Lambert Yamashita. DOH also received revised applications on November 17, 2015, August 28, 2015, and July 1, 2015, (in response to DOH-CWB's September 17, 2015, July 15, 2015, and June 3, 2015 comments) with transmittal forms (dated November 17, 2015, August 28, 2015, and July 2, 2015) from Mr. Lambert Yamashita. An e-mail was received on November 30, 2015 from Ms. Julie Zimmerman with an attached revised Applicable Monitoring and Assessment Plan (AMAP).

Ms. Leithead Todd stated in a June 29, 2015 letter:

"I would like to request a waiver of the public notice requirements pursuant to HAR 11-54-9.1.04. My project is covered under a Nationwide Permit, the discharge is minor based on my BMPs, and my project is non-controversial."

According to Item No. 7.b of the revised November 17, 2015 Application:

“The Hilo Wastewater Treatment Plant Outfall is a 4,468 foot-long ocean outfall constructed of 48-inch diameter reinforced concrete pipe that runs north from the Hilo Wastewater Treatment Plant, terminating in approximately 52 feet of water (See Attachment 1, Figure 1, Vicinity Map). The outfall was built in 1964-1965 and has gone through several repairs since its original construction. In 1988 and 1989, extensive repairs were conducted by pouring new concrete to reinforce areas of the pipe where material had been scoured from alongside and beneath the pipeline. Multiple inspections of the pipe have taken place since the last extensive repairs.

Most recently, divers inspected the Hilo outfall pipeline for damage in November 2010, April 2012, and October 2014 (see Table 1). See Attachment 6 for 2010, 2012, and 2014 Inspection Reports. A dye test conducted in October 2014 located two small leaks in the pipe, all at joints between the pipe sections. Several small areas were observed to have bedding and protection scoured from the pipe, leaving it exposed to wave forces. As noted in previous inspections (2001 and 2005), most of the armor stone originally placed on the pipe had been removed, either by storm waves or tsunamis. Even where the armor stone remains on top of the pipe, there is no evidence of any bedding layer remaining between the stones and the pipe. Much of the pipe has been reinforced with tremie concrete and appears stable. The only new damage noted was undercutting of a 38-foot section of pipe from stations 41+54 to 41+92. The pipe, including one joint, is approximately 10 to 14 inches above the seafloor along this length....”

“Proposed Repairs: Repairs to the Hilo Wastewater Treatment Plant Outfall will include repair of a 38-foot section of the outfall where undercutting of material is surrounding the outfall and the temporary external repair of the leaks at Sta. 8+55 and Sta. 41+46.”

“For the segment where undercutting has occurred (station 41+54 to 41+92), the structural integrity and scour protection will be restored. The contractor will use a concrete-filled fabric form (bag/mattress, comprised of a double layer of strong synthetic fabric) to support undermining section of the outfall (See Attachment 2- Construction Plans). During site preparation, two toe trenches (1.5 feet wide x 2 feet depth x 38 feet long) will be excavated using an underwater hydraulic hammer on the sea floor on both sides of the outfall (see Attachment 2, Construction Plans). Excavated materials (on-site sand, gravel and rocks) will be removed from the site using an eductor (a hydraulic submersible pump) and disposed of at an approved site selected by the contractor. Side-casting of excavated material will not be allowed. Seawater will be drained through a filtering system (see Attachment 9) back into the ocean. Before the water is returned back into the receiving water, the discharge will be sampled for pH, turbidity, dissolved oxygen, salinity, temperature, and enterococcus. Fabric forms (bag/mattress comprised of a double layer of strong synthetic fabric) filled with fine aggregate concrete will be used as a BMP to prevent concrete wash-out. After site preparation, fabric forms will be placed over the geotextile filter fabric within the limits shown on the construction drawing. Anchoring of the fabric forms shall be accomplished through the use of anchor, terminal, and toe trenches. Following the placement of the fabric forms, through the factory-installed inlet slits, fine aggregate concrete shall be pumped between the top and bottom layers of fabric, filling the forms to the recommended thickness and configuration.”

“The County had decided to include the temporary repair of Sta. 8+55 and Sta. 41+46 under this permit application. The approximate crack size at Sta. 8+55 is 1-inch (width) x 6-inch (length) x 3 inch (depth). No crack or separation on the pipe was visible at STA 41+46. During the dye test (October 24, 2014) a small discharge of green fluorescein dye was visibly flowing from under the pipe. The leaks are considered small based on the diminution of dye plums within less than one foot of the point of discharge. The repairs would be done using injection of Multigrout at Sta 8+55 and Sta 41+46. The following is a description of the means and methods of the external leak repair.”

“Sta 8+55 and Sta 41+46: Injection of Multigrout”

“Surface Preparation: All concrete surfaces in contact with Multigrout will be free of marine growth, laitance, and other contaminants. All concrete surfaces will be clean, sound, and rough to ensure a good bond.”

“Placement Procedures: AV-202 Multigrout is a single component, moisture activated polyurethane injection resin. Designed for sealing active water leaks in large cracks or joints in concrete structures, it can absorb up to 12 times its weight in water to create a tough, impermeable foam with excellent adhesive qualities. It is certified for use in potable water (ANSI/NSF 61 Potable Water Systems UL Certified). Grout will be designed to be pumped in place underwater (i.e. AVANTI AV-202 Multigrout). Hydrophilic polyurethane foam will be used to fill cracks in concrete, pores in granular soil, or voids in rock or soil along the existing concrete pipe. Either a manual injection or a high-pressure electric injection pump will be used. Installation will be continuous to prevent cold joints. Prior to injection, existing joint exposed will be packed with oakum, a fibrous jute material, to prevent the leak from moving along the joint to another point.”

“Conventional BMP measures will not be effective for these types of blended polyurethane injection resin. Designed for sealing active water leaks in large cracks or joints in concrete structures, this single component, moisture activated product, will absorb up to 12 times its weight in water creating an impermeable foam barrier with good adhesive qualities. Loose foam particles, if any, that may be release into the surrounding environment during the injection process, can be collected by the divers and disposed of at a landfill.”

“Certified for use in potable water, ANSI/NSF 61 Potable Water Systems UL Certified, this product will not pose a threat to the marine organisms in the general area of the repair (See Attachment 9).”

“There will be no expansion or change in the facility use or footprint beyond that previously existing. These repairs are not part of a group of additional actions, do not involve cumulative impacts, create secondary impacts, or affect any particularly sensitive environments.”

“Discharge” activities and the purpose of the proposed discharge activities are described in Item 7.c and reference Item 7.b of the revised November 17, 2015 Application:

“The discharge activity is described above. The purpose of the proposed discharge activity is to repair damaged sections of the currently existing wastewater outfall.”

In a ***“Provisional Nationwide Permit Verification for the Hilo Wastewater Treatment Plant Outfall Repairs, Puhi Bay, Hilo, Island of Hawaii, Hawaii Department of the Army File No. POH-2011-00282”*** dated July 24, 2015, from Ms. Michelle Lynch, Chief of the Regulatory Branch of the Department of the Army (DA), U.S. Army Corps of Engineers (COE), Pacific Ocean Division Honolulu District Office (POH), states:

“The Honolulu District, U.S. Army Corps of Engineers (Corps), has completed its review of your request for authorization dated May 7, 2015 for the proposed reinforcement of the Hilo Wastewater Treatment Plant Outfall Pipeline located in Puhi Bay, Hilo, Island of Hawaii, Hawaii. This office has verified that your proposed activity complies with the terms and conditions of Nationwide Permit (NWP) #12, Utility Line Activities and NWP #16, Return Water From Upland Contained Disposal Areas, and the overall NWP Program issued on March 17, 2012, pursuant to Section 10 of the

Rivers and Harbors Act of 1899 (Section 10) and/or Section 404 of the Clean Water Act (Section 404). Please reference Department of the Army (DA) file number POH-2011-00282 in any future correspondence relating to this permit.

This letter is to inform you that although the Corps has completed its review of your application, we cannot issue a final verification for NWP 12 & 16 until the State of Hawaii Department of Health, Clean Water Branch (DOH-CWB) issues a Section 401 Water Quality Certification (WQC) or waiver for the regulated discharges associated with your proposed pipeline reinforcement. Therefore, this letter is a Provisional NWP Verification. Upon receipt of the WQC and submittal of a copy to the Corps, the Corps will, within 30 days of receipt, send you a final NWP verification letter. **YOU MAY NOT BEGIN WORK WITHIN WATERS OF THE U.S. UNTIL YOU RECEIVE THE FINAL NWP VERIFICATION LETTER FROM THE CORPS.** You are advised that substantial legal penalties may be incurred if you proceed with the work in the absence of the above required State and Federal approvals.”

Based on the information contained in your most recent revised November 17, 2015 Application, the July 24, 2015 “*Provisional Nationwide Permit Verification for the Hilo Wastewater Treatment Plant Outfall Repairs, Puhi Bay, Hilo, Island of Hawaii, Hawaii Department of the Army File No. POH-2011-00282*” from Ms. Michelle Lynch of POH; and Ms. BJ Leithead Todd’s June 29, 2015 waiver request, DOH-CWB waives the public notification requirements for the processing of an Application for a Section 401 WQC for the subject project with the following conditions:

1. The determination of waiving the public notification requirements for the processing of an Application for a Section 401 WQC for the subject project:
 - a. Shall become invalid if the project construction activity is found to be controversial after the effective date of this determination. The County of Hawaii (COH) and the contractor(s) shall cease all discharge activities as specified in Item No. 7.d for the purposes as specified in Item Nos. 7.b and 7.c of the Application. COH, the General Contractor (GC), and the subcontractor(s), if any, shall not hold the DOH responsible for any damages or costs incurred due to the cessation of the discharge activity.
 - b. Shall become effective on **December 3, 2015** and shall expire on midnight **March 18, 2017** or until the applicable Water Quality Standards (WQS) are revised or modified, or the DA NWP #12 or DA NWP #16 expires or is revised or modified, or the mandatory requirements in implementing the Total Maximum Daily Load (TMDL) implementation Plan for Honolulu Harbor watershed is established by the DOH and approved by the U.S. Environmental Protection Agency (EPA), or when the project construction is completed, whichever is earliest. If the applicable State WQS is revised or modified before **March 18, 2017** and the discharge activity complies with the revisions or modifications this Section 401 WQC shall continue to be valid until **March 18, 2017**.

The expiration date of this determination may be administratively extended by the Director of Health (Director) for no more than 12 months beyond midnight, **March 18, 2017**, if the COH submits an extension request through the e-Permitting Section 401 WQC Compliance Form at least 30 calendar days before the Section 401 WQC expiration date and the COE has not modified, suspended, or revoked the 2012 NWP #12, or the 2012 NWP 16, or individual verification per 33 CFR 330.4(e) and 33 CFR 330.5(c) and (d). The submission shall include appropriate color photographs (including the date/time and narrative description) demonstrating that the project is in fact under physical construction and the purpose of extending the expiration date is to allow the contractor to complete the project construction. The decision by DOH-CWB to allow an administrative extension will be made on a case-by-case basis taking into account compliance history and impact to water quality.

c. May be revoked when:

- (1) New State WQS are subsequently established before the activity is completed and/or the Director determines that the activity is violating or in non-compliance with new State WQS. DOH-CWB will notify COH and/or the GC of the violation/non-compliance. COH and/or the GC shall cease the violation/non-compliance within 180 calendar days of the date of the notice. If COH and/or the GC fails within 180 calendar days of the date of the notice to cease the violation, the Director may revoke this certification; or
- (2) The Director determines that the discharge(s) from the activity is violating or in non-compliance with the existing State WQS or any condition specified in this letter. The Director will notify COH and/or the GC of the violation/non-compliance. COH and/or the GC shall cease the violation/non-compliance within seven (7) calendar days of the date of the notice. If COH and/or the GC fails within seven (7) calendar days of the date of the notice to cease the violation/non-compliance, the Director may revoke this certification.

These actions shall not preclude DOH-CWB from taking appropriate enforcement action authorized by law.

Written notification by the Director under this section is complete upon mailing or sending a facsimile transmission/email of the document or actual receipt of the document by COH and/or the GC.

2. Discharge activities that you are seeking coverage under this WQC Application, evaluated under Item No. 7.d of this WQC Application include:
 - Approximately 51 cubic yards of fine aggregate concrete consisting of cement (ASTM C150, Type II), fine aggregate (gravel), admixture (water reducing admixture, anti-washout admixture) will be placed inside of fabric forms (bag/mattress comprised of a double layer of strong synthetic fabric).
 - Fabric forms- designed to provide the least possible environmental impact. The fabric used in the forms allows excess mixing water to escape while retaining the cement solids, fine aggregate, and sand. The fabric acts as a separator between surrounding water and the concrete as it flows into the container preventing segregation.
 - Approximately 370 yards of epoxy coated bar. The epoxy coated bars will be embedded into the fine aggregate concrete permanently.
 - Approximately 0.258 pounds (0.117 kg) of excess water and dissolved pollutants (this discharge would occur as the forms are filled)
 - Two (2) cubic feet of hydraulic foam (AV-202 Multigrout)
 - 12 feet of oakum, a fibrous jute material.

3. COH shall:
 - a. Notify DOH-CWB via e-mail cleanwaterbranch@doh.hawaii.gov of the:
 - (1) Commencement date within seven (7) calendar days before the start of any construction activities.
 - (2) Completion date within 14 calendar days after the completion of the proposed construction activities (including the disturbed areas restoration activities).

All communication, including but not be limited to the e-mail, with DOH-CWB shall include **File No. WQC0876** and the certification statement below.
 - b. Submit to DOH-CWB within seven (7) calendar days before the start of any construction activities an updated construction schedule.
 - c. Comply with all information, requirements, specifications, Construction Plans (Attachment 2), "Hilo Wastewater Treatment Plant Outfall Repairs Applicable Monitoring and Assessment Plan Clean Water Act - Section 401 Water Quality Certification" (Attachment 4), Coral Mitigation Plan (Attachment 7), and Best Management Practices (BMPs) Plan (Attachment 9) contained in the November 17, 2015 Application. This BMPs Plan represents the minimum BMP measures required to be implemented in the construction of the subject project.

Upon approval by DOH-CWB, the GC may furnish additional BMP measures as deemed necessary.

- d. Properly conduct or contract with a qualified laboratory/environmental consultant to conduct the November 2015 AMAP.

Test methods promulgated in 40 CFR Part 136 effective on July 1, 2011, and, when applicable, the chemical methodology for sea water analyses (HAR, Section 11-54-10) shall be used. The detection limits of the test methods used shall be equal to or lower than the applicable WQS as specified in Hawaii Administrative Rules (HAR), Chapter 11-54. For situations where the applicable WQS is below the detection limits of the available test methods, the test method which has the detection limit closest to the applicable WQS shall be used. If a test method has not been promulgated for a particular parameter, the applicant may submit an application through the Director for approval of an alternate test procedure by following 40 CFR §136.4.

The Director may, at the Director's own discretion or upon written request from the COH and on a case-by-case basis, require the COH to modify the monitoring frequency(ies) or change the sampling locations, frequency, and/or parameter, as appropriate. If a written request is submitted for the reduction of monitoring frequency(ies), it shall be accompanied by an assessment of monitoring results which shall clearly demonstrate that the project construction activity related discharge has fully complied with the applicable WQS.

Color photographs shall be taken before, during, and after completion of the proposed construction activities. A photo orientation map shall be submitted.

Copies of the color photographs taken should note the date and time the photos were taken. Photographs taken before the project construction shall be submitted to the CWB prior to the commencement of the project construction. Photographs taken after the construction shall be submitted to the CWB within 14 calendar days after the completion of the construction project.

Field measurement results and color photographs taken during the construction period shall be submitted to the CWB, before the closing of the next business day the field samples and photographs were taken, via e-mail in excel and pdf format to cleanwaterbranch@doh.hawaii.gov. All communication, including but not be limited to the e-mail with the CWB shall include **File No. WQC0876** and the certification statement below.

- e. Ensure that all "discharges" associated with the proposed construction activities are conducted in a manner that will comply with "Basic Water Quality Criteria Applicable to All Waters" as specified in HAR, Section 11-54-4.
- f. Ensure that all material(s) placed or to be placed in State waters are free of waste material, heavy metals, organic materials, debris and any water pollutants at toxic or potentially hazardous concentrations to aquatic life as specified in HAR, Section 11-54-4(b).
- g. Ensure that the permitted activity will not result in non-compliance or violations to the applicable State WQS. Although temporary increases in turbidity level is expected, any visible floating debris, oil, grease, scum, other floating materials, or objectionable color, or turbidity plume, constitutes a violation of HAR, Subsection 11-54-4(a) requirements.

COH and/or the GC shall immediately cease the portion of the construction work if water quality monitoring or daily inspection or observation result(s) indicates that non-compliance to HAR, Section 11-54-4(a) or Section 11-54-4(b), will occur or is occurring. The construction activity shall not resume until adequate measures are implemented and appropriate corrective actions are taken and concurred with by the DOH-CWB.

COH shall not hold the DOH responsible for any damages or costs incurred due to the temporary cessation of the construction operations.

These actions shall not preclude the DOH-CWB from taking enforcement action authorized by law.

- h. Immediately report any spill(s) or other contamination(s) that occurs at the project site to DOH-CWB via telephone number (808) 586-4309 or through e-mail to: cleanwaterbranch@doh.hawaii.gov.
- i. Ensure that:
 - (1) Erosion and Sediment Control Measures are in place and functional before earth moving operations begin;
 - (2) Temporary soil stabilization shall be applied on areas that will remain unfinished for more than 30 calendar days; and
 - (3) Permanent soil stabilization shall be applied as soon as practicable after final grading.

COH and the contractor(s) shall maintain, at the construction site or in the nearby field office, a record that these requirements have been fully complied with.

- j. Ensure that all temporarily constructed structures, including the silt containment device(s), floating oil and grease boom as well as construction debris containment device(s) and/or soil erosion control structures, are properly removed immediately after the completion of the construction work and when the affected water body has returned to its pre-construction condition or better, as demonstrated by the monitoring results, including the color photographs.
 - k. Not allow any concrete truck wash water to be disposed by percolation into the ground.
 - l. Maintain, or require the contractor(s) and the subcontractor(s), if any, to maintain, a copy of the November 17, 2015 Application and this letter at the construction site or in a nearby field office. Ensure that all areas impacted, either directly or indirectly, by the project construction activities are fully restored.
 - m. Work shall be discontinued during storm events or during flood condition.
 - n. Clearing and grubbing shall be held to the minimum, if any.
4. COH shall review and update the effectiveness and adequacy of the AMAP, implemented site-specific BMP measures and other environmental protection measures as often as needed. COH shall modify the site-specific BMPs Plan, AMAP, and/or other environmental protection measures upon request or when instructed by the Director.

Any change(s) to the implemented site-specific BMPs measures, AMAP, and/or correction(s) or modification(s) to information already on file with the DOH shall be submitted to DOH-CWB for review and comment as such change(s), correction(s) or modification(s) arises. COH shall properly address all comment(s) and/or concern(s) to the Director's satisfaction before such change(s), correction(s) or modification(s) become effective.

5. By applying for and accepting this Section 401 WQC determination, COH agrees that the DOH-CWB may conduct routine inspection of the construction site in accordance with Hawaii Revised Statutes, Section 342D-8.
6. Construction debris, waste products, vegetation and/or dredged material removed from the construction site shall be disposed of at the upland State and County approved sites. A Solid Waste Disclosure Form for Construction Sites shall be completed and returned to the DOH, Solid and Hazardous Waste Branch, Solid Waste Section. The form can be downloaded at: <http://health.hawaii.gov/shwb/files/2013/06/swdiscformnov2008.pdf>. No construction material or construction activity-related materials shall be stockpiled, stored, or

placed in State waters or in ways that will disturb or adversely impact the aquatic environment.

7. Runoff from the stockpiling site shall be contained on land and not be allowed to enter, either directly or indirectly, State waters.
8. COH shall comply with all new State WQS adopted by the DOH after the effective date of this letter.
9. DOH-CWB reserves the right of taking appropriate enforcement action authorized by law against any non-compliance of conditions contained in this letter and applicable State WQS requirements.
10. Pursuant to Item No. 16. of the November 17, 2015 Application, Ms. Dora Beck, COH, is recognized as the duly authorized representative to submit all information/documents for compliance with the WQC conditions. A new authorized representative may be appointed.

Please include the **File No. WQC0876** and the following certification statement in all future correspondence with the DOH for the subject project:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Please complete the DOH Customer Satisfaction Survey regarding your request for a Section 401 WQC. This brief survey is available on the e-Permitting Portal located at: <https://eha-cloud.doh.hawaii.gov/epermit/>. Please use the Form Finder button and search for the “Customer Satisfaction Survey.

Ms. BJ Leithead Todd
December 3, 2015
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WQC0876.FNL.15

If you have any questions, please contact Mr. Mathew Kurano of the Enforcement Section or Mr. Edward Chen of the Engineering Section, CWB, at (808) 586-4309.

Sincerely,



STUART YAMADA, P.E., CHIEF
Environmental Management Division

GH:np

- c: Regulatory Office, POH, COE [via e-mail cepoh-ro@usace.army.mil only]
Ms. Michelle R. Lynch, POH, COE [via e-mail Michelle.R.Lynch@usace.army.mil only]
Ms. Dora Beck, County of Hawaii, CH-DEM-WWD
[via e-mail Dora.Beck@hawaiicounty.gov only]
Ms. Julie Zimmerman, AECOM [via e-mail Julie.Zimmerman@aecom.com only]
Mr. Lambert Yamashita, AECOM
[via e-mail Lambert.Yamashita@aecom.com only]
(w/Receipt No. 37023 for \$1000 Filing Fee only)
Mr. John Nakagawa, Office of Planning, DBEDT
[via e-mail jnakagaw@dbedt.hawaii.gov only]
Ms. Jessie Paahana, COE [via e-mail jessie.k.paahana@usace.army.mil only]



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

January 28, 2015

SUBJECT: Nationwide Permit Verification for the Hilo Wastewater Treatment Plant Outfall Repairs, Puhi Bay, Hilo, Island of Hawaii, Hawaii Department of the Army File No. POH-2011-00282

County of Hawaii
Department of Environmental Management, Wastewater Division
Attention: Dora Beck
25 Aupuni Street
Hilo, Hawaii 96720

Dear Ms. Beck:

The Honolulu District, U.S. Army Corps of Engineers (Corps), has completed its review of your request for authorization dated May 7, 2015 and revised November 24, 2015 for the proposed reinforcement of the Hilo Wastewater Treatment Plant Outfall Pipeline located in Puhi Bay, Hilo, Island of Hawaii, Hawaii. This office has verified that your proposed activity complies with the terms and conditions of Nationwide Permit (NWP) #12, Utility Line Activities and NWP #16, Return Water From Upland Contained Disposal Areas, and the overall NWP Program issued on March 17, 2012, pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and/or Section 404 of the Clean Water Act (Section 404). Please reference Department of the Army (DA) file number **POH-2011-00282** in any future correspondence relating to this permit.

This NWP verification is being issued pursuant to Section 10 and Section 404 and authorizes the following work as described below and as depicted on the enclosed drawings (Enclosure 1):

The proposed project will include the discharge of 51 cubic yards of tremie concrete into a geotextile fabric form 38-feet long by 24-feet wide, on center, to reinforce a portion of the existing 4,400-foot long 48-inch reinforced concrete pipeline. Temporary surface repairs to Sta. 8+55 and Sta. 41+46 using injection of multigrout pumped in place underwater either using manual injection or a high-pressure electric injection pump will also be part of the project.

Loose sand and rubble within the fill area and within two 38-foot long by 1.5-foot wide by 2-foot deep toe trenches lying parallel to the pipeline will be excavated using a barge-mounted hydraulic submersible pump. Excavated material and marine water will be pumped onto the barge for settling of rubble and filtration of return water. Filtered water will return to the bay from the barge. Excavated materials will be disposed of in an

approved upland disposal site.

Equipment, machinery and materials necessary for the in-water construction activities will be staged atop a floating barge anchored using a Manta Ray anchoring system (subgrade steel rod anchor limited to an eyehook at the benthic surface for barge attachment) near the project site. Anchors will remain in the same position throughout the duration of construction, with removal upon completion of the project. All material will be stockpiled offsite and transported to the nearby Hilo Harbor for loading onto the construction barge, daily. Tremie concrete mixed off-site will be transported atop the barge and pumped into the fabric form to fill the scour to the necessary thickness and configuration, approximately half-way up the surface of the pipeline. Prior to site preparation work, the applicant will transplant any coral adhered to rubble and occurring within the project area and out 3-feet beyond the proposed footprint to a suitable donor site within 50-meters of the project site.

In order for this NWP authorization to be valid, you must ensure that the work is performed in accordance with the *Nationwide Permit General Conditions* and the *Honolulu District Regional Conditions* (Enclosure 2), and the following project-specific Special Conditions:

1. Incidents where any individuals of Green Sea Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*), Humpback Whale, (*Megaptera novaeangliae*), Loggerhead Sea Turtle (*Caretta caretta*), Hawaiian Monk Seal, (*Monachus schauinslandi*) listed by NOAA Fisheries under the Endangered Species Act appear to be injured or killed as a result of discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States authorized by this NWP shall be reported to NOAA Fisheries, Office of Protected Resources at (301) 713-1401 and the Regulatory Office of the Honolulu District of the U.S. Army Corps of Engineers at (808) 835-4303. The finder should leave the animal alone, make note of any circumstances likely causing the death or injury, note the location and number of individuals involved and, if possible take photographs. Adult animals should not be disturbed unless circumstances arise where they are obviously injured or killed discharge exposure or some unnatural cause. The finder may be asked to carry out instructions provided by NOAA Fisheries, Office of Protected Resources, to collect specimens or take other measurements to ensure that evidence intrinsic to the specimen is preserved.
2. Mechanical abrasion of the seafloor must not exceed the designated 3-foot buffer surrounding the fill footprint.

3. All in-water construction activities (e.g. installation of anchor points for the construction barge, coral transplantation, excavation to prepare the site for reinforcement, installation of the fabric form, etc.) must be observed and assisted by a diver, where necessary, to ensure there is no inadvertent damage to corals.
4. Anchor points must be selected in areas with a minimum 3-foot radius void of corals. All components of the anchoring system must be removed at the completion of the authorized work.
5. In-water construction, including coral transplantation, must be scheduled to avoid the peak coral spawning period of June 1 to August 31. Work must also be scheduled to avoid forecasted adverse weather or wave conditions and halted under unforeseen circumstances until ambient conditions resume.
6. Should in-water work generate a turbidity plume, work must cease until corrective action is taken to reduce turbidity and must not resume until marine waters have reached ambient levels.
7. To avoid and minimize impacts to corals, the permittee must incorporate the following monitoring requirements into the final Coral Avoidance and Minimization Plan (CAMP) for the project:

Post-transplantation monitoring must occur at 3-, 6-, 12-, 18- and 24-months post-transplant. A proximal reference site must be identified and monitored to determine whether uncontrollable variables affected the transplanting success. The monitoring reports must include a description of the current condition of the receiver site(s), including the approximate number of coral colonies, size classes and species transplanted; receiver site(s) location data (e.g., coordinate location, size, water depth, etc.); date of the monitoring; general site conditions during monitoring; names and qualifications of the monitor(s); the methodology employed to conduct the monitoring; photographic surveys; evidence of coral recruitment and percentage of live coral cover; quantifications of transplanted coral colony mortality and partial mortality (e.g., percentage live tissue); and observations of indicators of reattachment, growth, disease, potential biotic or abiotic threats/stressors to survivorship, invasive species, and overall health. Monitoring reports must be submitted to the Corps via email at CEPOH-RO@usace.army.mil, Attn: Paahana, within 30-days after each survey.

A final draft of the proposed CAMP must be submitted to the Corps a minimum of 14 days prior to coral transplantation. The Corps will review the plan and coordinate with applicable resource agencies, if necessary. The authorized work must not begin until the Corps approves the final plan.

8. The permittee must notify the Corps by phone at 808-835-4107 or by email at CEPOH-RO@usace.army.mil, Attn: Paahana, of the intent to proceed with the authorized work at least 72-hours in advance.
9. Before beginning the authorized work, you must include a representative of this office in at least one pre-construction meeting with at least one representative for the permittee and at least one representative for the construction contractor to discuss the terms and conditions of this permit.
10. Within 30 days of completion of the pipeline reinforcement authorized by this permit, the permittee must submit the construction as-built drawings of the installed concrete form to the Corps at CEPOH-RO@usace.army.mil, Attn: Paahana.
11. The applicant must comply with the required Pac-SLOPES conditions agreed upon by the USACE and NOAA-NMFS and provided as Enclosure 3.

In addition, you must implement and abide by the conditions of the Section 401 Water Quality Certification (WQC 0876) issued to you on December 3, 2015 by the State of Hawaii Department of Health, Clean Water Branch. The State of Hawaii Department of Business, Economic Development and Tourism, Office of Planning issued a Coastal Zone Management consistency general concurrence for the 2012 NWP on March 16, 2012.

This NWP verification is valid until **March 18, 2017** unless this NWP is modified, reissued, or revoked prior to that date. If the authorized work has not commenced or is not under contract by March 18, 2017, then please contact this office at least 60 days prior to expiration of the NWP to request a permit extension. 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 Section 404 and/or Section 10 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.

Finally, General Condition #30 requires a signed certification be submitted to this office upon completion of work. Therefore, please sign, date and return the enclosed *Compliance Certification* form (Enclosure 4) within 7 days of completion of work to CEPOH-RO@usace.army.mil.

Thank you for your cooperation with the Honolulu District Regulatory Program. Should you have any questions related to this determination, please contact Ms. Jessie Paahana of my staff at 808-835-4107 or via e-mail at jessie.k.paahana@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 http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Sincerely,

A handwritten signature in black ink that reads "Michelle Lynch". The signature is written in a cursive, flowing style.

Michelle Lynch
Chief, Regulatory Office

Enclosure(s)

cc (sent via email):

State of Hawaii DBEDT Office of Planning (John Nakagawa)

State of Hawaii DOH-CWB (Darryl Lum)

NOAA-NMFS, Habitat Conservation Division (Gerry Davis)

USCG (Nicolas Jarboe)

AECOM (Julie Zimmerman, Lambert Yamashita)

Nationwide Permit (12) Utility Line Activities (3/19/2012)

Activities required for the construction, maintenance, repair, and removal of utility 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.

Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. 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 power line or 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 into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility 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 utility lines, including overhead power lines and 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 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 also authorizes temporary structures, fills, and work 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, 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.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (See general condition 31.) (Sections 10 and 404)

Note 1: Where the proposed utility line is constructed or installed 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 pre-construction notification and 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: 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 3: 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 Section 9 of the Rivers and Harbors Act of 1899. 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 4: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

REGIONAL CONDITIONS:

Honolulu District has adopted the following Regional Conditions as a means to ensure no more than minimal impacts, on an individual and/or cumulative basis, will occur in waters of the United States by projects authorized by Nationwide Permit (NWP). The following Regional Conditions are applicable unless the Honolulu District makes a written determination, based on project-specific information, that omitting or deviating from a particular Regional Condition is both merited and would not result in more than minimal impacts to the aquatic environment.

1. **Pre-Construction Notification (PCN).** Notification to the Honolulu District is required, in accordance with General Condition 31, for any activity authorized by this NWP that will take place within any of the geographic areas subject to the regulatory jurisdiction of the Honolulu District. You must obtain a written NWP verification from the Honolulu District before commencing the authorized activity.
2. **Coral Reef Advisory:** Please be advised that coral reefs are special aquatic sites with complex ecosystems that may consist of many contributing biological assemblages, including sponges, macroalgae, seagrass, soft corals, gorgonians, etc., in addition to reef-building coral colonies. It should not be assumed that low live coral cover or the absence of live coral colonies in a particular sample or location indicates the absence of potential impacts to a coral reef by a given project. The Honolulu District determines, after coordinating with the appropriate resource agencies, the presence and magnitude of impacts to coral reef special aquatic sites, as well as appropriate and practicable compensatory mitigation requirements, commensurate with the scope and scale of specific authorized activities. No activity that directly results in a permanent loss of coral reef may be authorized by this NWP if the District Engineer determines, after coordinating with appropriate resource agencies, that compensatory mitigation is required.
3. **National Wildlife Refuges, Hawaii State Wildlife Sanctuaries, Hawaii Marine Life Conservation Districts, and Guam Marine Preserve Areas.** This NWP may not be used to authorize activities within or directly affecting national wildlife refuges, Hawaii state wildlife sanctuaries, Hawaii marine life conservation districts, or Guam marine preserve areas, including wetlands adjacent to such designated areas, unless the Honolulu District determines after coordination with appropriate resource agencies that the activity would result in not more than minimal adverse impacts to aquatic resources.
4. **Anchialine pools, montane bogs, natural freshwater lakes and saline lakes.** This NWP may not be used to authorize activities within anchialine pools, montane bogs, natural freshwater lakes, or saline lakes.
5. **Mangroves and Sea and Freshwater Caves, including Vadose Shafts, Sink Holes, Allogetic Streams, Stream Caves, Phreatic Zones, and Cenotes, in the Territories of Guam and American Samoa and the Commonwealth of the Northern Mariana Islands (CNMI).** This NWP may not be used to authorize any activity in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands (CNMI) within mangroves or sea or freshwater caves, including vadose shafts, sink holes, allogetic streams, stream caves, phreatic zones, and cenotes.
6. **Stream Modification.** This NWP may not be used to authorize permanent stream channelization or the construction of dams that impound waters of the United States.
7. **Length Limitation.** Any discharge of dredged or fill material in any stream, including intermittent and ephemeral streams, may not exceed 200 linear feet if authorized by this NWP.
8. **Compensatory Mitigation.** Upland vegetation buffers may not be used as the primary or sole method to offset permanent losses of wetland or aquatic resources within the geographic areas subject to the regulatory jurisdiction of the Honolulu District. However, use of vegetated upland buffers is strongly encouraged as part of a compensatory mitigation plan that replaces lost aquatic resource functions through restoration, enhancement, and creation or, under exceptional circumstances, preservation of wetland and aquatic areas. Compensatory mitigation shall provide a minimum ratio of 1:1 replacement of unavoidable aquatic resource function losses or area. (Note: The actual ratio may be larger in order to account for the impact plus temporal loss of area/functions and/or uncertainty of mitigation success.)
9. **Minimization Measures.** A plan employing the techniques listed below must be implemented to avoid or minimize disturbance to wetlands, riparian areas and beach fringes and/or to re-establish vegetation in such areas when disturbance cannot be avoided. Areas disturbed during project construction must be revegetated as soon as possible. Erosion protection must be provided and maintained until the soil is permanently stabilized.
 - a. Avoidance and minimization techniques may vary with site conditions and include, but are not limited to, the following:
 - (1) Planning construction access and scheduling work to avoid or minimize damage to wetland vegetation.
 - (2) Using crane matting or suitable geotextile material to protect vegetation from damage by heavy equipment.
 - (3) Insuring that anchorage of construction barges, equipment, and their anchor lines avoid coral reefs and seagrass beds.
 - b. Revegetation techniques may vary with site conditions and include, but are not limited to seeding, planting, replacement of reserved ground cover, and/or fertilizing of re-contoured ground to promote re-establishment of natural plant communities. Species to be used for seeding and planting, preferably those that provide the same functions as those species they are replacing, shall follow this order of preference: 1) species native to the site; 2) species native to the area; 3) species native to the state; 4) non-native non-invasive, species. Note: non-native species shall be used only when native species are not available. The following species are known to be highly invasive and shall not be used under any circumstances for revegetation under these NWPs: 1) species included on the USDA APHIS Plant Protection and Quarantine, Federal Noxious Weed List as of 6/7/99; 2) species included on the Hawaii Department of Agriculture, List of Plant Species Designated as Noxious Weeds for Eradication or Control Purposes (6/18/92); and 3) the University of Hawaii, Department of Botany, Distribution Maps of Alien Plants in Hawaii by island, Hawaiian Ecosystems at Risk (HEAR) Project (1/16/01); and 4) plants that score >1 and evaluated as 'Accept' on the Hawaii Weed Risk Assessment.
10. **Site Identification.** Prior to clearing and construction, project limits of authorized sites must be clearly identified in the field (e.g., by staking, flagging, silt fencing, buoys, existing footprint for maintenance activities, etc.) to ensure that impacts to waters of the United States (including wetlands) beyond project footprints are avoided. Such identification of project limits must be properly maintained until construction is completed and the soils have been stabilized.
11. **Protected or Endangered Species.**
 - a. Constant vigilance shall be kept for the presence of protected species during all aspects of the proposed action. Protected species include plants and animals listed or proposed for listing as threatened or endangered under Endangered Species Act (ESA), birds covered under the Migratory Bird Conservation Act, as well as all marine mammals. Although the protected species potentially affected would be determined on a project-specific basis, protected species typically of concern in Hawaii include: Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, Hawaiian duck, Hawaiian goose, green sea turtle, hawksbill sea turtle, and Hawaiian monk seal. In the Territory of Guam or the Commonwealth of the Northern Mariana Islands species include: nightingale wee-warbler, Mariana common moorhen, green sea turtle, and hawksbill sea turtle. In American Samoa species also include: green sea turtle and hawksbill sea turtle.
 - b. All on-site project personnel, irrespective of their employment arrangement or affiliation (e.g. employee, contractor, etc.), shall be apprised of the status of any protected species potentially present in the project area and the protections

afforded to those species under Federal laws. Brochures explaining the laws and guidelines for listed species in Hawaii, American Samoa, and Guam may be downloaded from http://www.nmfs.noaa.gov/prot_res/MMWatch/hawaii.htm and <http://www.fws.gov/pacificislands/species.html>.

- c. The project foreman shall designate an appropriate number of competent observers to survey the area adjacent to the proposed action for protected species. The project foreman shall also have in his/her possession at the jobsite a handout with photographs of protected species that may enter the construction site to assist with identification of the protected species. (U.S. Fish and Wildlife Service – Pacific Islands Fish and Wildlife Office (PIFWO) will provide the informational handout).
- d. Surveys of the project area shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour, to ensure that no protected species are in the project area (typically within 50 yards of the proposed work). All work shall be postponed or halted when protected species are present, and shall only begin/resume after the animals have voluntarily departed the area. In the case of sessile species, a conservation plan shall be developed and approved between the Regulatory Branch, U.S. Army Corps of Engineers and PIFWO and/or National Marine Fisheries Service Pacific Islands Regional Office (PIRO).
- e. If an onsite protected species does not depart the area on its own for 3 days or more, we recommend that the permittee, or responsible contractor, contact PIFWO for further technical assistance and guidance (808) 792-9400.
- f. Any interaction with or incidental take of protected species shall be reported immediately to the Regulatory Branch, U.S. Army Corps of Engineers (808) 835-4303. Additionally, pursuant to the ESA, any take of ESA-listed species (other than marine mammals) must be reported to the U.S. Fish and Wildlife Office of Law Enforcement in Honolulu at 1-808-861-8525. Any incidental take of marine mammals shall be reported immediately to the National Oceanic and Atmospheric Administration's (NOAA) 24-hour hotline at 1-888-256-9840. Information reported must include the name and phone number of a point of contact, location of the incident, and nature of the take and/or injury.

Note: Additional requirements may be designated by the Honolulu District as appropriate for specific projects, including all conservation measures and/or best management practices (BMPs) required by any ESA consultation for the project.

12. **Standard Best Management Practices (BMPs).** Site-specific BMPs are generally a requirement of NWP verifications, either directly or by state water quality certification conditions, which are incorporated by reference. A permittee risks delays or enforcement action if work is commenced pursuant to a site-specific BMP plan that includes regulated activities, such as temporary access fill or stream diversions, that were not authorized under the NWP verification. To facilitate efficient review of a project, site-specific BMPs must be submitted as part of the PCN required for any activity requiring authorization under a NWP.

To the extent applicable, the following BMPs must be implemented to minimize the degradation of water quality and impacts to fish, coral reefs, and other aquatic resources:

- a. Turbidity and sediment from project-related work must be minimized and contained to the immediate vicinity of the authorized activity through the appropriate use of effective sediment containment devices.
- b. To the extent practicable, the work must be conducted in the dry season or when any affected stream has minimal or no flow. The site must be stabilized to prevent erosion and runoff and work must stop during flooding, intense rainfall, storm surge, or high surf conditions. To the extent practicable, shoreline work must be done during low tides.

- c. To the extent practicable, work in the aquatic environment must be scheduled to avoid coral spawning and recruitment periods and sea turtle nesting and hatching periods. Coordination with federal resource agencies (U.S. Fish and Wildlife Service and/or NOAA) can assist in identifying these time periods.
- d. Dredging and filling in the aquatic environment must be designed to avoid or minimize adverse impacts to or the loss of special aquatic sites (wetlands (swamps, marshes, bogs, etc.), mudflats, vegetated shallows/seagrass beds, coral reefs and/or riffle and pool complexes).
- e. All project-related materials (fill, landscaping, etc.) and equipment (dredges, barges, backhoes, etc.) to be placed in any aquatic environment shall be inspected and cleaned of pollutants, organic matter, and invasive species (including snakes, frogs, and marine plants and animals, etc.) prior to use in any aquatic environment.
- f. No project-related materials (fill, revetment rock, pipe etc.) shall be stockpiled in the aquatic environment (intertidal zones, reef flats, stream channels, wetlands etc.) or in close proximity such that materials could be carried into waters by wind, rain, or high surf.
- g. All construction debris and material removed from the marine/aquatic environment shall be disposed of at an approved upland or alternative disposal site.
- h. No contamination (by trash, debris, sediment, non-native species introductions, attractions of non-native pests, etc.) of adjacent waters of the United States, including special aquatic sites, shall result from project-related activities. Special attention must be paid to the fouling level on barges, vessels, and equipment whereas to minimize the transport and potential introduction and spread of aquatic non-native species. In addition, if dredged or excavated material or structural members are removed from the water or placed in the water, measures must be taken to prevent the spread or introduction of any aquatic non-native species. This shall be accomplished by implementing a litter-control plan and on a site or project specific need basis, developing a Hazard Analysis and Critical Control Point Plan (HACCP – see <http://www.haccp-nrm.org/Wizard/default.asp>) to prevent attraction and introduction of non-native species.
- i. Fueling of project-related vehicles and equipment shall take place away from the water and a contingency plan to control petroleum products accidentally spilled during the project shall be developed. The plan shall be retained on site with the person charged with the responsibility of compliance with the plan. Absorbent pads and containment booms shall be stored on-site, if appropriate, to facilitate the clean-up of accidental petroleum releases.
- j. To minimize turbidity in the aquatic environment, any under-layer fills used in the project shall be protected from erosion with suitable material (such as precast concrete armor or mat units) as soon after placement as practicable.
- k. Any soil exposed near water as part of the project shall be protected from erosion (with suitable material such as geotextile, filter fabric, etc.) after exposure and stabilized as soon as practicable (with vegetation matting, hydroseeding etc.). Revegetation should follow the established standards in Regional Condition #10 (Minimization Measures).
- l. Silt fences, silt curtains, or other diversion or containment structures shall be installed to contain sediment and turbidity at the work site (a) parallel to, and within 10 feet of, the toe of any fill or exposed soil which may introduce sediment to an adjacent aquatic site; and (b) adjacent to any fill placed or soil exposed within an aquatic site. All silt fences, curtains, and other structures shall be installed properly and maintained in a functioning manner for the life of the construction period and until the impact area is permanently stabilized, self sustaining, and/or turbidity levels, elevated due to construction, have returned to ambient levels.
- m. When the discharge of fill material results in the replacement of wetlands or waters of the US with impervious surfaces, the authorized activity must not

result in more than minimal degradation of water quality (in accordance with General Condition 25). To ensure NWP's do not cumulatively degrade water quality from increasing impervious area, projects should incorporate low impact development stormwater practices (e.g. native landscaping, bioretention and infiltration techniques, buffers, green roofs, and green spaces) to the extent practical to retain stormflows and pollutants on-site. More information including low impact stormwater concepts and definitions is available at: <http://www.epa.gov/owow/NPS/lid> .

13. **State of Hawaii, Department of Health, Clean Water Branch (DOH) Requirements (Projects in the State of Hawaii Only).**

- a. You must obtain a Clean Water Act (CWA) Section 401 Water Quality Certification (WQC) from the DOH before the Honolulu District can issue verification for proposed work requiring authorization under CWA Section 404. All conditions of a Section 401 WQC issued for a project are hereby incorporated into the project's NWP verification and are subject to discretionary enforcement by the Honolulu District. The permittee is strongly encouraged to submit a DOH WQC application to DOH, with site-specific BMPs, applicable monitoring plan, and any dredge spoils management plans.
- b. You must contact the DOH to determine if a National Pollutant Discharge Elimination System (NPDES) permit is required. For work authorizations requiring verification solely under Section 10 of the Rivers and Harbors Act of 1899, any best management practices (BMPs) required or recommended by the DOH for purposes of avoiding and minimizing the discharge of pollutants, other than dredged or fill material, into state waters, including 303(d)-listed impaired waters, are hereby incorporated into the NWP verification. These conditions are subject to discretionary enforcement by the Honolulu District.
- c. For projects directly impacting "Impaired Waters" as listed on the most recent CWA Section 303(d) list (<http://hawaii.gov/health/environmental/water/cleanwater/integrated/index.html>), the PCN shall:
 - (1) Identify the waterbody as an "Impaired Water" and,
 - (2) Identify mitigating measures or BMPs necessary to avoid further degradation of the impaired water.
- d. You may dispose of dredged spoils at state permitted landfills, provided you comply with the landfill's acceptance criteria. Preapproval by the DOH-Solid and Hazardous Waste Branch is not required for this action. The generator shall provide documentation to DOH upon request. You may use dredge spoils at off-site locations, provided the dredged spoils meet the Hawaii DOH Soil Environmental Action Levels for unrestricted use. You must adequately characterize the dredged spoils, including conducting sampling and analysis in accordance with the HEER Office Technical Guidance Manual and other relevant guidance documents. Sampling methodology and analytical results shall be documented, including a comparison to EALs, and maintained by the generator. The spoils shall also meet the definition of inert fill material, which generally includes "...earth, soil, rocks, and rock-like materials... [that do not] contain vegetation or other organic material, or other solid waste." The generator shall provide the documentation to the DOH upon request. Offsite placement of dredged spoils that do not meet the above criteria or occur without adequate records may be considered illegal dumping, subject to enforcement action.

14. **Sidecasting.** For any activity authorized under NWP 12, no material may be sidecast into flowing waters or waters subject to tidal action. Any material removed from an area suspected to contain contamination may not be sidecast for re-use, but must be disposed of in an upland location. All sidecast material must be completely removed at the earliest practicable date but no later than 30 days after its placement in waters of the United States..

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 NWP's, or who is currently relying on an existing or prior permit authorization under one or more NWP's, 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 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.
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 NWP's 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 and storm water management activities, 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.
 13. Removal of Temporary Fills. 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. No 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. 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).
 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 the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.
 - b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.
 - c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, 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 designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. 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. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation 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 with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.
 - e) Authorization of an activity by a 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 U.S. 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) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.
19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.
 20. Historic Properties.
 - a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, 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. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.
 - c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may 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 may be affected by the proposed work 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 resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, 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, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and 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 or that consultation under Section 106 of the NHPA has been completed.
- d) 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. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work 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 (16 U.S.C. 470h-2(k)) 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. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you 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 NWP's 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.
- b) For NWP's 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWP's only after it is determined 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 adverse effects on the aquatic environment are 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 adverse effects to the aquatic environment are 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 effects of the proposed activity are minimal, and provides a project-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 minimal adverse effects on the aquatic environment. 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 minimal adverse effects on the aquatic environment.
- (2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.
- (3) 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) – (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)).
- (4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.
- (5) 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.
- d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

- e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWP. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project 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 a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.
- f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. 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 establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing 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 compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.
- g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory 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.
- h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of 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 effects of the project to the 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 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. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe 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)). 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 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 prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not 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.
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 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 statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions.
 - 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
 - The signature of the permittee certifying the completion of the work and mitigation.
31. Pre-Construction Notification.
- 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 in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may 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 (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. 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 project;
 - (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; 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. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project 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);
 - (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral 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 waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;
 - (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands 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 effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.
- (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and
 - (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.
- c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.
- 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 project's adverse environmental effects to a minimal level.
 - (2) For 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, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed, and for all NWP 48 activities that require pre-construction notification, 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 (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), 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 telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse 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 the net adverse environmental effects to the aquatic environment of the proposed activity are 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.
 - (3) 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.
 - (4) 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. For a linear project, this determination will include an evaluation of the individual crossings 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 authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. 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 assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.
2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are 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 effects on the aquatic environment are 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 no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.
3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project 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 project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project 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 effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When 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.

SECTION 401 WATER QUALITY CERTIFICATION:

State of Hawaii, Department of Health, Clean Water Branch (DOH) Requirements (Projects in the State of Hawaii Only)

- a. **You must obtain a Clean Water Act (CWA) Section 401 Water Quality Certification (WQC) from the DOH before the Honolulu District can issue verification for proposed work requiring authorization under CWA Section 404. All conditions of a Section 401 WQC issued for a project are hereby incorporated into the project's NWP verification and are subject to discretionary enforcement by the Honolulu District. The permittee is strongly encouraged to submit a DOH WQC application to DOH, with site-specific BMPs, applicable monitoring plan, and any dredge spoils management plans.**
- b. **You must contact the DOH to determine if a National Pollutant Discharge Elimination System (NPDES) permit is required. For work authorizations requiring verification solely under Section 10 of the Rivers and Harbors Act of 1899, any best management practices (BMPs) required or recommended by the DOH for purposes of avoiding and minimizing the discharge of pollutants, other than dredged or fill material, into state waters, including 303(d)-listed impaired waters, are hereby incorporated into the NWP verification. These conditions are subject to discretionary enforcement by the Honolulu District.**
- c. **For projects directly impacting "Impaired Waters" as listed on the most recent CWA Section 303(d) list (<http://hawaii.gov/health/environmental/water/cleanwater/integrated/index.html>), the PCN shall:**
 - (1) **Identify the waterbody as an "Impaired Water" and,**
 - (2) **Identify mitigating measures or BMPs necessary to avoid further degradation of the impaired water.**
- d. **You may dispose of dredged spoils at state permitted landfills, provided you comply with the landfill's acceptance criteria. Preapproval by the DOH-Solid and Hazardous Waste Branch is not required for this action. The generator shall provide documentation to DOH upon request. You may use dredge spoils at off-site locations, provided the dredged spoils meet the Hawaii DOH Soil Environmental Action Levels for unrestricted use. You must adequately characterize the dredged spoils, including conducting sampling and analysis in accordance with the HEER Office Technical Guidance Manual and other relevant guidance documents. Sampling methodology and analytical results shall be documented, including a**

comparison to EALs, and maintained by the generator. The spoils shall also meet the definition of inert fill material, which generally includes "...earth, soil, rocks, and rock-like materials... [that do not] contain vegetation or other organic material, or other solid waste." The generator shall provide the documentation to the DOH upon request. Offsite placement of dredged spoils that do not meet the above criteria or occur without adequate records may be considered illegal dumping, subject to enforcement action.

COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION (3/16/2012):

The Hawaii Coastal Zone Management (CZM) Program Coastal Zone Management Act (CZMA) Federal Consistency review for the 2012 U.S. Army Corps of Engineers Nationwide Permits resulted in a general concurrence with the Nationwide Permit General Conditions and the 2012 Nationwide Permit Honolulu District Regional Conditions. The Hawaii CZM Program reserves the right to require an individual federal consistency review for any proposed activity covered by a NWP. CZM consistency general concurrences were issued for each of the following NWPs: 1,2,3,4,5,6, 7,9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,20,22,23,25,27,28,30,31, 32, 33, 35, 36, 37, 38, 40, 41, 43, 45, 46, 48, and 51.

Excluded NWP-The following NWPs are excluded from use within the State of Hawaii as explained below:

- 2012 Nationwide Permit Honolulu District Regional Conditions Regional Condition 1 - Exclusions; Revoked Permits The Corps Honolulu District has revoked the following NWPs for use within the State of Hawaii: NWPs 21, 24, 29, 34, 39, 42, 44, 49, 50, and 52.
- Reserved NWPs: NWP 26 and NWP 47 are designated by the Corps as "reserved." If these NWPs are made available for use during the five year authorization period for the 2012 NWPs, then Hawaii CZM Program federal consistency review will be required.
- NWP 8- Oil and Gas Structures on the Outer Continental Shelf, is not currently applicable to the State of Hawaii. If this NWP becomes available for use during the five-year authorization period for the 2012 NWPs, then Hawaii CZM Program federal consistency review will be required. In the event that NWP 8 should be amended to include renewable energy structures within areas leased for such purposes by the Department of Interior, Bureau of Ocean Energy Management, then Hawaii CZM Program federal consistency review will be required.

The 2012 NWPs are denied without prejudice in the Territories of American Samoa and Guam, and in the CNMI. As is the case with any DA authorization, verification of a NWP does not obviate the need for any other Federal, State or local authorization.

2012 NWP REGIONAL CONDITIONS DEFINITIONS:

Allogenic streams - streams flowing from an impervious surface, such as volcanic rock into porous limestone. Example: in Northern Guam, such streams will percolate into the ground and can flow into the marine environment from subsurface channels.

Anchialine pools – marine or brackish water bodies that have no surface connection but that, through permeable substrates, have subsurface hydrologic connection to the ocean.

Cenotes - sinkholes open to the surface and extending into groundwater.

Coral Reefs - As defined at 40 CFR 230.44 (Clean Water Act, Section 404(b)(1) Guidelines), coral reefs consist of the skeletal deposit, usually of calcareous or siliceous materials, produced by the vital activities of anthozoan polyps or other invertebrate organisms present in growing portions of the reef.

Phreatic zones - the zones along a coast where freshwater and saltwater mix usually causing rapid dissolution of limestone with a resulting cave formation

Sinkholes - caves formed when a water formed cave either collapses or is opened up by adequate dissolution of limestone by water.

Stream caves - a series of caves formed by water flowing through limestone usually structurally complex.

Vadose Shafts - vertical shafts in limestone that allows rapid passage of water into the ground water lens.

Nationwide Permit (16) Return Water From Upland Contained Disposal Areas (3/19/2012)

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 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. (Section 404)

REGIONAL CONDITIONS:

Honolulu District has adopted the following Regional Conditions as a means to ensure no more than minimal impacts, on an individual and/or cumulative basis, will occur in waters of the United States by projects authorized by Nationwide Permit (NWP). The following Regional Conditions are applicable unless the Honolulu District makes a written determination, based on project-specific information, that omitting or deviating from a particular Regional Condition is both merited and would not result in more than minimal impacts to the aquatic environment.

1. **Pre-Construction Notification (PCN).** Notification to the Honolulu District is required, in accordance with General Condition 31, for any activity authorized by this NWP that will take place within any of the geographic areas subject to the regulatory jurisdiction of the Honolulu District. You must obtain a written NWP verification from the Honolulu District before commencing the authorized activity.
2. **Coral Reef Advisory:** Please be advised that coral reefs are special aquatic sites with complex ecosystems that may consist of many contributing biological assemblages, including sponges, macroalgae, seagrass, soft corals, gorgonians, etc., in addition to reef-building coral colonies. It should not be assumed that low live coral cover or the absence of live coral colonies in a particular sample or location indicates the absence of potential impacts to a coral reef by a given project. The Honolulu District determines, after coordinating with the appropriate resource agencies, the presence and magnitude of impacts to coral reef special aquatic sites, as well as appropriate and practicable compensatory mitigation requirements, commensurate with the scope and scale of specific authorized activities. No activity that directly results in a permanent loss of coral reef may be authorized by this NWP if the District Engineer determines, after coordinating with appropriate resource agencies, that compensatory mitigation is required.
3. **National Wildlife Refuges, Hawaii State Wildlife Sanctuaries, Hawaii Marine Life Conservation Districts, and Guam Marine Preserve Areas.** This NWP may not be used to authorize activities within or directly affecting national wildlife refuges, Hawaii state wildlife sanctuaries, Hawaii marine life conservation districts, or Guam marine preserve areas, including wetlands adjacent to such designated areas, unless the Honolulu District determines after coordination with appropriate resource agencies that the activity would result in not more than minimal adverse impacts to aquatic resources.
4. **Compensatory Mitigation.** Upland vegetation buffers may not be used as the primary or sole method to offset permanent losses of wetland or aquatic resources within the geographic areas subject to the regulatory jurisdiction of the Honolulu District. However, use of vegetated upland buffers is strongly encouraged as part of a compensatory mitigation plan that replaces lost aquatic resource functions through restoration, enhancement, and creation or, under exceptional circumstances, preservation of wetland and aquatic areas. Compensatory mitigation shall provide a minimum ratio of 1:1 replacement of unavoidable aquatic resource function losses or area. (Note: The actual ratio may be larger in order to account for the impact plus temporal loss of area/functions and/or uncertainty of mitigation success.)
5. **Minimization Measures.** A plan employing the techniques listed below must be implemented to avoid or minimize disturbance to wetlands, riparian areas and beach fringes and/or to re-establish vegetation in such areas when disturbance cannot be avoided. Areas disturbed during project construction must be revegetated as soon as possible. Erosion protection must be provided and maintained until the soil is permanently stabilized.
 - a. Avoidance and minimization techniques may vary with site conditions and include, but are not limited to, the following:
 - (1) Planning construction access and scheduling work to avoid or minimize damage to wetland vegetation.
 - (2) Using crane matting or suitable geotextile material to protect vegetation from damage by heavy equipment.
 - (3) Insuring that anchorage of construction barges, equipment, and their anchor lines avoid coral reefs and seagrass beds.
 - b. Revegetation techniques may vary with site conditions and include, but are not limited to seeding, planting, replacement of reserved ground cover, and/or fertilizing of re-contoured ground to promote re-establishment of natural plant communities. Species to be used for seeding and planting, preferably those that provide the same functions as those species they are replacing, shall follow this order of preference: 1) species native to the site; 2) species native to the area; 3) species native to the state; 4) non-native non-invasive, species. Note: non-native species shall be used only when native species are not available. The following species are known to be highly invasive and shall not be used under any circumstances for revegetation under these NWPs: 1) species included on the USDA APHIS Plant Protection and Quarantine, Federal Noxious Weed List as of 6/7/99; 2) species included on the Hawaii Department of Agriculture, List of Plant Species Designated as Noxious Weeds for Eradication or Control Purposes (6/18/92); and 3) the University of Hawaii, Department of Botany, Distribution Maps of Alien Plants in Hawaii by island, Hawaiian Ecosystems at Risk (HEAR) Project (1/16/01); and 4) plants that score >1 and evaluated as 'Accept' on the Hawaii Weed Risk Assessment.
6. **Site Identification.** Prior to clearing and construction, project limits of authorized sites must be clearly identified in the field (e.g., by staking, flagging, silt fencing, buoys, existing footprint for maintenance activities, etc.) to ensure that impacts to waters of the United States (including wetlands) beyond project footprints are avoided. Such identification of project limits must be properly maintained until construction is completed and the soils have been stabilized.
7. **Protected or Endangered Species.**
 - a. Constant vigilance shall be kept for the presence of protected species during all aspects of the proposed action. Protected species include plants and animals listed or proposed for listing as threatened or endangered under Endangered Species Act (ESA), birds covered under the Migratory Bird Conservation Act, as well as all marine mammals. Although the protected species potentially affected would be determined on a project-specific basis, protected species typically of concern in Hawaii include: Hawaiian stilt, Hawaiian coot, Hawaiian moorhen, Hawaiian duck, Hawaiian goose, green sea turtle, hawksbill sea turtle, and Hawaiian monk seal. In the Territory of Guam or the Commonwealth of the Northern Mariana Islands species include: nightingale wee-warbler, Mariana common moorhen, green sea turtle, and hawksbill sea turtle. In American Samoa species also include: green sea turtle and hawksbill sea turtle.

- b. All on-site project personnel, irrespective of their employment arrangement or affiliation (e.g. employee, contractor, etc.), shall be apprised of the status of any protected species potentially present in the project area and the protections afforded to those species under Federal laws. Brochures explaining the laws and guidelines for listed species in Hawaii, American Samoa, and Guam may be downloaded from http://www.nmfs.noaa.gov/prot_res/MMWatch/hawaii.htm and <http://www.fws.gov/pacificislands/species.html>.
- c. The project foreman shall designate an appropriate number of competent observers to survey the area adjacent to the proposed action for protected species. The project foreman shall also have in his/her possession at the jobsite a handout with photographs of protected species that may enter the construction site to assist with identification of the protected species. (U.S. Fish and Wildlife Service – Pacific Islands Fish and Wildlife Office (PIFWO) will provide the informational handout).
- d. Surveys of the project area shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour, to ensure that no protected species are in the project area (typically within 50 yards of the proposed work). All work shall be postponed or halted when protected species are present, and shall only begin/resume after the animals have voluntarily departed the area. In the case of sessile species, a conservation plan shall be developed and approved between the Regulatory Branch, U.S. Army Corps of Engineers and PIFWO and/or National Marine Fisheries Service Pacific Islands Regional Office (PIRO).
- e. If an onsite protected species does not depart the area on its own for 3 days or more, we recommend that the permittee, or responsible contractor, contact PIFWO for further technical assistance and guidance (808) 792-9400.
- f. Any interaction with or incidental take of protected species shall be reported immediately to the Regulatory Branch, U.S. Army Corps of Engineers (808) 835-4303. Additionally, pursuant to the ESA, any take of ESA-listed species (other than marine mammals) must be reported to the U.S. Fish and Wildlife Office of Law Enforcement in Honolulu at 1-808-861-8525. Any incidental take of marine mammals shall be reported immediately to the National Oceanic and Atmospheric Administration's (NOAA) 24-hour hotline at 1-888-256-9840. Information reported must include the name and phone number of a point of contact, location of the incident, and nature of the take and/or injury.

Note: Additional requirements may be designated by the Honolulu District as appropriate for specific projects, including all conservation measures and/or best management practices (BMPs) required by any ESA consultation for the project.

- 8. **Standard Best Management Practices (BMPs).** Site-specific BMPs are generally a requirement of NWP verifications, either directly or by state water quality certification conditions, which are incorporated by reference. A permittee risks delays or enforcement action if work is commenced pursuant to a site-specific BMP plan that includes regulated activities, such as temporary access fill or stream diversions, that were not authorized under the NWP verification. To facilitate efficient review of a project, site-specific BMPs must be submitted as part of the PCN required for any activity requiring authorization under a NWP.

To the extent applicable, the following BMPs must be implemented to minimize the degradation of water quality and impacts to fish, coral reefs, and other aquatic resources:

- a. Turbidity and sediment from project-related work must be minimized and contained to the immediate vicinity of the authorized activity through the appropriate use of effective sediment containment devices.
- b. To the extent practicable, the work must be conducted in the dry season or when any affected stream has minimal or no flow. The site must be stabilized to prevent erosion and runoff and work must stop during flooding, intense rainfall,

- storm surge, or high surf conditions. To the extent practicable, shoreline work must be done during low tides.
- c. To the extent practicable, work in the aquatic environment must be scheduled to avoid coral spawning and recruitment periods and sea turtle nesting and hatching periods. Coordination with federal resource agencies (U.S. Fish and Wildlife Service and/or NOAA) can assist in identifying these time periods.
- d. Dredging and filling in the aquatic environment must be designed to avoid or minimize adverse impacts to or the loss of special aquatic sites (wetlands (swamps, marshes, bogs, etc.), mudflats, vegetated shallows/seagrass beds, coral reefs and/or riffle and pool complexes).
- e. All project-related materials (fill, landscaping, etc.) and equipment (dredges, barges, backhoes, etc.) to be placed in any aquatic environment shall be inspected and cleaned of pollutants, organic matter, and invasive species (including snakes, frogs, and marine plants and animals, etc.) prior to use in any aquatic environment.
- f. No project-related materials (fill, revetment rock, pipe etc.) shall be stockpiled in the aquatic environment (intertidal zones, reef flats, stream channels, wetlands etc.) or in close proximity such that materials could be carried into waters by wind, rain, or high surf.
- g. All construction debris and material removed from the marine/aquatic environment shall be disposed of at an approved upland or alternative disposal site.
- h. No contamination (by trash, debris, sediment, non-native species introductions, attractions of non-native pests, etc.) of adjacent waters of the United States, including special aquatic sites, shall result from project-related activities. Special attention must be paid to the fouling level on barges, vessels, and equipment whereas to minimize the transport and potential introduction and spread of aquatic non-native species. In addition, if dredged or excavated material or structural members are removed from the water or placed in the water, measures must be taken to prevent the spread or introduction of any aquatic non-native species. This shall be accomplished by implementing a litter-control plan and on a site or project specific need basis, developing a Hazard Analysis and Critical Control Point Plan (HACCP – see <http://www.haccp-nrm.org/Wizard/default.asp>) to prevent attraction and introduction of non-native species.
- i. Fueling of project-related vehicles and equipment shall take place away from the water and a contingency plan to control petroleum products accidentally spilled during the project shall be developed. The plan shall be retained on site with the person charged with the responsibility of compliance with the plan. Absorbent pads and containment booms shall be stored on-site, if appropriate, to facilitate the clean-up of accidental petroleum releases.
- j. To minimize turbidity in the aquatic environment, any under-layer fills used in the project shall be protected from erosion with suitable material (such as precast concrete armor or mat units) as soon after placement as practicable.
- k. Any soil exposed near water as part of the project shall be protected from erosion (with suitable material such as geotextile, filter fabric, etc.) after exposure and stabilized as soon as practicable (with vegetation matting, hydroseeding etc.). Revegetation should follow the established standards in Regional Condition #10 (Minimization Measures).
- l. Silt fences, silt curtains, or other diversion or containment structures shall be installed to contain sediment and turbidity at the work site (a) parallel to, and within 10 feet of, the toe of any fill or exposed soil which may introduce sediment to an adjacent aquatic site; and (b) adjacent to any fill placed or soil exposed within an aquatic site. All silt fences, curtains, and other structures shall be installed properly and maintained in a functioning manner for the life of the construction period and until the impact area is permanently stabilized, self sustaining, and/or turbidity levels, elevated due to construction, have returned to ambient levels.

- m. When the discharge of fill material results in the replacement of wetlands or waters of the US with impervious surfaces, the authorized activity must not result in more than minimal degradation of water quality (in accordance with General Condition 25). To ensure NWP's do not cumulatively degrade water quality from increasing impervious area, projects should incorporate low impact development stormwater practices (e.g. native landscaping, bioretention and infiltration techniques, buffers, green roofs, and green spaces) to the extent practical to retain stormflows and pollutants on-site. More information including low impact stormwater concepts and definitions is available at: <http://www.epa.gov/owow/NPS/lid>.

9. **State of Hawaii, Department of Health, Clean Water Branch (DOH) Requirements (Projects in the State of Hawaii Only).**

- a. You must obtain a Clean Water Act (CWA) Section 401 Water Quality Certification (WQC) from the DOH before the Honolulu District can issue verification for proposed work requiring authorization under CWA Section 404. All conditions of a Section 401 WQC issued for a project are hereby incorporated into the project's NWP verification and are subject to discretionary enforcement by the Honolulu District. The permittee is strongly encouraged to submit a DOH WQC application to DOH, with site-specific BMPs, applicable monitoring plan, and any dredge spoils management plans.
- b. You must contact the DOH to determine if a National Pollutant Discharge Elimination System (NPDES) permit is required. For work authorizations requiring verification solely under Section 10 of the Rivers and Harbors Act of 1899, any best management practices (BMPs) required or recommended by the DOH for purposes of avoiding and minimizing the discharge of pollutants, other than dredged or fill material, into state waters, including 303(d)-listed impaired waters, are hereby incorporated into the NWP verification. These conditions are subject to discretionary enforcement by the Honolulu District.
- c. For projects directly impacting "Impaired Waters" as listed on the most recent CWA Section 303(d) list (<http://hawaii.gov/health/environmental/water/cleanwater/integrated/index.html>), the PCN shall:
- (1) Identify the waterbody as an "Impaired Water" and,
 - (2) Identify mitigating measures or BMPs necessary to avoid further degradation of the impaired water.
- d. You may dispose of dredged spoils at state permitted landfills, provided you comply with the landfill's acceptance criteria. Preapproval by the DOH-Solid and Hazardous Waste Branch is not required for this action. The generator shall provide documentation to DOH upon request. You may use dredge spoils at off-site locations, provided the dredged spoils meet the Hawaii DOH Soil Environmental Action Levels for unrestricted use. You must adequately characterize the dredged spoils, including conducting sampling and analysis in accordance with the HEER Office Technical Guidance Manual and other relevant guidance documents. Sampling methodology and analytical results shall be documented, including a comparison to EALs, and maintained by the generator. The spoils shall also meet the definition of inert fill material, which generally includes "...earth, soil, rocks, and rock-like materials... [that do not] contain vegetation or other organic material, or other solid waste." The generator shall provide the documentation to the DOH upon request. Offsite placement of dredged spoils that do not meet the above criteria or occur without adequate records may be considered illegal dumping, subject to enforcement action.

10. **Sidecasting.** No activity may sidecast material into waters of the United States.

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 NWP's, or who is currently relying on an existing or prior permit authorization under one or more NWP's, 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 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.
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 NWP's 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 and storm water management activities, 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.
13. Removal of Temporary Fills. 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. No 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. 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).
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.
- 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 the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.
 - Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.
- c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, 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 designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. 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. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation 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 with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.
- e) Authorization of an activity by a 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 U.S. 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) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.
19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.
20. Historic Properties.
- In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.
 - Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.
 - Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may 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 may be affected by the proposed work 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 resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, 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, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and 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 or that consultation under Section 106 of the NHPA has been completed.
- d) 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. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work 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 (16 U.S.C. 470h-2(k)) 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. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you 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 NWP's 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.
- b) For NWP's 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWP's only after it is determined 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 adverse effects on the aquatic environment are 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 adverse effects to the aquatic environment are 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 effects of the proposed activity are minimal, and provides a project-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 minimal adverse effects on the aquatic environment. 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 minimal adverse effects on the aquatic environment.
- (2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.
- (3) 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) – (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)).
- (4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.
- (5) 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.
- d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

- e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWP. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project 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 a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.
- f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. 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 establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing 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 compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.
- g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory 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.
- h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of 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 effects of the project to the 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 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. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe 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)). 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 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 prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not 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.
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 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 statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions.
 - 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
 - The signature of the permittee certifying the completion of the work and mitigation.
31. Pre-Construction Notification.
- 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 in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may 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 (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. 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 project;
 - (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; 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. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project 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);
 - (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral 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 waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;
 - (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands 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 effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.
- (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and
 - (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.
- c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.
- 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 project's adverse environmental effects to a minimal level.
 - (2) For 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, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed, and for all NWP 48 activities that require pre-construction notification, 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 (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), 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 telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse 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 the net adverse environmental effects to the aquatic environment of the proposed activity are 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.
 - (3) 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.
 - (4) 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. For a linear project, this determination will include an evaluation of the individual crossings 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 authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. 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 assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.
2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are 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 effects on the aquatic environment are 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 no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.
3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project 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 project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project 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 effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When 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.

SECTION 401 WATER QUALITY CERTIFICATION:

State of Hawaii, Department of Health, Clean Water Branch (DOH) Requirements (Projects in the State of Hawaii Only)

- a. **You must obtain a Clean Water Act (CWA) Section 401 Water Quality Certification (WQC) from the DOH before the Honolulu District can issue verification for proposed work requiring authorization under CWA Section 404. All conditions of a Section 401 WQC issued for a project are hereby incorporated into the project's NWP verification and are subject to discretionary enforcement by the Honolulu District. The permittee is strongly encouraged to submit a DOH WQC application to DOH, with site-specific BMPs, applicable monitoring plan, and any dredge spoils management plans.**
- b. **You must contact the DOH to determine if a National Pollutant Discharge Elimination System (NPDES) permit is required. For work authorizations requiring verification solely under Section 10 of the Rivers and Harbors Act of 1899, any best management practices (BMPs) required or recommended by the DOH for purposes of avoiding and minimizing the discharge of pollutants, other than dredged or fill material, into state waters, including 303(d)-listed impaired waters, are hereby incorporated into the NWP verification. These conditions are subject to discretionary enforcement by the Honolulu District.**
- c. **For projects directly impacting "Impaired Waters" as listed on the most recent CWA Section 303(d) list (<http://hawaii.gov/health/environmental/water/cleanwater/integrated/index.html>), the PCN shall:**
 - (1) **Identify the waterbody as an "Impaired Water" and,**
 - (2) **Identify mitigating measures or BMPs necessary to avoid further degradation of the impaired water.**
- d. **You may dispose of dredged spoils at state permitted landfills, provided you comply with the landfill's acceptance criteria. Preapproval by the DOH-Solid and Hazardous Waste Branch is not required for this action. The generator shall provide documentation to DOH upon request. You may use dredge spoils at off-site locations, provided the dredged spoils meet the Hawaii DOH Soil Environmental Action Levels for unrestricted use. You must adequately characterize the dredged spoils, including conducting sampling and analysis in accordance with the HEER Office Technical Guidance Manual and other relevant guidance documents. Sampling methodology and analytical results shall be documented, including a**

comparison to EALs, and maintained by the generator. The spoils shall also meet the definition of inert fill material, which generally includes "...earth, soil, rocks, and rock-like materials... [that do not] contain vegetation or other organic material, or other solid waste." The generator shall provide the documentation to the DOH upon request. Offsite placement of dredged spoils that do not meet the above criteria or occur without adequate records may be considered illegal dumping, subject to enforcement action.

COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION (3/16/2012):

The Hawaii Coastal Zone Management (CZM) Program Coastal Zone Management Act (CZMA) Federal Consistency review for the 2012 U.S. Army Corps of Engineers Nationwide Permits resulted in a general concurrence with the Nationwide Permit General Conditions and the 2012 Nationwide Permit Honolulu District Regional Conditions. The Hawaii CZM Program reserves the right to require an individual federal consistency review for any proposed activity covered by a NWP. CZM consistency general concurrences were issued for each of the following NWPs: 1,2,3,4,5,6, 7,9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,20,22,23,25,27,28,30,31, 32, 33, 35, 36, 37, 38, 40, 41, 43, 45, 46, 48, and 51.

Excluded NWP-The following NWPs are excluded from use within the State of Hawaii as explained below:

- 2012 Nationwide Permit Honolulu District Regional Conditions Regional Condition 1 - Exclusions; Revoked Permits The Corps Honolulu District has revoked the following NWPs for use within the State of Hawaii: NWPs 21, 24, 29, 34, 39, 42, 44, 49, 50, and 52.
- Reserved NWPs: NWP 26 and NWP 47 are designated by the Corps as "reserved." If these NWPs are made available for use during the five year authorization period for the 2012 NWPs, then Hawaii CZM Program federal consistency review will be required.
- NWP 8- Oil and Gas Structures on the Outer Continental Shelf, is not currently applicable to the State of Hawaii. If this NWP becomes available for use during the five-year authorization period for the 2012 NWPs, then Hawaii CZM Program federal consistency review will be required. In the event that NWP 8 should be amended to include renewable energy structures within areas leased for such purposes by the Department of Interior, Bureau of Ocean Energy Management, then Hawaii CZM Program federal consistency review will be required.

The 2012 NWPs are denied without prejudice in the Territories of American Samoa and Guam, and in the CNMI. As is the case with any DA authorization, verification of a NWP does not obviate the need for any other Federal, State or local authorization.

2012 NWP REGIONAL CONDITIONS DEFINITIONS:

Allogenic streams - streams flowing from an impervious surface, such as volcanic rock into porous limestone. Example: in Northern Guam, such streams will percolate into the ground and can flow into the marine environment from subsurface channels.

Anchialine pools – marine or brackish water bodies that have no surface connection but that, through permeable substrates, have subsurface hydrologic connection to the ocean.

Cenotes - sinkholes open to the surface and extending into groundwater.

Coral Reefs - As defined at 40 CFR 230.44 (Clean Water Act, Section 404(b)(1) Guidelines), coral reefs consist of the skeletal deposit, usually of calcareous or siliceous materials, produced by the vital activities of anthozoan polyps or other invertebrate organisms present in growing portions of the reef.

Phreatic zones - the zones along a coast where freshwater and saltwater mix usually causing rapid dissolution of limestone with a resulting cave formation

Sinkholes - caves formed when a water formed cave either collapses or is opened up by adequate dissolution of limestone by water.

Stream caves - a series of caves formed by water flowing through limestone usually structurally complex.

Vadose Shafts - vertical shafts in limestone that allows rapid passage of water into the ground water lens.

SPECIAL CONDITION #8: Conditions Required under the Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES)

GENERAL CONDITIONS: The Corps will apply the following set of general conditions to each action authorized under Pac-SLOPES.

1. Each applicable condition, BMP, and conservation measure will be included as an enforceable part of the permit document.
2. The Corps will retain the right of reasonable access to projects authorized under Pac-SLOPES to monitor the compliance with and effectiveness of permit conditions.
3. Each permit will contain the requirement that the permittee document and report to the Corps and NMFS, all interactions with listed species, including the disposition of any listed species that are injured or killed. Should an ESA-listed species be adversely affected, all work must stop pending reinitiation of consultation between the Corps and NMFS PRD for that action.
4. Constant vigilance shall be kept for the presence of ESA-listed marine species during all aspects of a proposed action
 - a) A responsible party, i.e., permittee/site manager/project supervisor, shall designate a competent observer to survey work sites and the areas adjacent to the proposed action for ESA-listed marine species;
 - b) Surveys shall be made prior to the start of work each day, including prior to resumption of work following any break of more than one half hour. Periodic additional surveys throughout the work day are strongly recommended;
 - c) All in-water work will be postponed or halted when ESA-listed marine species are within 50 yards of the proposed work, and will only begin/resume after the animals have voluntarily departed the area, with the following exception: if ESA-listed marine species are noticed within 50 yards after work has already begun, that work may continue only if, in the best judgment of the responsible party, the activity is unlikely disturb or harm the animal(s), for example, divers performing surveys or underwater work (excluding the use of toxic chemicals) is likely safe, the use of heavy machinery is not; and
 - d) No one shall attempt to feed, touch, ride, or otherwise intentionally interact with any protected species.
5. Project footprints must be limited to the minimum area necessary to complete the project.
6. The project area must be flagged to identify sensitive resource areas, such as seagrass beds, listed terrestrial plants, and turtle nests.
7. Work located waterward of the Mean Higher High Tide Line of a navigable water or waterward of the upward limits of adjacent wetlands must be timed to minimize effects on ESA-listed species and their habitats.
8. Project operations must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.

9. A storm water management plan, commensurate to the size of the project, must be prepared and carried out for any project that will produce any new impervious surface or a land cover conversion that will slow the entry of water into the soil to ensure that effects to water quality and hydrology are minimized.
10. A pollution and erosion control plan for the project site and adjacent areas must be prepared and carried out. As a minimum, this plan shall include:
 - a) Proper installation and maintenance of silt fences, saudades, equipment diapers, and/or drip pans;
 - b) A contingency plan to control and clean spilled petroleum products and other toxic materials.
 - c) Appropriate materials to contain and clean potential spills will be stored at the work site, and be readily available;
 - d) All project-related materials and equipment placed in the water will be free of pollutants;
 - e) Daily pre-work inspections of heavy equipment for cleanliness and leaks, with all heavy equipment operations postponed or halted until leaks are repaired and equipment is cleaned;
 - f) Fueling of project-related vehicles and equipment will take place at least 50 feet away from the water, preferably over an impervious surface;
 - g) A plan will be developed to prevent trash and debris from entering the marine environment during the project; and
 - h) All construction discharge water (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated before discharge.
11. Erosion controls must be properly installed before any alteration of the area may take place.
12. Temporary access roads and drilling pads must avoid steep slopes, where grade, soil types, or other features suggest a likelihood of excessive erosion or failure; existing access routes must be utilized or improved whenever possible, in lieu of construction of new access routes.
13. All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days.
14. Drilling and sampling are restricted to uncontaminated areas, and any associated waste or spoils must be completely isolated and disposed of in an upland location.
15. Authorized work must comply with all applicable NWP General and Regional Conditions.

SPECIAL CONDITIONS: In addition to the general conditions listed the following special conditions are required under Pac-SLOPES for each activity:

2.2.5 Buoy Installation & Repair

1. Anchoring locations and moorings must be designed to avoid, to the greatest extent practicable, impacts to live corals and other benthic organisms.
2. The following buoy deployments are expressly excluded from coverage under Pac-SLOPES:
 - a) Deployment of mooring buoys in or adjacent to seagrass beds;

- b) Any new deployments or installations within the Hawaiian Islands Humpback Whale National Marine Sanctuary; and
- c) With the exception of certain wave and current monitoring systems that operate in frequency bands well outside the hearing ranges of ESA-listed marine life, the deployment of moored active acoustic devices.

2.2.7 Minor Discharges and Excavations

- 1. The dredged or discharged material will be free of contamination; and
- 2. The site of excavation or discharge will contain no known forage or resting habitat for ESA-listed marine species.

2.2.9 Outfall Structure Repair & Replacement

- 1. The following actions are expressly excluded from coverage under Pac-SLOPES:
 - a) Installation of new or expanded outfall structures; and
 - b) Relocation of existing outfall structures.

ACTIVITY-SPECIFIC BMPs: The following Best Management Practices (BMPs) apply to each action authorized under Pac-SLOPES.

5.1 Collision with vessels:

- 1. Vessel operators shall alter course to remain at least 100 yards from whales, and at least 50 yards from other marine mammals and sea turtles.
- 2. Vessel operators shall reduce vessel speed to 10 knots or less when piloting vessels in the proximity of marine mammals, and to 5 knots or less when piloting vessels in areas of known or suspected turtle activity.
- 3. If approached by a marine mammal or turtle, the vessel operator shall put the engine in neutral and allow the animal to pass.
- 4. Vessel operators shall not encircle or trap marine mammals or sea turtles between multiple vessels or between vessels and the shore.

5.2. Direct physical impact:

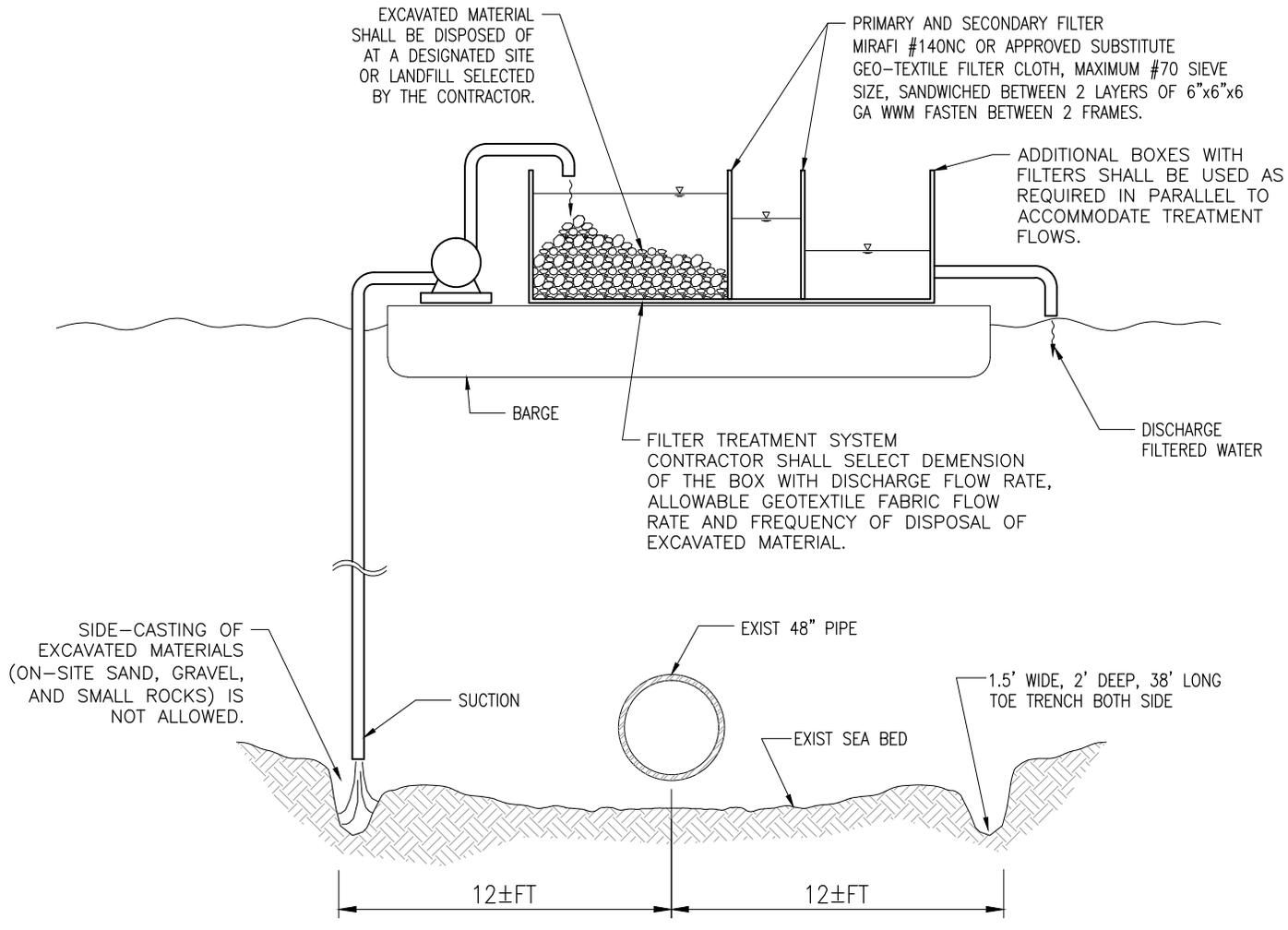
- 1. Before any equipment, anchor(s), or material enters the water, a responsible party, i.e., permittee/site manager/project supervisor, shall verify that no ESA-listed species are in the area where the equipment, anchor(s), or materials are expected to contact the substrate. If practicable, the use of divers to visually confirm that the area is clear is preferred.
- 2. Equipment operators shall employ “soft starts” when initiating work that directly impacts the bottom. Buckets and other equipment shall be sent to the bottom in a slow and controlled manner for the first several cycles before achieving full operational impact strength or tempo.
- 3. All objects lowered to the bottom shall be lowered in a controlled manner. This can be achieved by the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent.
- 4. Equipment, anchor(s), or materials shall not be deployed in areas containing live corals, sea grass beds, or other significant resources.

5.3 Entanglement:

- 1. Mooring systems shall employ the minimum line length necessary to account for expected fluctuations in water depth due to tides and waves.
- 2. Mooring systems shall be designed to keep the line as tight as possible, with the intent to eliminate the potential for loops to form.

3. Mooring lines shall consist of a single line. No additional lines or material capable of entangling marine life may be attached to the mooring line or to any other part of the deployed system.
4. Mooring systems shall be designed to keep the gear off the bottom, by use of a mid-line float when appropriate, with the intent to eliminate scouring of corals or entanglement of the line on the substrate.
5. Any permanent or long-term deployments shall include an inspection and maintenance program to reduce the likelihood of failures that may result in loose mooring lines lying on the substrate or hanging below a drifting buoy.
6. Mooring systems, including those used for temporary markers, scientific sensor buoys, or vessel moorings, shall be completely removed from the marine environment immediately at the completion of the authorized work or the end of the mooring's service life. The only exceptions to this rule shall be mooring anchors such as eyebolts that are epoxied into the substrate and which pose little or no risk to marine life.

PATH/FILENAME: P:\USIG\Wastewater\60241242-Hilo Outfall\400 Tech Support\441 CAD\SCB-Hilo Outfall.dwg
 PLOT DATE: March 31, 2015 @ 10:38:51 am
 LAST UPDATE: March 31, 2015 @ 09:20:40 am



County of Hawaii
 Department of
 Environmental Management
 Wastewater Division

DETAILS

**HILO WASTEWATER TREATMENT PLANT
 OUTFALL REPAIRS**
 HILO, ISLAND OF HAWAII
 HAWAII
 MARCH 2015

Concrete Fabric Form

1. Low cost

No loss of concrete. Reduced amount of concrete. No form work. A small crew can handle the installation. Reduce construction period.

2. Simple processing

Fabric form is delivered to the job site ready-to-fill and requires no additional forming materials. Installation consists of preparing the area, laying out the fabric form, and filling them with concrete through a small line concrete pump.

3. The elements can be tailor-made



4. Simple job mobilization

The fabric forms are extremely lightweight, so they can be rapidly transported anywhere. Once the site is prepared, simple hand tools and a concrete pump are all that is needed to fill the form. The concrete can be pumped to the forms as far away as 800 feet. (For tremie concrete, barge and tremie pipe should be located exactly above the pipe section to be repaired)

5. Environmental concerns



Fabric forms are designed to provide the least possible environmental impact. The fabric used in the forms allows excess mixing water to escape while retaining the cement solids, fine aggregate, and sand.

6. Quality Control



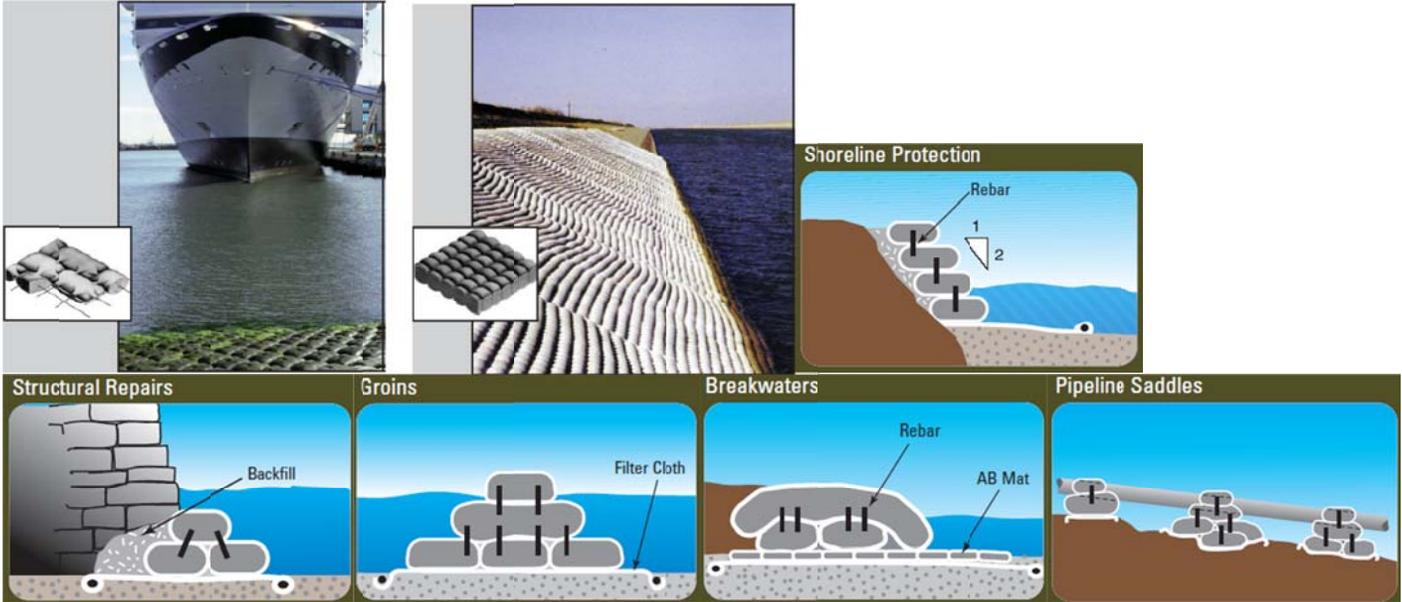
The fabric forms themselves assure that the concrete assumes the proper configuration, contours, dimensions, and thickness. Also quality of concrete.

7. Preventing segregation

The fabric acts as a separator between surrounding water and the concrete as it flows into the container preventing segregation.

8. Stability

Fabric forms have been used in thousands of marine constructions worldwide, some in the most severe conditions. In erosion protection, thousands of projects and extensive flume testing have proven that fabric formed concrete erosion protection systems outperform all alternatives, traditional concrete slope paving and rip rap.



9. Phase construction



Fabric form make it possible to phase construction without construction joint preparation under water. In case of tremie concrete, to eliminate construction joint preparation under water, placements should be large monoliths placed over short period of time.



Rescon T[®]

**Anti-washout admixture
for underwater concrete**



AREA OF USE

Rescon T[®] is an anti-washout admixture in powder form, for use with under water concrete and mortar.

PROPERTIES

Addition of **Rescon T[®]** makes concrete suitable for all types of underwater applications:

- The cohesiveness of the concrete increases which prevents washout of cement, and does not cloud the water and reduce visibility during placement
- The concrete is stabilised, separation in water is prevented
- The concrete becomes self-compacting
- Stability of concrete during pumping is ensured
- Flow properties are enhanced

Can be used for all underwater concrete, irrespective of application:

- Constructions
- Concrete bases
- Repairs and renovation

Underwater concrete containing **Rescon T[®]** is suitable for all the usual methods of underwater placement:

- Pumping
- Tremie
- Bucket and crane
- Concrete chute
- Sack method

DOSAGE

The normal dosage of **Rescon T[®]** is from 4 to 6 kg/m³.

FORMULATION TESTS

The proportioning of underwater concrete must always be specific to the materials used and the methods of production and application.

The choice of composition is based upon the documentation of working properties of trial batches. In certain cases trial casting underwater should be performed for verification of concrete characteristics, and to ensure that the combination of concrete and working equipment functions satisfactorily. The picture below shows how the operation and the flow properties are controlled in an L-shaped form.



*L-box for
testing
Rescon T[®]*



*Good
workability
T-concrete:
slump flow
> 550 mm*

As a basic principle, a representative from Mapei AS should give advice during the formulation of under water concrete, if the concrete suppliers themselves do not have the necessary experience.

UNDERWATER CASTING

The concrete should have as little contact with water as possible during the operation. When in contact with water the flow of concrete must be as even and steady as possible.

Generally, placement by pumping is emphasised as a more reliable method than conventional tremie, because the concrete can be subjected to greater forces than those of gravity alone. The placement pipe can then be used at greater depths, which gives a more favourable flow profile with less risk of sedimentation.

The difference between the two methods is particularly large, in favour of pumping, for placement in shallow water, i.e. with shorter pipes. The risk of airlock formation is also eliminated. Pumping, in most cases, also gives a higher rate of placement, resulting in a faster build up.

The flow properties of underwater concrete with **Rescon T®** can be adjusted with all types of superplasticising admixtures, except for those which are naphthalene based.

PACKAGING

Rescon T® is delivered in 10 kg bags.

STORAGE

The product has a minimum shelf life of 1 year when stored dry, in original unopened packaging.

SAFETY INSTRUCTIONS FOR PREPARATION AND USE

Rescon T® is not considered dangerous according to European regulations regarding classification of chemicals. It is recommended to wear gloves and goggles and to take usual precautions for handling of chemicals.

For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE

WARNING

The technical recommendations and details in this product description represent our current knowledge and experience of the products. All the above information should be treated as a guide and full consideration should be given. Anyone using the product must ensure that it is suitable for the intended purpose before use. The manufacturer cannot be held liable for use of the product for purposes for which it is not recommended or in the event of accidental use.

Please refer to the most recent version of the technical data sheet on our website at www.mapei.no

All relevant references for the product are available upon request and from www.mapei.no

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Type:	powder
Colour:	grey/white

TYPICAL UNDERWATER CONCRETE (kg/m³)

CONSTITUENTS	CONVENTIONAL UNDER WATER CONCRETE	UNDER WATER CONCRETE B30 M60	UNDER WATER CONCRETE B45 M40
Cement:	420	380	475
Silica:	25	20	35
Sand (< 8 mm):	1020	860	825
Coarse aggregate (D _{max} 22 mm):	720	860	825
Rescon T [®] :		5	5
Plastisizing admixture:	3		
Superplastsizing admixture:	3		2 - 3
Total water:	180	218	212
Mass ratio:	0.39	0.53	0.39

TESTING AT VATTENFALL AB IN COMPLIANCE WITH THE SWEDISH PUBLIC ROADS ADMINISTRATION'S PUBLICATION BRO 2002:50

COMPARISON OF RESULTS AND REQUIREMENTS

	Requirement value	Result value	Result A or N
Level difference form type 1 (mm):	≤ 50	10	A
Level difference form type 1 (mm):	≤ 100	25	A
Compressive strength 28 days, cubes, average value in compliance with SS-EN 206-1 (MPa):	≥ 39.0	40.5	A
Compressive strength 28 døg, cubes, value in compliance with SS-EN 206-1 (MPa):	≥ 31.0	39.4	A
Compressive strength, cylinder, in compliance with BBK (MPa):	≥ 30.0	42.4	A
Compressive strength, cylinder, in compliance with BBK (MPa):	≥ 23.0	39.3	A
Compressive strength, cylinder, variation coefficient in core in compliance with BBK (%):	≤ 10.0	8.0	A
Holding strength, cylinder, variation coefficient in core in compliance with BBK (%):	≤ 7.0	4.8	A
Aggregate content of cediment/sludge (weight %):	≥ 50	> 70 - 80	A

A=Approved • N=Not approved



BUILDING THE FUTURE

Safety Data Sheet RESCON T

Safety Data Sheet dated 16/5/2015, version 2

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name: RESCON T

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use:

Admixture for concrete

Uses advised against:

==

1.3. Details of the supplier of the safety data sheet

Supplier:

MAPEI AS - Vallsetvegen, 6 - 2120 Sagstua - Norway

Competent person responsible for the safety data sheet:

sicurezza@mapei.it

1.4. Emergency telephone number

MAPEI AS - phone: +47-62972000

fax: +47-62972099

www.mapei.no (office hours)

Giftinformasjonen – phone number: +47 22591300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Adverse physicochemical, human health and environmental effects:

No other hazards

2.2. Label elements

Symbols:

None

Hazard Statements:

None

Precautionary Statements:

None

Special Provisions:

EUH210 Safety data sheet available on request.

Contents:

Triisobutyl phosphate

: May produce an allergic reaction.

reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1): May produce an allergic reaction.

The product is not classified as dangerous according to Regulation EC 1272/2008 (CLP).

Special provisions according to Annex XVII of REACH and subsequent amendments:

Safety Data Sheet

RESCON T

- None
- 2.3. Other hazards
vPvB Substances: None - PBT Substances: None
- Other Hazards:
No other hazards
See at paragraph 11 the additional information concerning crystalline silica

SECTION 3: Composition/information on ingredients

3.1. Substances N.A.

3.2. Mixtures

Hazardous components within the meaning of the CLP regulation and related classification:
>= 10% - < 20% free crystalline silica ($\varnothing > 10 \mu$)
CAS: 14808-60-7, EC: 238-878-4
The product is not classified as dangerous according to Regulation EC 1272/2008 (CLP).

>= 0.49% - < 1% Triisobutyl phosphate

CAS: 126-71-6, EC: 204-798-3
◇ 3.4.2/1-1A-1B Skin Sens. 1,1A,1B H317

9 ppm reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Index number: 613-167-00-5, CAS: 55965-84-9

- ◇ 3.2/1B Skin Corr. 1B H314
- ◇ 3.4.2/1-1A-1B Skin Sens. 1,1A,1B H317
- ◇ 4.1/A1 Aquatic Acute 1 H400
- ◇ 4.1/C1 Aquatic Chronic 1 H410
- ◇ 3.1/3/Oral Acute Tox. 3 H301
- ◇ 3.1/3/Dermal Acute Tox. 3 H311
- ◇ 3.1/3/Inhal Acute Tox. 3 H331

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wash immediately with water for at least 10 minutes.

In case of Ingestion:

Wash the mouth thoroughly and drink plenty of water. In case of disease consult a physician immediately and present this safety-data sheet.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

4.2. Most important symptoms and effects, both acute and delayed

No specific hazards are encountered under normal product use.

The powder dispersed in the air can explode.

4.3. Indication of any immediate medical attention and special treatment needed

Treatment:

(see paragraph 4.1)

Safety Data Sheet

RESCON T

SECTION 5: Firefighting measures

- 5.1. Extinguishing media
Suitable extinguishing media:
Water.
Carbon dioxide (CO₂).
Extinguishing media which must not be used for safety reasons:
None in particular.
- 5.2. Special hazards arising from the substance or mixture
- 5.3. Advice for firefighters
Use suitable breathing apparatus .
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

- 6.1. Personal precautions, protective equipment and emergency procedures
Wear personal protection equipment.
Remove persons to safety.
See protective measures under point 7 and 8.
- 6.2. Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand
- 6.3. Methods and material for containment and cleaning up
Rapidly recover the product, wearing protective clothing.
Scoop into containers and seal for disposal.
Wash with plenty of water.
- 6.4. Reference to other sections
See also section 8 and 13

SECTION 7: Handling and storage

- 7.1. Precautions for safe handling
Avoid contact with skin and eyes and exposure to high dust concentration.
Avoid powder development and deposit
Do not eat or drink while working.
See also section 8 for recommended protective equipment.
Fine dust may form explosive mixture with air. Keep away from open flames, heat and sparks.
Do not remove shrink film in hazardous locations (because of risk of static charging/discharge)
- 7.2. Conditions for safe storage, including any incompatibilities
Always keep the containers tightly closed.
Incompatible materials:
Keep away from water or from damp surroundings.
Instructions as regards storage premises:
Adequately ventilated premises.
- 7.3. Specific end use(s)
None in particular

SECTION 8: Exposure controls/personal protection

- 8.1. Control parameters
free crystalline silica ($\text{Ø} > 10 \mu$) - CAS: 14808-60-7
ACGIH - LTE mg/m³(8h): 0.025 mg/m³ - Notes: A2 (R) - Pulm fibrosis, lung cancer
National -- Country: NORWAY - LTE mg/m³(8h): 0,3 mg/m³ - Notes: K 7
- DNEL Exposure Limit Values
Triisobutyl phosphate

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- CAS: 126-71-6

Worker Industry: 6.03 mg/m³ - Consumer: 1.49 mg/m³ - Exposure: Human Inhalation -
Frequency: Long Term, systemic effects

Worker Industry: 1.71 mg/kg - Consumer: 0.86 mg/kg - Exposure: Human Dermal -
Frequency: Long Term, systemic effects

Consumer: 0.86 mg/kg - Exposure: Human Oral - Frequency: Long Term (repeated)

PNEC Exposure Limit Values

Triisobutyl phosphate

- CAS: 126-71-6

Target: Fresh Water - Value: 0.011 mg/l

Target: Marine water - Value: 0.0011 mg/l

Target: Marine water sediments - Value: 0.158 mg/kg

Target: Freshwater sediments - Value: 1.58 mg/kg

Target: MAP2 - Value: 0.11 mg/l

8.2. Exposure controls

Eye protection:

Safety goggles.

Not needed for normal use. Anyway, operate according good working practices.

Protection for skin:

No special precaution must be adopted for normal use.

Protection for hands:

Not needed for normal use.

Respiratory protection:

Not needed for normal use.

In case of insufficient ventilation use mask with B type filters (EN 14387).

Personal Protective Equipment should comply with relevant CE standards (as EN 374 for gloves and EN 166 for goggles), correctly maintained and stored. Consult the supplier to check the suitability of equipment against specific chemicals and for user information.

Thermal Hazards:

None

Environmental exposure controls:

None

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	powder
Colour:	white
Odour:	typical
Odour threshold:	N.A.
pH:	N.A.
pH(water dispersion, 10%):	7,3
Melting point / freezing point:	N.A.
Initial boiling point and boiling range:	== °C
Solid/gas flammability:	N.A.
Upper/lower flammability or explosive limits:	N.A.
Vapour density:	N.A.
Flash point:	== °C
Evaporation rate:	N.A.
Vapour pressure:	N.A.
Relative density:	0,54 g/cm ³ (23°C)
Vapour density (air=1):	N.A.
Solubility in water:	partly soluble
Solubility in oil:	N.A.
Viscosity:	N.A.

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Auto-ignition temperature:	==	°C	
Explosion limits(by volume):	==		
Decomposition temperature:	N.A.		
Partition coefficient (n-octanol/water):			N.A.
Explosive properties:	==		
Oxidizing properties:	N.A.		
9.2. Other information			
Miscibility:	N.A.		
Fat Solubility:	N.A.		
Conductivity:	N.A.		
Substance Groups relevant properties			N.A.

SECTION 10: Stability and reactivity

- 10.1. Reactivity
 - Stable under normal conditions
- 10.2. Chemical stability
 - Stable under normal conditions
- 10.3. Possibility of hazardous reactions
 - Toxic fumes may be evolved on heating (formaldehyde).
- 10.4. Conditions to avoid
 - Stable under normal conditions.
- 10.5. Incompatible materials
 - None in particular.
- 10.6. Hazardous decomposition products
 - None.

SECTION 11: Toxicological information

- 11.1. Information on toxicological effects
 - Route(s) of entry:
 - Ingestion: Yes
 - Inhalation: Yes
 - Contact: No
 - Toxicological information related to the product:
 - There is no toxicological data available on the mixture. Consider the individual concentration of each component to assess toxicological effects resulting from exposure to the mixture.
 - Toxicological information of the mixture:
 - N.A.
 - Toxicological information of the main substances found in the mixture:
 - Triisobutyl phosphate
 - CAS: 126-71-6
 - a) acute toxicity:
 - Test: LD50 - Route: Oral - Species: Rat 4.180 mg/kg
 - Test: LC50 - Route: Inhalation - Species: Rat > 5.14 mg/l
 - Test: LD50 - Route: Skin - Species: Rabbit > 5000 mg/kg
 - reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1) - CAS: 55965-84-9
 - a) acute toxicity:
 - Test: LD50 - Route: Oral - Species: Rat 53 mg/kg
 - Test: LC50 - Route: Inhalation Dust - Species: Rat 330 mg/m³ - Duration: 4h
 - Test: LC50 - Route: Inhalation - Species: Rat 2.36 mg/l - Duration: 4h
 - Test: LD50 - Route: Skin - Species: Rabbit 660 mg/kg
 - Corrosive/Irritating Properties:
 - Skin:
 - The product can cause a temporary irritation by prolonged contact.
 - Eye:
 - The product can cause a temporary irritation by contact.

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Sensitizing Properties:

No effects are known.

Cancerogenic Effects:

The IARC (International Agency for Research on Cancer) believes that the crystalline silica inhaled at the workplace can cause lung cancer in man.

However, it also points out that the cancer effect depends on the silica characteristics and on the biological-physical condition of the environment.

There is a large amount of information in support of the fact that increased risk of cancer is limited to persons suffering from silicosis.

In the current situation of studies, protection of workers from silicosis can be ensured by respecting the exposure limit values.

Mutagenic Effects:

No effects are known.

Teratogenic Effects:

No effects are known.

If not differently specified, the information required in Regulation 453/2010/EC listed below must be considered as N.A.:

- a) acute toxicity
- b) skin corrosion/irritation
- c) serious eye damage/irritation
- d) respiratory or skin sensitisation
- e) germ cell mutagenicity
- f) carcinogenicity
- g) reproductive toxicity
- h) STOT-single exposure
- i) STOT-repeated exposure
- j) aspiration hazard

SECTION 12: Ecological information

12.1. Toxicity

Adopt good industrial practices, so that the product is not released into the environment.

Not available data on the mixture

Biodegradability: not readily biodegradable

Biodegradability: no data available on the preparation.

Triisobutyl phosphate

- CAS: 126-71-6

a) Aquatic acute toxicity:

Endpoint: LC50 - Species: Fish 10-100 mg/l - Duration h: 96

Endpoint: EC50 - Species: Daphnia 10-100 mg/l - Duration h: 24

Endpoint: EC50 - Species: Algae 10-100 mg/l - Duration h: 72

reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1) - CAS: 55965-84-9

a) Aquatic acute toxicity:

Endpoint: EC50 - Species: Daphnia = 0.16 mg/l - Duration h: 48

Endpoint: LC50 - Species: Fish = 0.19 mg/l - Duration h: 96

12.2. Persistence and degradability

N.A.

12.3. Bioaccumulative potential

N.A.

12.4. Mobility in soil

N.A.

12.5. Results of PBT and vPvB assessment

List of substances dangerous for the environment and corresponding classification:

Safety Data Sheet RESCON T

49 ppm bronopol (INN); 2-bromo-2-nitropropane-1,3-diol

CAS: 52-51-7

R50 Very toxic to aquatic organisms.

EC50 (Daphnia): 1.1 mg/l (48 hr)

LC50 (Fish): 8.6 mg/l (96 hr)

EC50 (Daphnia) 48h - 1,4 mg/l

EC50 (Algae) 72h - 0,4 mg/l

LC50 (Fish) 96h - 41,2 mg/l

9 ppm reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1)

CAS: 55965-84-9

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

EC50 (Daphnia): 0.16 mg/l (48 hr)

LC50 (Fish): 0.19 mg/l (96 hr)

vPvB Substances: None - PBT Substances: None

12.6. Other adverse effects

Not available data on the mixture

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Recover if possible. In so doing, comply with the local and national regulations currently in force. 91/156/EEC, 91/689/EEC, 94/62/EC and subsequent amendments.

SECTION 14: Transport information

14.1. UN number

Not classified as dangerous in the meaning of transport regulations.

UN Number: ==

14.2. UN proper shipping name

N.A.

14.3. Transport hazard class(es)

Rail/Road(RID/ADR): no dangerous good

ADR-Upper number: NA

Air (ICAO/IATA): no dangerous good

Sea (IMO/IMDG): no dangerous good

N.A.

14.4. Packing group

N.A.

14.5. Environmental hazards

Marine pollutant: No

N.A.

14.6. Special precautions for user

N.A.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

N.A.

No

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Dir. 98/24/EC (Risks related to chemical agents at work)

Dir. 2000/39/EC (Occupational exposure limit values)

Dir. 2006/8/EC

Regulation (EC) n. 1907/2006 (REACH)

Regulation (EC) n. 1272/2008 (CLP)

Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013

Regulation (EU) n. 453/2010 (Annex I)

Safety Data Sheet RESCON T

Regulation (EU) n. 286/2011 (ATP 2 CLP)

Regulation (EU) n. 618/2012 (ATP 3 CLP)

Regulation (EU) n. 487/2013 (ATP 4 CLP)

Regulation (EU) n. 944/2013 (ATP 5 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:

No restriction.

Restrictions related to the substances contained:

No restriction.

REACH Regulation (1907/2006) – All. XVII: N.A.

Legislative Decree no. 81 of the 9th of April 2008 Title XI "Dangerous substances - Chapter I - Protection against chemical agents"

Directive 2000/39/CE and s.m.i. (Professional threshold limit)

Legislative Decree no. 152 of the 3rd of April 2006 and subsequent modifications and additions. (Environmental regulations)

Directive 105/2003/CE (Seveso III): N.A.

ADR Agreement – IMDG Code – IATA Regulation

VOC (2004/42/EC) : N.A. g/l

PRODUCT REGISTER NUMBER : 110701

Social Dialogue on Respirable Crystalline Silica

On April 26, 2006 was signed a multi-sector social dialogue, based on a "Guide to Good Practices", on workers health protection who are in contact with products containing crystalline silica.

The text of the agreement published in G.U. European Union (2006 / C 279/02) and the "Guide to Good Practices", with attachments, are available on www.nepsi.eu website, they offer guidelines and useful information for handling products containing respirable crystalline silica.

15.2. Chemical safety assessment

No

SECTION 16: Other information

Text of phrases referred to under heading 3:

H317 May cause an allergic skin reaction.

H314 Causes severe skin burns and eye damage.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

H301 Toxic if swallowed.

H311 Toxic in contact with skin.

H331 Toxic if inhaled.

Paragraphs modified from the previous revision:

Safety Data Sheet

RESCON T

SECTION 3: Composition/information on ingredients
SECTION 8: Exposure controls/personal protection
SECTION 11: Toxicological information
SECTION 12: Ecological information
SECTION 15: Regulatory information

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

NIOSH - Registry of toxic effects of chemical substances
ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre,
Commission of the European Communities
SAX'S - Dangerous properties of industrial materials
Istituto Superiore di Sanità - Inventario Nazionale Sostanze Chimiche

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS:	Chemical Abstracts Service (division of the American Chemical Society).
CLP:	Classification, Labeling, Packaging.
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GefStoffVO:	Ordinance on Hazardous Substances, Germany.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.
IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
INCI:	International Nomenclature of Cosmetic Ingredients.
KSt:	Explosion coefficient.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
LTE:	Long-term exposure.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STE:	Short-term exposure.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWATLV:	Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).
OEL:	European threshold limit value
VLE:	Threshold Limiting Value.
WGK:	German Water Hazard Class.
TSCA:	United States Toxic Substances Control Act Inventory
DSL:	DSL - Canadian Domestic Substances List

Certificate of Compliance

Certificate Number **20050504-MH20894-27898**
Report Reference **MH27898, 2003 April 23**
Issue Date **2005 May 4**

Page 1 of 1



**Underwriters
Laboratories Inc.®**

Issued to: **Avanti Sales International Inc**
822 Bay Star Blvd.
Webster, TX 77598

This is to certify that representative samples of **AV-202 Multi-Grout**
Maximum Product Surface Area/Water Volume Application: 1 sq cm/L

Have been investigated by Underwriters Laboratories Inc.® in accordance with the Standard(s) indicated on this Certificate.

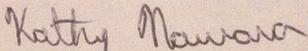
Standard(s) for Safety: **ANSI/NSF Standard 61 - Drinking Water System Components - Health Effects**

Additional Information: **Category: Joining and Sealing Materials**
Water Contact Temperature: 23°C

Only those products bearing the UL Classification Mark should be considered as being covered by UL's Classification and Follow-Up Service.

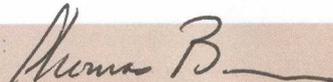
The UL Classification Mark includes: UL in a circle symbol:  with the word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

Look for the UL Classification Mark on the product

Issued by: 
Kathy Nawara, Associate Project Engineer

Underwriters Laboratories Inc.

For questions in The United States of America you may call 1-877-UL-HELPS.

Reviewed by: 
Thomas Bowman, Section Manager

Underwriters Laboratories Inc.



Section 1: Identification

GHS Product Identifier: AV-202 Multigrout

Classification: Hydrophilic Foam

Product Use: Industrial Use Only

Supplier

Avanti International
1100 Hercules Ave., Suite 320
Houston, TX 77058
Phone: 800.877.2570
Fax: 281.486.7300

24 HR. EMERGENCY TELEPHONE NUMBER

Chemtrec: 800.424.9300

Section 2: Hazards Identification

GHS Classification

Hazard Class

Resp. sens.

Skin sens.

Category

1

1

Respiratory sensitization

Skin sensitization

GHS Label Elements

Hazard pictograms:



Signal Word:	Danger
Hazards Statements:	
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Precautionary Statements:	Prevention:
P261	Avoid breathing vapors, spray or mist.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear eye protection, protective clothing and protective gloves.
P284	In case of inadequate ventilation, wear respiratory protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P333 + P313	If skin irritation or rash occurs, get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P501	Dispose of contents/container according to local, regional, national, and international regulations.

Other hazards not contributing to classification:

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

Unknown Acute Toxicity (GHS-US):

No data available.

Section 3: Composition/Information on Ingredients

Weight %	Components	CAS-No.	Classification
45 - 55%	Oxirane, methyl-, polymer with oxirane, ether with 1,2,3-propanetriol (3:1), polymer with 1,1'-methylenebis[4-isocyanatobenzene]	(CAS #) 59675-67-1	Resp. Sens. 1, H334 Skin Sens. 1, H317
45 - 55%	Poly[oxy(methyl-1,2-thanediy)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,3-diisocyanato-2-methylbenzene and 2,4-diisocyanato-1-methylbenzene	(CAS #) 64814-10-4	Not Classified

Full text of H-phrases: See section 16

Section 4: First-Aid Measures

Description of First-Aid Measures

First-aid Measures General

Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid Measures After Inhalation

When symptoms occur: go into open air and ventilate suspected area. Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact

Remove contaminated clothing. Gently wash with plenty of soap and water followed by rinsing with water for at least 15 minutes. Call a Poison Center or doctor/physician if you feel unwell. Wash contaminated clothing before reuse.

First-aid Measures After Eye Contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

First-aid Measures After Ingestion

Rinse mouth. Do not induce vomiting. Immediately call a Poison Center or doctor/physician.

Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms/Injuries: Causes skin irritation. May be fatal if swallowed and enters airways. May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/Injuries After Inhalation: MDI vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, and lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever and chills) has also been reported. These symptoms can be delayed up to several hours after exposure.

Symptoms/Injuries After Skin Contact: Isocyanates react with skin protein and moisture, and can cause irritation, which may include the following symptoms; reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove.

Symptoms/Injuries After Eye Contact: liquid, aerosols or vapors are irritating and can cause tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible (see Emergency and first aid procedures).

Symptoms/Injuries After Ingestion: can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

Chronic Symptoms:

As a result of previous repeated overexposures, or single large dose, certain individuals develop symptoms to isocyanates at levels way below TLV. These symptoms, which can include chest tightness, wheezing, cough; shortness of breath, or asthma attack could be immediate or delayed up to several hours after exposure, similar to many non-specific asthmatic responses. There are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks

and in severe cases for several years. Overexposure to isocyanates has also been reported to cause lung damage, including decrease in lung function), which may be permanent. Sensitization can either be temporary or permanent.

Indication of Any Immediate Medical Attention and Special Treatment Needed. If exposed or concerned, get medical advice and attention.

Section 5: Fire-Fighting Measures

Suitable Extinguishing Media:	Water spray, fog, alcohol-resistant foam, carbon dioxide (CO ₂), dry chemical powder.
Unsuitable Extinguishing Media:	Do not use a heavy water stream. A heavy water stream may spread burning liquid.
Special Hazards Arising from Substance or Mixture	Fire Hazard: Not flammable but will support combustion. Explosion Hazard: Product is not explosive. Reactivity: Hazardous reactions will not occur under normal conditions.
Fire-fighting Procedure	Exercise caution when fighting any chemical fire. Use water spray or fog for cooling exposed containers. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	Do not allow run-off from firefighting to enter drains or water courses. Do not allow the product to be released into the environment.

Section 6: Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures

Avoid all contact with skin, eyes, or clothing. Avoid breathing (vapor, mist, spray).

For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Eliminate ignition sources. Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

Methods and Material for Containment and Cleaning-Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection.

Section 7: Handling and Storage

Precautions for Safe Handling

Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. Avoid contact with skin and eyes.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Conditions for Safe Storage (Including Any Incompatibilities)

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use.

Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Products: Water, amines, strong bases, and alcohols will cause some corrosion to copper alloys and aluminum.

Incompatible Materials: Sources of ignition. Direct sunlight. Heat sources.

Maximum Storage Period: 6 months

Storage Temperature: 18°C - 30°C

Specific End Use(s): No additional information available.

Section 8: Exposure Controls/Personal Protection

Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles. Gloves. Protective clothing. Insufficient ventilation: wear respiratory protection.



Personal Protective Equipment

Respiratory Protection:

Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

Hand Protection:

Wear chemically resistant protective gloves.

Eye Protection:

Chemical goggles or safety glasses

Skin and Body Protection

Wear suitable protective clothing.

Environmental Exposure Controls

Do not allow the product to be released into the environment.

Consumer Exposure Controls

Do not eat, drink or smoke during use.

Section 9: Physical and Chemical Properties

Appearance: Transparent, brown liquid

Odor: Slightly musty odor

Odor Threshold: No data available

pH: No data available

Freezing Point: 32°F (0°C)

Boiling Point: 406°F @ 5 mmHg for MDI (207.78°C)

Flashpoint: higher than 212°F (100°C) Pensky-Martens closed cup (ASTM-D-93)

Evaporation Rate: No data available

Flammability: No data available

Lower Explosion Limits: No data available

Upper explosion limits: No data available

Vapor Pressure: less than 10-5 mm Hg at 77° F (25° C) for MDI

Vapor Density: 8.5 (MDI) (air – 1)

Relative Density: No data available

Solubility in Water: Not soluble. Reacts slowly with water to liberate CO₂ gases

Partition Coefficient n-octanol/water: No data available

Auto-ignition Temperature: No data available

Decomposition Temperature: No data available

Specific Gravity: 1.24 (water = 1)

Viscosity: 200 CPS

Section 10: Stability and Reactivity

Reactivity

Hazardous reactions will not occur under normal conditions.

Chemical stability

Stable under recommended handling and storage conditions (see Section 7).

Possibility of hazardous reactions

May occur; contact with moisture, other materials, which react with isocyanates, or temperatures about 400°F (204°C) may cause polymerization.

Conditions to avoid

Contamination with water and high temperatures above 400°F (204°C).

Incompatible materials

Water, amines, strong bases, alcohols will cause some corrosion to copper alloys and aluminum.

Hazardous decomposition products

By high heat and fire; carbon monoxide, oxides of nitrogen, traces of HCN, MDI vapors or aerosols

Section 11: Toxicological Information

Acute Toxicity/Effects

Not classified

Skin Corrosion/Irritation	Causes skin irritation.
Serious Eye Damage/Irritation	Not classified
Respiratory or Skin Sensitization	May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ Cell Mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive Toxicity	Not classified
STOT (Single Exposure)	Not classified
STOT (Repeated Exposure)	Not classified
Aspiration Hazard	May be fatal if swallowed and enters airways.

Section 12: Ecological Information

Toxicity

Harmful to aquatic life with long lasting effects. Harmful to aquatic life.

Persistence and degradability

May cause long-term adverse effects in the environment.

Bioaccumulative potential

Not established.

Mobility in soil

No additional information available.

Other adverse effects

Avoid release to the environment.

Section 13: Disposal Considerations

Waste Disposal Recommendations:

Dispose of waste material in accordance with all local, regional, national, & international regulations.

Sewage Waste Recommendations:

Do not dispose of waste into sewer.

Section 14: Transport Information

DOT (Department of Transportation)

Proper Shipping Name: Liquid Resin (Non-Regulated)

Hazard Class: Non-regulated

UN Number: None

Packing Group: None

Label: Not applicable

Placard: Not applicable

NMFC (National Motor Freight Carriers)

Freight Class: 55

IMO / IMDG CODE (OCEAN) HAZARD CLASS DIVISION NUMBER: Non-regulated/Not dangerous goods

ICAO / IATA (AIR) HAZARD CLASS DIVISION NUMBER: Non-regulated/Not dangerous goods

Section 15: Regulatory Information

US Federal Regulations

SARA Section 311/312 Hazard Classes: Immediate (acute) health hazard

Oxirane, methyl-, polymer with oxirane, ether with 1,2,3-propanetriol (3:1), polymer with 1,1'-methylenebis[4-isocyanatobenzene] (59675-67-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,3-diisocyanato-2-methylbenzene and 2,4-diisocyanato-1-methylbenzene (64814-10-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Neither this product nor its chemical components appear on any US state lists.

Section 16: Other Information

Skin Sens. 1

H317

Skin sensitization Category 1

Resp. Sens. 1

H334

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

NFPA 704M ratings:	Health	Flammability 1	Reactivity 1	Other
HMS ratings: 0-Insignificant 1-Slight 2-Moderate 3-High 4-Extreme	Health 3	Flammability 1	Physical Hazard 1	Personal Protection G

The information provided in this Safety Data Sheet is correct to the best of Avanti International's knowledge, information and belief at the date of this publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process, unless specified in the text. AVANTI INTERNATIONAL MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. Given the variety of factors that can affect the use and application of this product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the product to determine whether it is fit for a particular purpose and suitable for user's method of use or application. Each user is also responsible for evaluating the conditions of use and designing the appropriate protective mechanisms to prevent employee exposures, property damage, or release to the environment. Avanti International assumes no responsibility for injury to the recipient or third persons or for any damage to any property resulting from misuse of the product.



The Chemical Company

January 22, 2014

Certificate of Conformance
MasterPozzolith® 322 Admixture
Formerly Pozzolith 322N Admixture
BASF Corporation* Admixture for Concrete

*(successor in interest to BASF Construction Chemicals, LLC, which is successor by merger to BASF Admixtures, Inc., formerly known as Degussa Admixtures, Inc., formerly known as Master Builders, Inc.)

TO WHOM IT MAY CONCERN:

State of Ohio)
County of Cuyahoga) ss

Before me, a Notary Public, in and for the aforesaid State and County, personally appeared Richard Hubbard III, who being duly sworn, deposes and says:

That he is a Sr. Technical Specialist for BASF Corporation in Cleveland, Ohio; and

That MasterPozzolith 322 admixture is manufactured by BASF Corporation – Admixture Systems; and

That MasterPozzolith 322 admixture and Pozzolith 322N admixture are the same product having identical composition, differing only in designation; and

That MasterPozzolith 322 admixture, based on the chlorides originating from all the ingredients used in its manufacture, contributes less than 0.00024 percent (2.4 ppm) chloride ions by weight of the cement when used at the rate of 65 mL per 100 kg (1 fluid ounce per 100 pounds) of cement; and

That MasterPozzolith 322 admixture meets the requirements for a Type A, Water-Reducing, Type B, Retarding, and Type D, Water-Reducing and Retarding Admixture specified in ASTM C 494/C 494M, Standard Specifications for Chemical Admixtures for Concrete, as well as the requirements for Type A, Type B and Type D admixtures as specified in Corps of Engineers' CRD-C 87 and AASHTO M194; and

That MasterPozzolith 322 admixture made at the Cucamonga, California plant conforms to the requirements of the NSF International Standard 61 - Drinking Water System Components - Health Effects, and that it is, therefore, suitable for use in properly cured concrete structures in contact with potable water; and

That MasterPozzolith 322 admixture is made to the same formulation and manufacturing specifications at all BASF Corporation – Admixture Systems manufacturing facilities

Richard Hubbard III
Richard Hubbard III
BASF Corporation - Admixture Systems

Subscribed and sworn to before me
the 22nd day of January, 2014

Charlene R. Mandat
Charlene R. Mandat
Notary Public, State of Ohio
My Commission Expires November 4, 2016
Recorded in Summit County

MasterPozzolith® 322

Water-Reducing Admixture

Formerly Pozzolith 322 N*

Description

MasterPozzolith 322 ready-to-use, liquid admixture is used for making more uniform and predictable quality concrete. It meets ASTM C 494/C 494M requirements for Type A, water-reducing, Type B, retarding, and Type D, retarding and water-reducing, admixtures.

Applications

Recommended for use in:

- Prestressed concrete
- Precast concrete
- Reinforced concrete
- Shotcrete
- Lightweight concrete
- Pumped concrete
- 4x4™ Concrete
- Pervious concrete
- Self-consolidating concrete (SCC)

Features

- Reduced water content required for a given workability
- Normal setting characteristics

Benefits

- Improved workability
- Reduced segregation
- Superior finishing characteristics for flatwork and cast surfaces
- Increased compressive and flexural strengths

Performance Characteristics

Mix Data: 400 lb/yd³ (237 kg/m³) of Type I cement; slump 5 inches (125 mm); non-air-entrained concrete; concrete temperature 76 °F (24 °C); ambient temperature 74 °F (23 °C).

Setting Time

Mix Design	Initial Set (h:min)	Difference (h:min)
Plain Concrete	5:20	REF
MasterPozzolith 322 admixture @		
3 fl oz/cwt (195 mL/100 kg)	5:15	-0:05
5 fl oz/cwt (325 mL/100 kg)	5:40	+0:20
7 fl oz/cwt (460 mL/100 kg)	6:20	+1:00

Compressive Strength

Mix Design	psi	7 Days		psi	28 Days	
		MPa	%		MPa	%
Plain Concrete	2150	14.8	100	3070	21.2	100
MasterPozzolith 322 admixture @						
3 fl oz/cwt (195 mL/100 kg)	2820	19.4	131	3970	27.4	129
5 fl oz/cwt (325 mL/100 kg)	3160	21.8	147	4100	28.3	134
7 fl oz/cwt (460 mL/100 kg)	3190	22.0	148	4390	30.3	143

Note: The data shown are based on controlled laboratory tests. Reasonable variations from the results shown here may be experienced as a result of differences in concrete-making materials and jobsite conditions.

Setting time of concrete is influenced by the chemical and physical composition of the basic ingredients of the concrete, the temperature of the concrete and the climactic conditions. Trial mixes should be made with job site materials to determine the dosage required for specified setting time and a given strength requirement.

Guidelines for Use

Dosage: MasterPozzolith 322 admixture is recommended for use within a range of 3-7 fl oz/cwt (195-460 mL/100 kg) of cement for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your local sales representative.

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: MasterPozzolith 322 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: MasterPozzolith 322 admixture may be used in combination with any BASF admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mixture.

Storage and Handling

Storage Temperature: MasterPozzolith 322 admixture should be stored above freezing temperatures. If MasterPozzolith 322 admixture freezes, thaw at temperatures above 35 °F (2 °C) and completely reconstitute by mild mechanical agitation. **Do not use pressurized air for agitation.**

Shelf Life: MasterPozzolith 322 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterPozzolith 322 admixture has been exceeded.

Packaging

MasterPozzolith 322 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Safety Data Sheets: MasterPozzolith 322 admixture

Additional Information

For additional information on MasterPozzolith 322 admixture, contact your local sales representative.

The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.

Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

* Pozzolith 322 N became MasterPozzolith 322 under the Master Builders Solutions brand, effective January 1, 2014.

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1. Identification

Product identifier used on the label

MasterPozzolith 322 also POZZOLITH 322 N

Recommended use of the chemical and restriction on use

Recommended use*: for industrial and professional users

* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:

BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Chemical family: No data available.

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Eye Dam./Irrit.	2A	Serious eye damage/eye irritation
Skin Sens.	1	Skin sensitization
Aquatic Acute	3	Hazardous to the aquatic environment - acute

Label elements

Pictogram:

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Signal Word:
Warning

Hazard Statement:

H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H402 Harmful to aquatic life.

Precautionary Statements (Prevention):

P280 Wear protective gloves and eye/face protection.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.
P272 Contaminated work clothing should not be allowed out of the workplace.
P264 Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303 + P362 IF ON SKIN (or hair): Wash with plenty of soap and water.
P333 + P311 If skin irritation or rash occurs: Call a POISON CENTER or doctor/physician.
P362 + P364 Take off contaminated clothing and wash before reuse.
P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precautionary Statements (Disposal):

P501 Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

<u>CAS Number</u>	<u>Weight %</u>	<u>Chemical name</u>
102-71-6	>= 3.0 - < 10.0%	2,2',2''-nitrilotriethanol
111-42-2	>= 0.3 - < 3.0%	2,2'-iminodiethanol
59-50-7	>= 0.3 - < 3.0%	4-chloro-3-methyl phenol
90-43-7	>= 0.3 - < 1.0%	[1,1'-Biphenyl]-2-ol
132-27-4	>= 0.1 - < 1.0%	sodium-2-biphenylate
1310-73-2	>= 0.1 - < 1.0%	Sodium Hydroxide
533-74-4	>= 0.1 - < 0.2%	dazomet
1310-58-3	>= 0.0 - < 0.2%	Potassium hydroxide

4. First-Aid Measures

Description of first aid measures

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General advice:

First aid personnel should pay attention to their own safety. Immediately remove contaminated clothing.

If inhaled:

If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

If on skin:

After contact with skin, wash immediately with plenty of water and soap. Under no circumstances should organic solvent be used. If irritation develops, seek medical attention.

If in eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

If swallowed:

Rinse mouth immediately and then drink plenty of water, seek medical attention. Do not induce vomiting unless told to by a poison control center or doctor.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Hazards: No applicable information available.

Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
foam, water spray, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons:
water jet

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
carbon dioxide, carbon monoxide, harmful vapours, nitrogen oxides, fumes/smoke, carbon black

Advice for fire-fighters

Protective equipment for fire-fighting:
Wear a self-contained breathing apparatus.

Further information:

The degree of risk is governed by the burning substance and the fire conditions. If exposed to fire, keep containers cool by spraying with water. Collect contaminated extinguishing water separately, do

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not allow to reach sewage or effluent systems. Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Do not breathe vapour/aerosol/spray mists. Wear eye/face protection. If exposed to high vapour concentration, leave area immediately. Use personal protective clothing. Handle in accordance with good building materials hygiene and safety practice.

Environmental precautions

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up

For small amounts: Pick up with inert absorbent material (e.g. sand, earth etc.). Dispose of contaminated material as prescribed.

For large amounts: Pump off product.

7. Handling and Storage

Precautions for safe handling

Avoid aerosol formation. Avoid inhalation of mists/vapours. Avoid skin contact. No special measures necessary provided product is used correctly.

Conditions for safe storage, including any incompatibilities

No applicable information available.

Suitable materials for containers: High density polyethylene (HDPE)

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect from direct sunlight.

Protect from temperatures below: 0 °C

The packed product must be protected from temperatures below the indicated one.

Protect from temperatures below: 32 °F

The packed product must be protected from temperatures below the indicated one.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits

2,2',2"-nitrioltriethanol

ACGIH TLV TWA value 5 mg/m³ ;

2,2'-iminodiethanol

OSHA PEL TWA value 3 ppm 15 mg/m³ ;
ACGIH TLV TWA value 1 mg/m³ Inhalable fraction and vapor ; Skin Designation Inhalable fraction and vapor ;

The substance can be absorbed through the skin.

Advice on system design:

No applicable information available.

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Personal protective equipment

Respiratory protection:

When workers are facing concentrations above the occupational exposure limits they must use appropriate certified respirators.

Hand protection:

Wear chemical resistant protective gloves., Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:

Safety glasses with side-shields.

Body protection:

Body protection must be chosen based on level of activity and exposure.

General safety and hygiene measures:

Do not inhale gases/vapours/aerosols. Avoid contact with the skin, eyes and clothing. Avoid exposure - obtain special instructions before use. Handle in accordance with good building materials hygiene and safety practice. Wearing of closed work clothing is recommended. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks).

9. Physical and Chemical Properties

Form:	liquid
Odour:	musty
Odour threshold:	No applicable information available.
Colour:	No applicable information available.
pH value:	approx. 7.5
Melting point:	No applicable information available.
Boiling point:	No applicable information available.
Sublimation point:	No applicable information available.
Flash point:	A flash point determination is unnecessary due to the high water content.
Flammability:	not flammable
Lower explosion limit:	No applicable information available.
Upper explosion limit:	No applicable information available.
Autoignition:	No applicable information available.
Vapour pressure:	No applicable information available.
Density:	approx. 1.2 g/cm ³ (20 °C)
Relative density:	No applicable information available.
Vapour density:	No applicable information available.
Partitioning coefficient n-octanol/water (log Pow):	No applicable information available.
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated.
Viscosity, dynamic:	No applicable information available.
Viscosity, kinematic:	No applicable information available.
Solubility in water:	(20 °C) completely soluble
Miscibility with water:	(20 °C) miscible

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Solubility (quantitative):	No applicable information available.
Solubility (qualitative):	No applicable information available.
Evaporation rate:	No applicable information available.
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.

10. Stability and Reactivity

Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:

No corrosive effect on metal.

Oxidizing properties:

not fire-propagating

Chemical stability

The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions

The product is stable if stored and handled as prescribed/indicated.

Conditions to avoid

See MSDS section 7 - Handling and storage.

Incompatible materials

strong acids, strong bases, strong oxidizing agents, strong reducing agents

Hazardous decomposition products

Decomposition products:

No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:

No decomposition if stored and handled as prescribed/indicated.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity

Assessment of acute toxicity: Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact. Based on available Data, the classification criteria are not met. The product has not been tested. The statement has been derived from the properties of the individual components.

Oral

No applicable information available.

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Inhalation

No applicable information available.

Dermal

No applicable information available.

Assessment other acute effects

No applicable information available.

Irritation / corrosion

Assessment of irritating effects: Irritating to eyes. May cause slight irritation to the skin.

Sensitization

Assessment of sensitization: May cause allergic skin reaction.

Chronic Toxicity/Effects

Repeated dose toxicity

Assessment of repeated dose toxicity: No reliable data was available concerning repeated dose toxicity. Based on available Data, the classification criteria are not met.

Genetic toxicity

Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

Carcinogenicity

Assessment of carcinogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

Reproductive toxicity

Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

Teratogenicity

Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

Other Information

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses. The product has not been tested. The statements on toxicology have been derived from the properties of the individual components.

Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

12. Ecological Information

Toxicity

Aquatic toxicity

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms.

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Persistence and degradability

Assessment biodegradation and elimination (H₂O)

Inherently biodegradable. The insoluble fraction can be removed by mechanical means in suitable waste water treatment plants.

Bioaccumulative potential

Assessment bioaccumulation potential

Discharge into the environment must be avoided.

Mobility in soil

Assessment transport between environmental compartments

No data available.

Additional information

Other ecotoxicological advice:

Do not discharge product into the environment without control. The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

13. Disposal considerations

Waste disposal of substance:

Dispose of in accordance with national, state and local regulations. Residues should be disposed of in the same manner as the substance/product. Do not discharge into drains/surface waters/groundwater.

Container disposal:

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

14. Transport Information

Land transport

USDOT

Not classified as a dangerous good under transport regulations

Sea transport

IMDG

Not classified as a dangerous good under transport regulations

Air transport

IATA/ICAO

Not classified as a dangerous good under transport regulations

15. Regulatory Information

Federal Regulations

Registration status:

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Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Acute;

<u>CERCLA RQ</u>	<u>CAS Number</u>	<u>Chemical name</u>
5000 LBS	59-50-7	4-chloro-3-methyl phenol
1000 LBS	7664-93-9; 1310-58-3; 1310-73-2	Sulfuric acid; Potassium hydroxide; Sodium Hydroxide
100 LBS	111-42-2	2,2'-iminodiethanol

State regulations

<u>State RTK</u>	<u>CAS Number</u>	<u>Chemical name</u>
PA	90-43-7	[1,1'-Biphenyl]-2-ol
	111-42-2	2,2'-iminodiethanol
	102-71-6	2,2',2''-nitritotriethanol
MA	90-43-7	[1,1'-Biphenyl]-2-ol
	111-42-2	2,2'-iminodiethanol
	102-71-6	2,2',2''-nitritotriethanol
NJ	90-43-7	[1,1'-Biphenyl]-2-ol
	111-42-2	2,2'-iminodiethanol
	102-71-6	2,2',2''-nitritotriethanol

CA Prop. 65:

WARNING: THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

NFPA Hazard codes:

Health : 2 Fire: 0 Reactivity: 0 Special:

16. Other Information

SDS Prepared by:

BASF NA Product Regulations

SDS Prepared on: 2015/05/27

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END OF DATA SHEET

Hilo Wastewater Treatment Plant Outfall Repairs

Applicable Monitoring and Assessment Plan for Clean Water Act Section 401 Water Quality Certification

November 2015

Prepared for:

County of Hawaii
Department of Environmental Management
Wastewater Division
25 Aupuni Street
Hilo, Hawaii 96720

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ATTACHMENTS

Attachment A Figures

Attachment B Field Sampling and Form

ACRONYMS AND ABBREVIATIONS

°C	degree Celsius
%	percent
AMAP	Applicable Monitoring and Assessment Plan
AECOM	AECOM Technical Services, Inc.
BMP	best management practice
CWB	Clean Water Branch
DLNR	Department of Land and Natural Resources
DO	dissolved oxygen
DOH	Department of Health, State of Hawaii
DQO	data quality objectives
DU	decision unit
ft	foot/feet
HAR	Hawaii Administrative Rules
lf	linear feet
NTU	nephelometric turbidity unit
PSQ	principal study question
ppt	part per thousand
SOP	standard operating procedure
QA	quality assurance
QC	quality control
RSD	relative standard deviation
TBD	to be determined
TSS	total suspended solids
WQS	Water Quality Standards

1.0 INTRODUCTION

This Applicable Monitoring and Assessment Plan (AMAP) will be implemented for the Hilo Wastewater Treatment Plant Outfall Repair project to accomplish the following tasks:

- **Pre-construction monitoring.** To establish a baseline (benchmark) water quality range of Puhi Bay at the project site before the start of construction activities.
- **Construction monitoring.** To monitor water quality during construction activities to ensure that best management practices (BMPs) are working effectively.
- **Post-construction monitoring.** To document post-construction water quality after the completion of construction activities to ensure that there is no net increase of pollutants or adverse impacts as a result of this project.

The objective of this AMAP is to establish the methods and means that will be used to monitor the potential impacts of proposed construction activities on the State of Hawaii receiving waters during repairs to the wastewater treatment plant outfall in Puhi Bay. The water quality monitoring performed during the construction activities will be used to determine the impact of the in-water construction activities and to ensure the effectiveness of the BMPs implemented at the project site.

The responsible parties for the three tasks above are as follows:

- **Pre-construction monitoring** – Qualified Sampler (TBD)
- **Construction monitoring** – Qualified Sampler (TBD)
- **Post-construction monitoring** – Qualified Sampler (TBD)

Samples will be collected by a designated environmental sampler who will be a Qualified Sampler. "Qualified Sampler," as used in this AMAP, means a person who actively practices environmental science, and has formal training in sampling theory, practices, and techniques. The Qualified Samplers will be knowledgeable of all aspects of the sampling in this AMAP including all equipment, instruments, calibrations, secondary checks, limits, and reporting requirements. Samplers will be knowledgeable of taking *MULTI INCREMENT*[®] samples.

See Table 1-1 for a listing of project personnel that are associated with this project.

Table 1-1: Project Personnel

Name	Title	Organization	Project Responsibility	Qualifications
BJ Leithead Todd	Director	County of Hawaii DEM	<ul style="list-style-type: none"> • Owner 	Knowledgeable of construction activities as they relate to 401 WQC requirements. Knowledgeable of WQC monitoring requirements for this project
---	Planning and Design Consultant	AECOM	<ul style="list-style-type: none"> • Planning and Design Consultant • Responsible for project design, obtaining permits, and submittal of 401 WQC Application forms. 	Knowledgeable of construction activities as they relate to 401 WQC requirements. Knowledgeable of WQC monitoring requirements for this project
---	Construction Contractor ^a	TBD	<ul style="list-style-type: none"> • Prime Construction Contractor • Responsible for executing project construction 	Knowledgeable of construction activities as they relate to 401 WQC requirements. Knowledgeable of WQC monitoring requirements for this project

Name	Title	Organization	Project Responsibility	Qualifications
---	Qualified Sampler ^a	TBD	<ul style="list-style-type: none"> Responsible for water quality sampling and reporting 	Will be trained and experienced in project management, collection of water samples, collection of <i>MULTIINCREMENTAL</i> @ samples, use of water quality monitoring equipment to perform field measurements of water quality data, use of laboratory equipment to perform instrumental analysis, and report preparation.
----	Analytical Laboratory	TBD	<ul style="list-style-type: none"> Analyze water quality samples 	Trained and experienced in project management, analyzing the various parameters the in aquatic and marine environments, and report preparation.

DEM Department of Environmental Management

^a This information will be provided to CWB prior to sampling.

1.1 BACKGROUND

The Hilo Wastewater Treatment Plant Outfall is a 4,468 foot-long ocean outfall constructed of 48-inch diameter reinforced concrete pipe that runs north from the Hilo Wastewater Treatment Plant, terminating in approximately 52 feet of water (See Attachment A, Figure 1, Vicinity Map). The outfall was built in 1964-1965 and has gone through several repairs since its original construction. In 1988 and 1989, extensive repairs were conducted by pouring new concrete to reinforce areas of the pipe where material had been scoured from alongside and beneath the pipeline. Multiple inspections of the pipe have taken place since the last extensive repairs.

Most recently, divers inspected the Hilo outfall pipeline for damage in November 2010, April 2012, and October 2014. A dye test conducted in October 2014 located two small leaks in the pipe, all at joints between the pipe sections. Several small areas were observed to have bedding and protection scoured from the pipe, leaving it exposed to wave forces. As noted in previous inspections (2001 and 2005), most of the armor stone originally placed on the pipe had been removed, either by storm waves or tsunamis. Even where the armor stone remains on top of the pipe, there is no evidence of any bedding layer remaining between the stones and the pipe. Much of the pipe has been reinforced with tremie concrete and appears stable. The only new damage noted was undercutting of a 38-foot section of pipe from stations 41+54 to 41+92. The pipe, including one joint, is approximately 10 to 14 inches above the seafloor along this length.

Repairs to the Hilo Wastewater Treatment Plant Outfall will include repair of a 38-foot section of the outfall where undercutting of material is surrounding the outfall and the temporary external repair of the leaks at Sta. 8+55 and Sta. 41+46.

For the segment where undercutting has occurred (station 41+54 to 41+92), the structural integrity and scour protection will be restored. During site preparation, two toe trenches (1.5 feet wide x 2 feet depth x 38 feet long) will be excavated using an underwater hydraulic hammer on the sea floor on both sides of the outfall. Excavated materials (on-site sand, gravel and rocks) will be disposed of at an approved site selected by the contractor. To prevent concrete wash-out into the ocean, fabric forms, comprised of a double layer of strong synthetic fabric filled with fine aggregate concrete, will be used as a BMP. The fabric used in the forms will retain the cement solids, fine aggregate, and sand.

After site preparation, fabric forms will be placed over the geotextile filter fabric and within the limits shown on the construction drawing. Anchoring of the fabric forms shall be accomplished through the use of anchor, terminal, and toe trenches. Following the placement of the fabric forms, through the factory-installed inlet slits, fine aggregate concrete shall be pumped between the top and bottom layers of fabric, filling the forms to the recommended thickness and configuration.

The County had decided to include the temporary repair of Sta. 8+55 and Sta. 41+46 under this permit application. The approximate crack size at Sta. 8+55 is 1-inch (width) x 6-inch (length) x 3 inch (diameter). The approximate crack size at STA 41+46 is 10-feet. The repairs would be done using injection of multigrout at Sta 8+55 and Sta 41+46. The following is a description of the means and methods of the external leak repair.

- **Sta 8+55 and Sta 41+46: Injection of Multigrout**

- **Surface Preparation:** All concrete surfaces in contact with Multigrout will be free of marine growth, laitance, and other contaminants. All concrete surfaces will be clean, sound, and rough to ensure a good bond.
- **Placement Procedures:** AV-202 Multigrout is a single component, moisture activated Methylene Diphenyl Diisocyanate (MDI)/ Toluene Diisocyanate (TDI) blended polyurethane injection resin. Designed for sealing active water leaks in large cracks or joints in concrete structures, it can absorb up to 12 times its weight in water to create a tough, impermeable foam with superb adhesive qualities. It is certified for use in potable water (ANSI/NSF 61 Potable Water Systems UL Certified). Grout will be designed to be pumped in place underwater (i.e. AVANTI AV-202 Multigrout). Hydrophilic polyurethane foam will be used to fill cracks in concrete, pores in granular soil, or voids in rock or soil along the existing concrete pipe. A manual injection pump will be used. Installation will be continuous to prevent cold joints. Prior to injection, existing joint exposed will be packed with oakum, a strong fibrous jute material, to prevent the leak moving another point along the joint.

Conventional BMP measures will not be effective for these types of blended polyurethane injection resin. Designed for sealing active water leaks in large cracks or joints in concrete structures, this single component, moisture activated product, will absorb up to 12 times its weight in water creating an impermeable foam barrier with good adhesive qualities. Loose foam particles, if any, that may be released into the surrounding environment during the injection process, can be collected by the divers and disposed of at a landfill.

Certified for use in potable water, ANSI/NSF 61 Potable Water Systems UL Certified, this product will not pose a threat to the marine organisms in the general area of the repair (See Attachment 9 of the CWB-WQC Application).

There will be no expansion or change in the facility use or footprint beyond that previously existing. These repairs are not part of a group of additional actions, do not involve cumulative impacts, create secondary impacts, or affect any particularly sensitive environments.

1.2 DATA QUALITY OBJECTIVES

The data quality objectives (DQOs) for this project were developed in accordance with *Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4)* (EPA 2006) and are presented below.

1.2.1 Problem Statement

Water quality monitoring of receiving State waters is necessary to evaluate and document the non-impairment of Puhi Bay during the wastewater outfall repair activities and evaluate and document the effectiveness of BMPs during construction.

1.2.2 Identify Decisions

The goal of this AMAP is to conduct water sampling and analysis sufficient to monitor the impact of the planned construction activities on water quality in Puhi Bay in the immediate vicinity of the project site. The purpose of the AMAP outlined herein will be to:

- 1) demonstrate that the BMPs in place for the protection of water quality are adequate for compliance with Hawai'i State water quality standards as detailed in HAR 11-54 (DOH, 2014);
- 2) promptly determine if the BMPs in place are adequate for the protection of water quality, so that any modifications that may be necessary can be implemented in a timely manner; and
- 3) serve as a basis for self-compliance, so that planned construction activities can proceed in compliance with Hawai'i State water quality standards without requiring direct intervention from DOH CWB.

1.2.3 Inputs to the Decision

The parameters shown below in Table 1-2 will be monitored during water quality monitoring events conducted prior to, during, and following construction activities. Water quality monitoring will be conducted in accordance with the State of Hawaii Department of Health (DOH) Clean Water Branch (CWB) General Monitoring Guidelines and HAR Title 11 Chapter 54: WQS (DOH 2014) for dredging projects that do not include habitat loss or modification. All samples will be collected as *MULTI INCREMENT*® samples. Total Suspended Solids (TSS) will not be sampled during this project. The in-water work will only last for 7-14 days; therefore, the work will be done before the TSS lab analysis would be completed and results received, and the results would not be applicable.

Table 1-2: Sampling Type and Analyses

Analyses	Units	Sample Type
pH (in the field only)	Log H ⁺ concentration	Onsite field meter
Turbidity (in the field or lab)	NTU	Onsite field meter
Dissolved Oxygen (in the field only)	mg/L/%	Onsite field meter
Salinity (in the field only)	ppt	Onsite field meter
Temperature (in the field only)	°C	Onsite field meter

% percent
 °C degrees Celsius
 log H⁺ logarithm of the hydrogen ion concentration
 mg/L milligrams per liter
 N/A not applicable
 NTU nephelometric turbidity unit
 ppt part per thousand

1.2.4 Study Boundaries

The study boundary for water quality monitoring will include waters upcurrent and downcurrent of the construction work site in Puhi Bay. Ten DUs will be established for water quality monitoring activities. Due to the nature and extent of the undercutting and leak repair work, each portion of the work will have specific DUs. The undercutting repair work is a larger area of the wastewater pipe and the established DUs are not necessarily appropriate for the smaller work area necessary for the leak repairs.

Table 1-3 shows the approximate latitude and longitude for the water quality monitoring stations.

Table 1-3: Approximate Locations for Water Quality Monitoring Stations

Sample Location	Latitude (N) ^a	Longitude (E) ^a
Undercutting Repair Work		
Upcurrent Control Station (DU 1)	330707.99	1795388.09
Impact Station 1 (DU 2)	330677.59	1795356.02
Impact Station 2 (DU 3)	330669.30	1795347.35
Downcurrent Control Station (DU 4)	330638.93	1795315.77
Leak Repair Work at STA 8+55		
Upcurrent Control Station (DU 5)	327382.02	1795444.08
Impact Station 3 (DU 6)	327375.12	1795436.85
Downcurrent Control Station (DU 7)	327368.21	1795429.62
Leak Repair Work at STA 41+46		
Upcurrent Control Station (DU8)	330646.46	1795360.91
Impact Station 4 (DU 9)	330646.46	1795351.82
Downcurrent Control Station (DU 10)	330639.71	1795346.45

^a Latitude and Longitude coordinates are based on NAD 1983 Hawaii State Planes, Zone 1. Accurate GPS data for sample collection locations will be included with all data reports.

Section 2.2 details the locations of DUs. See Attachment A, Figure 2, Decision Unit Locations and Figure 3, 4, and 5- Decision Unit Details for further information.

Pre-construction water quality monitoring to assess ambient conditions will be conducted prior to the start of construction. Pre-construction monitoring will consist of 10 total sets of samples to establish water quality limits. Samples will be taken during normal, non-storm conditions. Construction is scheduled to start November 2015; therefore, pre-construction monitoring will take place in October 2015. A pre-construction report will be submitted to DOH-CWB at the conclusion of pre-construction monitoring prior to initiating any construction activity. The report will include all data results from the monitoring period as well as all photos taken during each sampling event.

During construction, monitoring will be limited to the length of the construction work period in accordance with DOH CWB General Monitoring Guidelines (revised April 7, 2000). The length of in-water work will be 7-14 days. Sampling will take place once per every day of in-water work.

Post-construction monitoring will be conducted after all in-water construction activities are complete. In-water construction is scheduled to be completed by the end of November 2015. A final report will be submitted to DOH-CWB within two weeks after post-construction monitoring is complete. The final report will evaluate/assess all pre-during-and post construction monitoring results for complying with “no net increase in loading of pollutants of concern” according to CWB’s Integrated Report compliance, as well as all photos taken during the sampling events.

The temporal boundaries of the study will begin at the outset of pre-construction monitoring, continue through the period of construction activities, and finish at the completion of post construction monitoring activities.

1.2.5 Decision Rules

The results of construction monitoring will be evaluated by comparing the Impact Station results with results from the Upcurrent and Downcurrent Control Stations, as well as pre-construction monitoring results, to address the PSQ outlined above in Section 1.2.2.

During sample collection, field sampling personnel will record field conditions and note the conditions of all BMPs. To prevent concrete wash-out into the ocean, fabric forms, comprised of a double layer

of strong synthetic fabric filled with fine aggregate concrete, will be used as a BMP. The fabric used in the forms will retain the cement solids, fine aggregate, and sand. If at any time pollution associated with construction activities extends beyond the BMPs, all work will stop until the cause of the pollution is determined and corrected, or until such time as additional BMPs can be put in place to contain the pollution.

If any pollutant sample exceeds the numerical reference indicated, the contractor must:

- Stop all activities
- Determine whether or not the cause of the exceedances is attributable to construction activities
- If necessary, repair, replace, or modify the BMPs, and
- Resume activities only when numerical values for the pollutants are below the numerical references.

If at any time the turbidity at the Impact Stations exceeds the numerical references listed below:

- Highest average value from triplicate samples collected during 10 days of pre-construction sampling or:
- Upcurrent Control sample results from the same day,

...or if pH results recorded at the Impact Stations exceed these parameters:

- Outside the range of 5.5 to 8.0;
- Deviates by more than 0.5 units from the control stations, or:
- Deviates more than 0.5 units from the pre-construction range,

...or if salinity, DO, or temperature at the Impact Stations exceeds the established WQS as listed in HAR Title 11 Chapter 54: WQS (DOH 2014).

...then a determination must be made as to whether or not the cause of these exceedances is attributable to construction activities.

If the Qualified Sampler notices a problem in the field, such as a damaged BMP, either during visual inspections or during sampling procedures, it will be their responsibility to notify the contractor's on-site foreman. Data collected from the DUs and observations noted by the Qualified Sampler will be used to determine whether construction activities are impacting water quality. If it is determined that construction activities are impacting water quality, then the activity or activities in question should be amended as necessary until the problem is corrected, or BMPs should be adjusted as necessary to contain the pollution. In the event of any exceedances, DOH CWB will be notified within 24 hours or the next business day.

1.2.6 Limits on Decision Errors

Performance or acceptance criteria will be used to accomplish the following tasks:

- Identify potential sources of error.
- Define the general types of decision error and the consequences.
- Establish how decision errors will be managed during the project.

The data for this project need to be of sufficient quality to reliably determine whether construction activities are impacting receiving waters.

Sources of Errors: There are several potential sources of error in an investigation; however, for the proposed water quality monitoring, the primary source of error is field sampling error. Field sampling errors can lead to decision errors if they are not properly accounted for by the project team. A field sampling error occurs as a result of a sampling design that does not allow for an equal probability of including any given part of the population of interest in the sample. The selection of the monitoring locations and the technique used to collect the water data can lead to field sampling errors. One objective of the investigation is to reduce errors so that decision makers can be confident that the data accurately represent the characteristics of the site.

Another source of error is measurement or instrument error. This error can introduce bias into the data. Measurement error will be minimized by employing a rigorous instrument calibration schedule to ensure that the instrument is performing in accordance with the manufacturer's design specifications and secondary checks.

Decision Errors: The data collected to make decisions are potential sources of errors. A decision error can occur as a result of making the wrong decision based on data collection and evaluation. It is not possible to eliminate the potential for a decision error, but the probability can be reduced.

Managing Decision Errors: The investigation will use the following methods and techniques to reduce decision errors potentially associated with sampling design and sampling procedures:

- Evaluate site conditions and characteristics to identify the appropriate DU locations. Samples will be collected from the three DUs, upcurrent and downcurrent of the construction work site in Puhi Bay. Sampling locations are shown on Figure 2, Decision Unit Locations in Attachment A.
- Apply the same sampling methodology for all sampling events. Divers will collect *MULTI INCREMENT*® samples so the sample can be taken as close as possible to where the work is being conducted.
- Use appropriate calibration methods, as well as secondary checks before and after sampling, on field instruments to reduce the potential for instrument error or bias.
- Replicate samples will also be collected daily to validate the reproducibility of sample results. Triplicate samples will be collected during all sampling events at the Downcurrent Control Station during pre-construction monitoring, and at the Impact Station during construction monitoring and post-construction monitoring. Triplicate samples will be used to ensure that the sampling design is producing reproducible samples with sufficient precision/error. If the relative standard deviation (RSD) of the triplicate results is less than 20%, the data will be deemed acceptable for project purposes. If the RSD is above 20%, the sample will be considered acceptable but sampling procedures and conditions will be reviewed.

1.2.7 Obtaining Data

The data collection design that has been developed to generate data that will meet the quantitative and qualitative criteria as previously described for this project is described in Section 2.0, Monitoring Plan. The Monitoring Plan specifies the type, number, location, physical quantity of samples and data, as well as the quality assurance (QA) and quality control (QC) activities that will ensure that sampling design and measurement errors are managed sufficiently.

2.0 MONITORING PLAN

This AMAP has been designed to collect data directly relevant to the decision being addressed in a quality-, cost-, and time-efficient manner. This section details the Monitoring and Analysis Plan for the required water quality monitoring to be completed under this AMAP during completion of the Hilo Wastewater Treatment Plant Outfall Repairs project. The sampling design is based on the project-specific DQOs as described above.

2.1 MONITORING PARAMETERS

The parameters shown in Table 2-1 will be measured during water quality monitoring activities for this project in accordance with the DOH CWB General Monitoring Guidelines (revised April 7, 2000) for dredging projects with no habitat loss or modification. These parameters and their respective reporting limits are shown in Table 2-2.

Table 2-1: Sample Parameters

Parameter	Analytical Method	Units	Instrument	Hold Times	Preservation	Minimum Detection Limit	Sensitivity
pH	SM 4500-H+	Standard unit	Water quality probe	Immediate	None	0	0.01
Turbidity	EPA 180.1	NTU	Turbidimeter	48 hours	None	0.1	0.01
DO	SM 4500-O G/ membrane electrode	mg/L/%	Water quality probe	Immediate	None	0.1	0.01
Salinity	Field test	---	Conductivity meter	24 hours	None	--	0.1
Temperature	SM 2550-B	degrees Celsius	Water quality probe	Immediate	None	1	0.1

Notes :1) Per Test America, salinity does not have a MDL, but has a Reporting Limit of 2.0 practical salinity unit (psu).

2) TSS will not be sampled during this project. The in-water work will only last for 7-14 days; therefore, the work will be done before the lab analysis would be completed and results received; therefore, the results would not be applicable.

Table 2-2: Sample Parameter Reporting Limits

Parameter	Analytical Method	Units	Reporting Limit ^a	
			Wet Season Marine Water Criteria (November-April)	Dry Season Marine Water Criteria (May-October)
pH	SM 4500-H+	Standard unit	7.6 - 8.6	7.6 - 8.6
Turbidity	EPA 180.1	NTU	0.5	0.2
DO	SM 4500-O G/membrane electrode	mg/L	≥ 75% oxygen saturation at ambient temperature ^b	≥ 75% oxygen saturation at ambient temperature ^b
Salinity	Field test	ppt	< 10% from natural salinity ^c	< 10% from natural salinity ^c
Temperature	SM 2550-B	°C	± 1 degree from ambient	± 1 degree from ambient

^a HAR 11-54-6(b)(3) criteria for marine water, Class A, open coastal water (marine waters bounded by the 183 meter or 600 foot [100 fathom] depth contour and the shoreline).

^b Percent oxygen saturation equals actual dissolved oxygen (mg/L) divided by maximum oxygen concentration at water temperature.

^c Salinity for brackish water is between 0.5 to 32 parts per thousand. Salinity for salt waters is greater than 32 parts per thousand. Salinity criteria shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

The Qualified Sampler will take color photos during each sampling event every day before, during, and after the proposed construction to allow for comparison of site conditions. Photos will be accompanied with a date/time stamp and a narrative description of what the photo is documenting. The photos will be submitted to DOH CWB daily or by the end of the next business day. Photo orientation will be shown on an accompanying map. These photos will be independent of the contractor inspection of BMPs and documentation of photos.

2.2 MONITORING LOCATIONS

Table 1-3 (Section 1.2.4) shows the approximate latitude and longitude for the water quality monitoring stations.

During construction, the Upcurrent Control Stations will be used as a control to determine if any changes to the water quality in the bay have occurred due to events unrelated to construction activities, such as a large rain storm or unrelated release from upcurrent of the construction activities. For example, if a parameter exceeds ranges established during pre-construction monitoring at the Impact Station (DU 2) and Downcurrent Control Station (DU 3), but not at the Upcurrent Control Station (DU 1), it can be assumed that the construction BMPs are not effective. Work will cease and BMPs will be inspected and deficiencies corrected. Water quality monitoring will continue as BMPs are inspected and repaired.

If a parameter exceeds limits established during pre-construction monitoring at all DUs and at comparable levels, it can be assumed that the BMPs are effective and the exceedance is due to conditions upcurrent that are unrelated to the construction activities. Work will continue.

See Attachment A, Figure 2, Decision Unit Locations. Once in the field, GPS points will be established at each DU to ensure that the pre-construction, construction, and post-construction measurements are collected from the same locations during every sampling event. The reference point will indicate where the qualified sampler will collect the *MULTI INCREMENT*® samples. Accurate GPS data for sample collection locations will be included with all data reports

Due to the nature and extent of the undercutting and leak repair work, each portion of the work will have specific DUs. The undercutting repair work is a larger area of the wastewater pipe and the established DUs are not necessarily appropriate for the smaller work area necessary for the leak repair.

Undercutting Repair Work

The following DUs will be established for the undercutting repair work:

- Upcurrent Control Station (DU 1)
- Impact Station 1 (DU 2)
- Impact Station 2 (DU 3)
- Downcurrent Control Station (DU 4)

During the undercutting repair work, the Upcurrent Control Station (DU 1) will be established approximately 50 feet (15 meters) upcurrent of the discharge pipe. Impact Station 1 (DU 2) will be established directly adjacent to the area of the fabric form bag being filled at that time (6 feet x 6.4 feet segments of the bag will be filled at a time). Therefore, the dimensions and location of DU 2 will change depending on the work being conducted. See Figure 3 for details. Impact Station 2 (DU 3) will be established on the other side of the pipe. Samples shall be taken within 12 inches from the top surface of fabric form at DU2 and DU3.

The Impact Station sample(s) will be taken as close as possible to the geo-textile bag to ensure that the bag is not leaking. The Upcurrent Control Station (DU 1) and Downcurrent Control Station (DU 4)

will be in-line with the Impact Stations (DU 2 and DU 3). The Downcurrent Control Station (DU 4) will be established approximately 50 feet (15.24 meters) downcurrent of the Impact Station.

Leak Repair Work at STA 8+55

The following DUs will be established for the undercutting repair work:

- Upcurrent Control Station (DU 5)
- Impact Station 3 (DU 6)
- Downcurrent Control Station (DU 7)

During the leak repair work at Sta 8+55, the Upcurrent Control Station (DU 5) will be established 10 feet (3.0 meters) upcurrent of the discharge pipe. Impact Station 3 (DU 6) will be established as close as possible to the leak repair work being at Sta. 8+55. Sample shall be taken within 12 inches from the top surface of grout injection at DU6. The Downcurrent Control Station (DU 7) will be established approximately 10 feet (3.0 meters) downcurrent of the Impact Station See Figure 4 for details.

Leak Repair Work at STA 41+46

- Upcurrent Control Station (DU 8)
- Impact Station 4 (DU 9)
- Downcurrent Control Station (DU 10)

During the leak repair work at STA 41+46, the Upcurrent Control Station (DU 8) will be established 10 feet (3.0 meters) upcurrent of the discharge pipe. Impact Station 4 (DU 9) will be established as close as possible to the leak repair work being at Sta. 41+46 to ensure all controls are working properly. Samples shall be taken within 12 inches from the top surface of grout injection at DU 9. The Downcurrent Control Station (DU 10) will be established approximately 10 feet (3.0 meters) downcurrent of the Impact Station See Figure 5 for details.

2.3 MONITORING PROCEDURES

Samples will be collected as *MULTI INCREMENT*® samples. Divers will fill a one-liter sample container by slowly moving the sample container through the entire DU as described in AECOM's Standard Operating Procedures (SOPs) – Site Work- Sampling and Analysis (AECOM 2005). The sample container will have two quarter inch holes in the top. Any preservative added to the sample should be added after sample collection to avoid loss of preservative. The sample container will be slowly moved through the entire DU as the bottle is filled to ensure that a representative sample is acquired. The quality of the samples will be determined through the collection of triplicate samples as discussed elsewhere in this document. Samples will be taken during work operations.

Turbidity, pH, DO, salinity, and temperature measurements will be made *ex situ* with standard field grade equipment. Table 2-2 lists the sampling parameters and associated reporting limits. Table 2-3 lists the field calibration, maintenance, testing, and inspection requirements for the *ex situ* sampling equipment.

Table 2-3: Field Equipment Calibration, Maintenance, Testing, and Inspection

Analyses*	Calibration	Maintenance	Testing	Acceptance	Inspection	Corrective Action
YSI Water Quality Parameter Meter 6920 V2	Calibrate with calibration solutions (pH buffers and conductivity, and turbidity solutions).	Decontaminate after every use. Keep batteries charged.	Calibrate with calibration solutions.	Stable readings achieved (three or more successive readings within 10%).	Visually inspect daily for wear or damage before calibration.	If equipment fails to calibrate or inspection indicates damage, the equipment will not be used. A back up instrument will be available in the event of equipment failure, to ensure there is no gap in monitoring.

*When the Qualified Sampler is hired, the specific field equipment may be updated.

The Qualified Sampler will be qualified to calibrate field instruments and will perform secondary checks on the instruments. The calibration/check standards to be used are specified in the manufacturer's instructions (YSI Incorporated), and AECOM's SOPs- Field Monitoring Equipment Maintenance and Calibration SOP (AECOM, 2009). The QC checks will be performed daily to verify instrumental precision and accuracy prior to and upon completion of field analysis.

The Qualified Sampler will maintain field records that are sufficient to re-create all sampling and measurement activities. The information will be recorded in indelible ink in a permanently bound field logbook with sequentially numbered pages and on the field sampling forms (Attachment B). All relevant sample collection information will be recorded in a field log book in accordance with SM 1060B (SM, 2012). The field logbook will include the field sampling personnel names, the date, sample location, time of the sample analysis, as well as meteorological and ocean conditions (i.e., weather, current, wind direction), construction activities, unusual site conditions, and condition of any BMPs at the time of sample collection. Any construction-related (or non-construction-related) conditions or activities noted at or near the project site that might impact water quality at the time of sample collection will also be recorded. In addition, the field logbook will include the field instruments used, calibration results, secondary checks, and numerical value/units of each measurement taken.

Table 2-4: Required Sample Containers

Parameter	Sample Bottle/Preservation	Number of Bottles to be Filled in Field
pH, Turbidity, DO, Salinity, Temperature	None*	None

°C degrees Celsius

*Samples will be collected *ex situ* from Puhi Bay

2.3.1 Monitoring Frequency

Pre-Construction Water Quality Sampling

Pre-construction monitoring will be conducted in October 2015, the month prior to the start of construction work. The pre-construction monitoring will include a total of 10 sampling events. One sampling event per day will be conducted during normal business hours over a minimum of a 2-week period. Samples will not be taken during storm events. Pre-construction samples will be collected at the Upcurrent and Downcurrent Control Stations, with Downcurrent Control Station being conducted in triplicate. The Impact Station will not be collected during the pre-construction monitoring. The pre-construction monitoring will include *ex situ* measurements (pH, turbidity, DO, salinity, and temperature) with a field meter at both sampling locations. The pre-construction monitoring data will establish a limit of concentrations for each parameter to which the construction monitoring results can be compared. The %RSD of the results from the triplicate samples collected at the Downcurrent Control Station will be calculated and reported with each data submittal.

Construction Water Quality Sampling

Construction monitoring will be conducted during the in-water construction work period, which is estimated at 7-14 days. The Qualified Sampler will be on site during in-water construction activities and will conduct monitoring every day, including visual inspections, photo documentation, and water quality sampling. Sampling will be conducted during normal business hours. During the in-water work, *ex situ* measurements will be taken every day at the Impact Station for pH, turbidity, DO, salinity, and temperature with a field meter. The %RSD of the results from the triplicate samples collected at the Impact Station during each sampling event will be calculated and reported with each data submittal.

Post- Construction Water Quality Sampling

Post-construction water quality sampling will be conducted once per week for three weeks following construction completion. Samples will be taken at the same locations as the Pre-Construction samples. The %RSD of the results from the triplicate samples collected during each sampling event at the Downcurrent Control Station will be calculated and reported with each data submittal.

3.0 SAMPLE QUALITY ASSURANCE

The following water quality monitoring QA/QC protocols will be implemented for this project.

3.1 SAMPLING DEVICE DECONTAMINATION

Samples will be prevented from coming into contact with potentially contaminating substances (such as tape, oil, engine exhaust, corroded surfaces, and dirt). Where applicable, all sample devices will be cleaned and wrapped in plastic between uses.

3.2 FIELD SAMPLING

All samples will be collected so as not to cause cross-contamination. The location where samples will be collected will be marked in the field. The sampling locations are detailed on Figure 2 in Attachment A.

3.3 EQUIPMENT CALIBRATION AND MAINTENANCE

The field meters will be calibrated before use in accordance with the manufacturer's instructions (YSI Incorporated), and AECOM's SOPs- Field Monitoring Equipment Maintenance and Calibration SOP (AECOM, 2009) All probes come factory calibrated (with certification) except DO, which requires calibration in the field. All calibration records will be maintained in the field logbook. Field

equipment will be maintained in accordance with the manufacturer's instructions and manual. The field team will avoid exposing the equipment to high humidity and dusty conditions.

The pH, salinity, turbidity, temperature, and DO measurements will be measured onsite. The Qualified Sampler will have extensive experience with using pH, turbidity, temperature, salinity, and DO meters/instruments before going to the field and collecting samples.

3.4 FIELD MEASUREMENTS

The pH, salinity, temperature, and DO measurements will be measured onsite. Turbidity samples will be measured immediately following field activities (i.e., within 24 hours following sample collection). The Qualified Sampler will have extensive experience using the field instruments before going to the field and collecting samples.

3.4.1 Replicate Analysis

During the pre and post construction phase, triplicate samples will be collected from the Downcurrent Control Station; during the construction phase, triplicate samples will be collected from the Impact Station. This will result in replicate analysis at a rate of at least 20% for all samples collected. Acceptable RSD for replicate analysis will be 20% or less. If the RSD is above 20%, the sample will be considered acceptable but sampling procedures and conditions will be reviewed.

3.4.2 Sample Handling

All samples will be tested in the field immediately following sample collections for parameters including pH, temperature, turbidity, salinity and DO.

3.4.2.1 SAMPLE IDENTIFICATION

Each sample will be properly labeled. The labels will provide space for the following:

- Project name and project number
- Location
- Sample ID
- Name of sampler
- Parameters to be analyzed
- Date and time of sample collection

3.4.3 Record Keeping

Field records sufficient to re-create all sampling and measurement activities will be maintained. The information will be recorded in indelible ink in a permanently bound notebook with sequentially numbered pages. These records will be archived in an easily accessible location. They will also be provided to DOH CWB upon request. The following information will be recorded for all activities:

- Location
- Date and time
- Sampling personnel
- Weather conditions
- Numerical value and units of each measurement
- Identity of and calibration results for each field instrument
- Sample type and sampling method

- Identity of each sample
- Sample description (e.g., color, odor, clarity)
- Identification of conditions that might affect the representativeness of a sample (e.g., mitigation activities, refueling operations, activity elsewhere in the bay, rained night before, etc.)

Samples will be collected and measured in accordance with their respective equipment manufacturer's directions. Equipment will be calibrated and decontaminated prior to sampling and in accordance with the manufacturer's recommendations prior to sampling. All sampling activities will be recorded in the field logbook and will be provided to DOH CWB.

4.0 MONITORING RESULTS EVALUATION AND DATA REPORTING

Before the construction work begins, color photos with a date/time stamp and associated narrative of the site will be submitted to DOH CWB along with the established pre-construction, benchmark water quality data.

By comparing the established pre-construction water quality benchmarks for the site to subsequent samples collected on a daily basis, the Qualified Sampler can determine whether there are changes in the ambient water quality that are a direct result of construction activities. If measurements collected during the construction activities do not fall within the ranges established during pre-construction monitoring, in-water work will be halted until appropriate adjustments can be made or additional BMPs can be implemented. Water quality monitoring will continue each day that construction work is halted.

Copies of the field sampling forms and photos collected during in-water work will be forwarded to the DOH CWB via an e-mail, cleanwaterbranch@doh.hawaii.gov each day that samples are collected. The Qualified Sampler will be responsible for emailing the sampling forms. The email will be sent on the day of sampling or before the end of the next business day. The initial field sampling form submittal will include a map of the sampling locations. A final data summary will be submitted within two weeks after completing the post construction work and will include photo documentation of the new site conditions accompanied by the maximum and average values of parameters measured. The final report will assess the water quality impacts, if any, due to the construction project.

5.0 REFERENCES

AECOM, 2005. Site Work-Sampling and Analysis. March 2005.

AECOM, 2009. Field Monitoring Equipment Maintenance and Calibration. May 2009.

Department of Health, State of Hawaii (DOH). 2014. Hawaii Administrative Rules (HAR), Title 11, Chapter 54: Water Quality Standards. Honolulu. 15 November.

Environmental Protection Agency, United States (EPA). 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process*. EPA QA/G-4. EPA/240/B-06/001. Office of Environmental Information. February.

YSI Incorporated. Environmental Monitoring Systems Manual. 6-Series Multiparameter Water Quality Sondes User Manual.

Attachment A
Figures

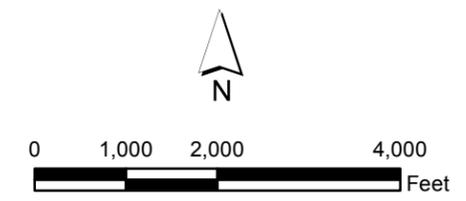
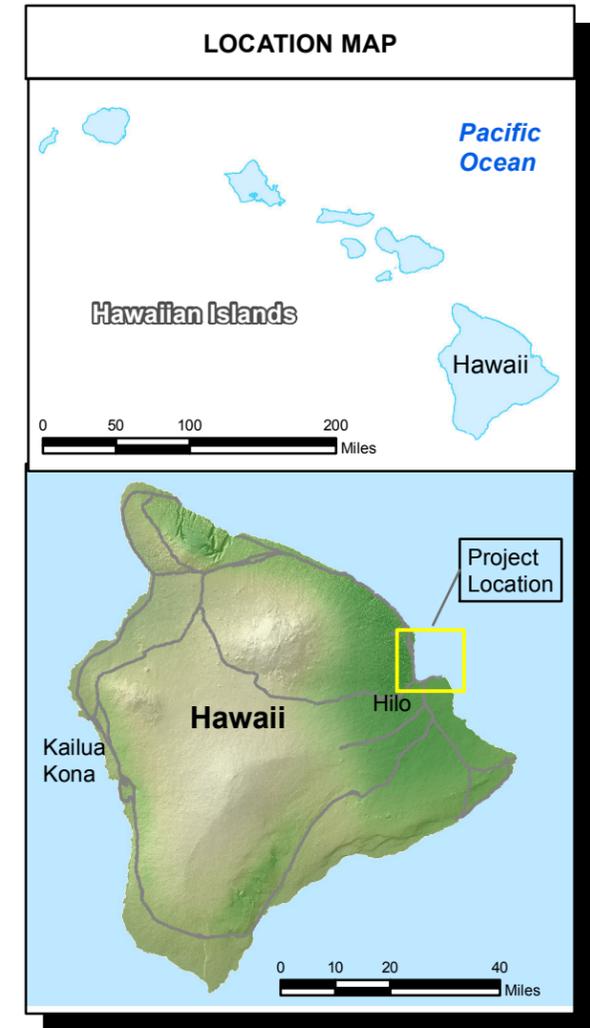


Figure 1
Site Location Map
Hilo Wastewater Treatment Plant
Ocean Outfall Maintenance Project
Hilo Bay, Hawaii

P:\US\GIS\Wastewater\60241242-Hilo Outfall\400_Tech_Support\440_GIS\MXD\Figure 1 - Site Location Map.mxd 8/10/2015

CONSTRUCTION LIMIT, 48'x30'

HILO OUTFALL 48" DIA. CONCRETE PIPE

STA 41+54 CONSTRUCTION BEGIN

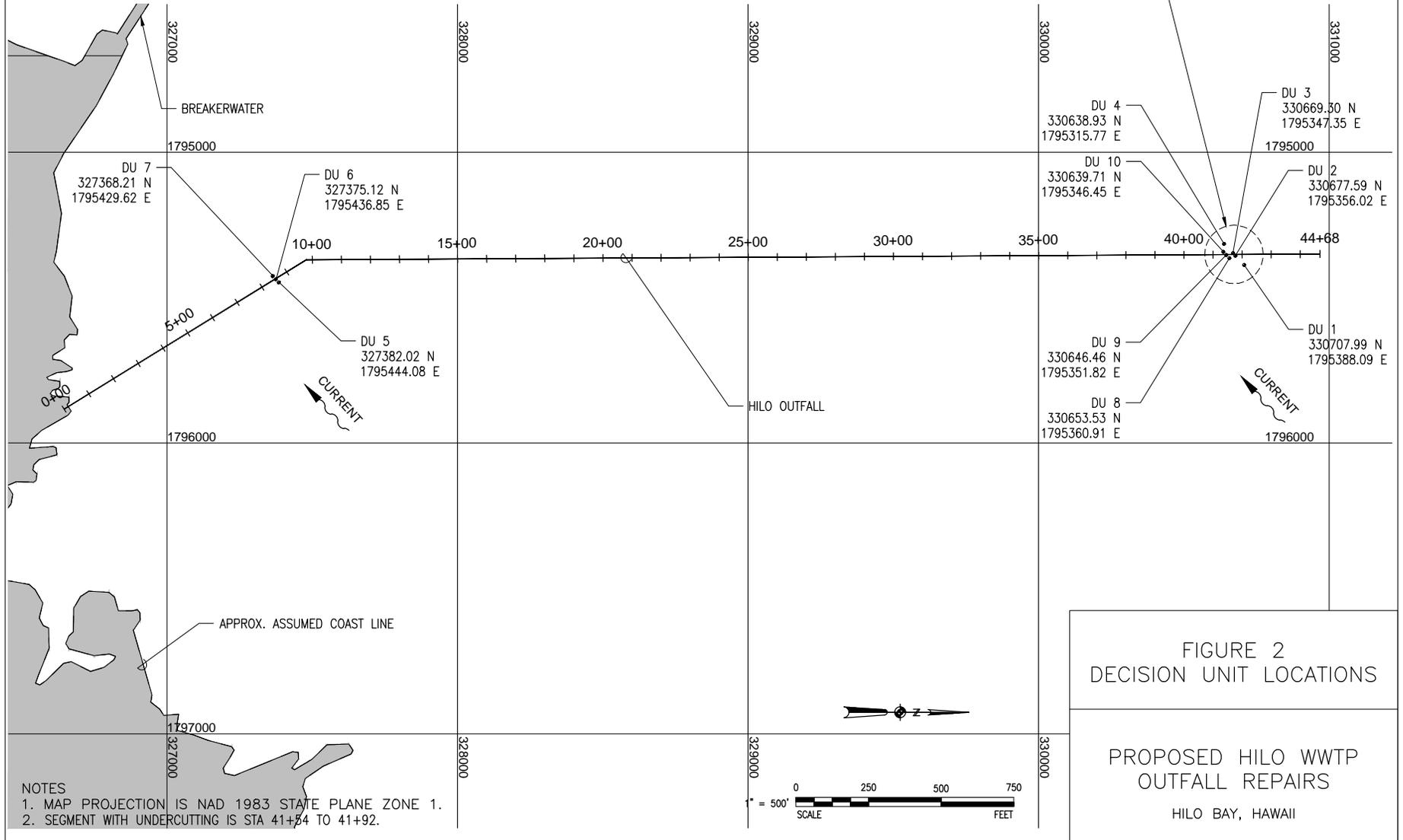
STA 41+92 CONSTRUCTION END

CONCRETE FILLED FABRIC FORM

INSERT "A"
NOT TO SCALE

SEGMENT WITH UNDERCUTTING REPAIR 38FT OF EROSION DAMAGE.

CONSTRUCTION LIMIT SEE INSERT "A"



NOTES

1. MAP PROJECTION IS NAD 1983 STATE PLANE ZONE 1.
2. SEGMENT WITH UNDERCUTTING IS STA 41+54 TO 41+92.

FIGURE 2
DECISION UNIT LOCATIONS

PROPOSED HILO WWTP
OUTFALL REPAIRS

HILO BAY, HAWAII

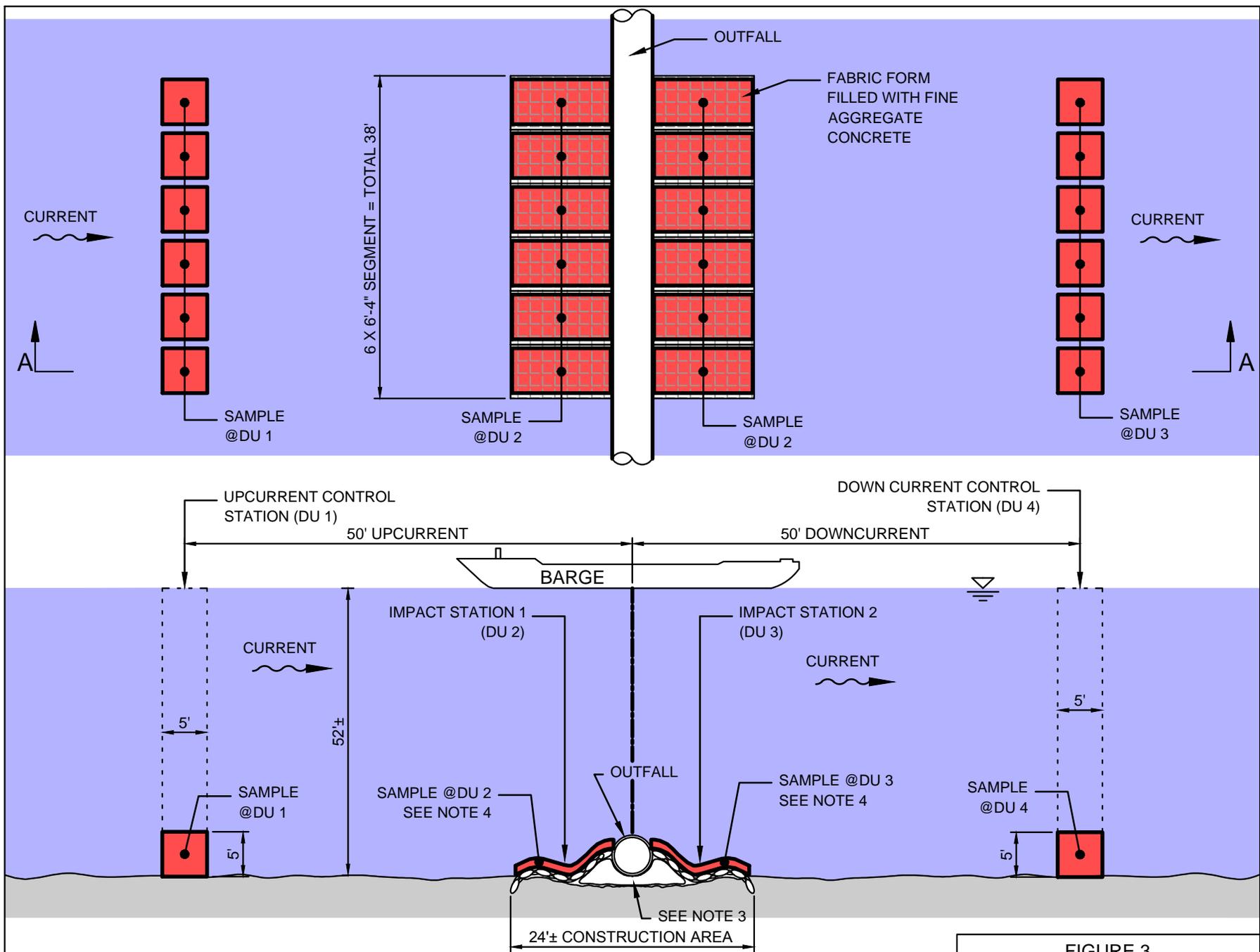
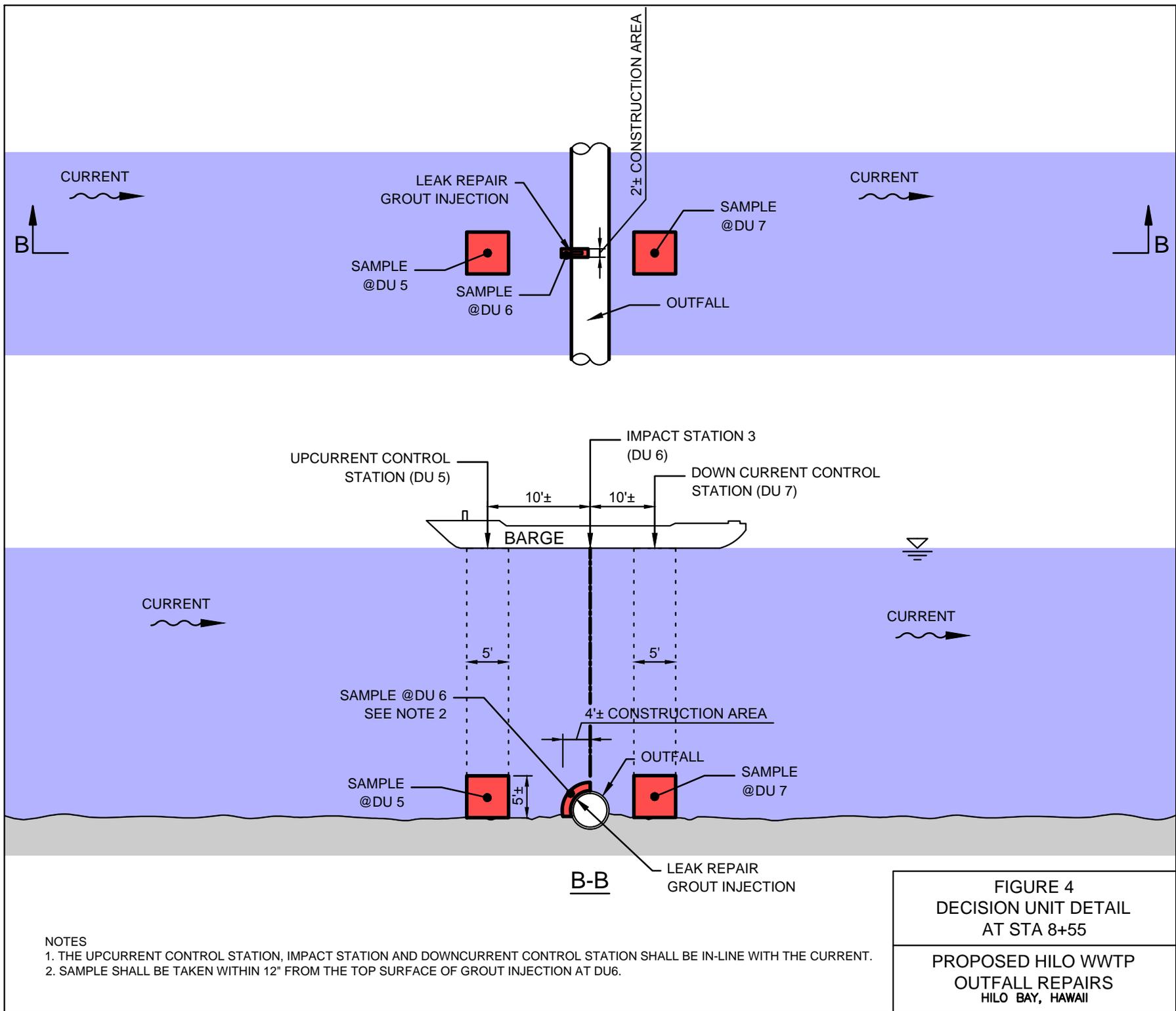


FIGURE 3
DECISION UNIT DETAIL
AT STA 41+54 TO STA 41+92

PROPOSED HILO WWTP
OUTFALL REPAIRS
HILO BAY, HAWAII

NOTES

1. THE UPCURRENT CONTROL STATION, IMPACT STATION AND DOWNCURRENT CONTROL STATION SHALL BE IN-LINE WITH THE CURRENT.
2. SAMPLES AT DU 2 SHALL BE TAKEN AS CLOSE TO THE FABRIC FORM AS POSSIBLE AT BOTH SIDE OF OUTFALL.
3. 8.5 CY OF FINE AGGREGATE CONCRETE WILL BE PLACED INSIDE OF FABRIC FORM AT EACH 6'-4" SEGMENTS. (6 X 6'-4" = TOTAL 38 LF)
4. SAMPLES SHALL BE TAKEN WITHIN 12" FROM THE TOP SURFACE OF FABRIC FORM AT DU2 AND DU3.

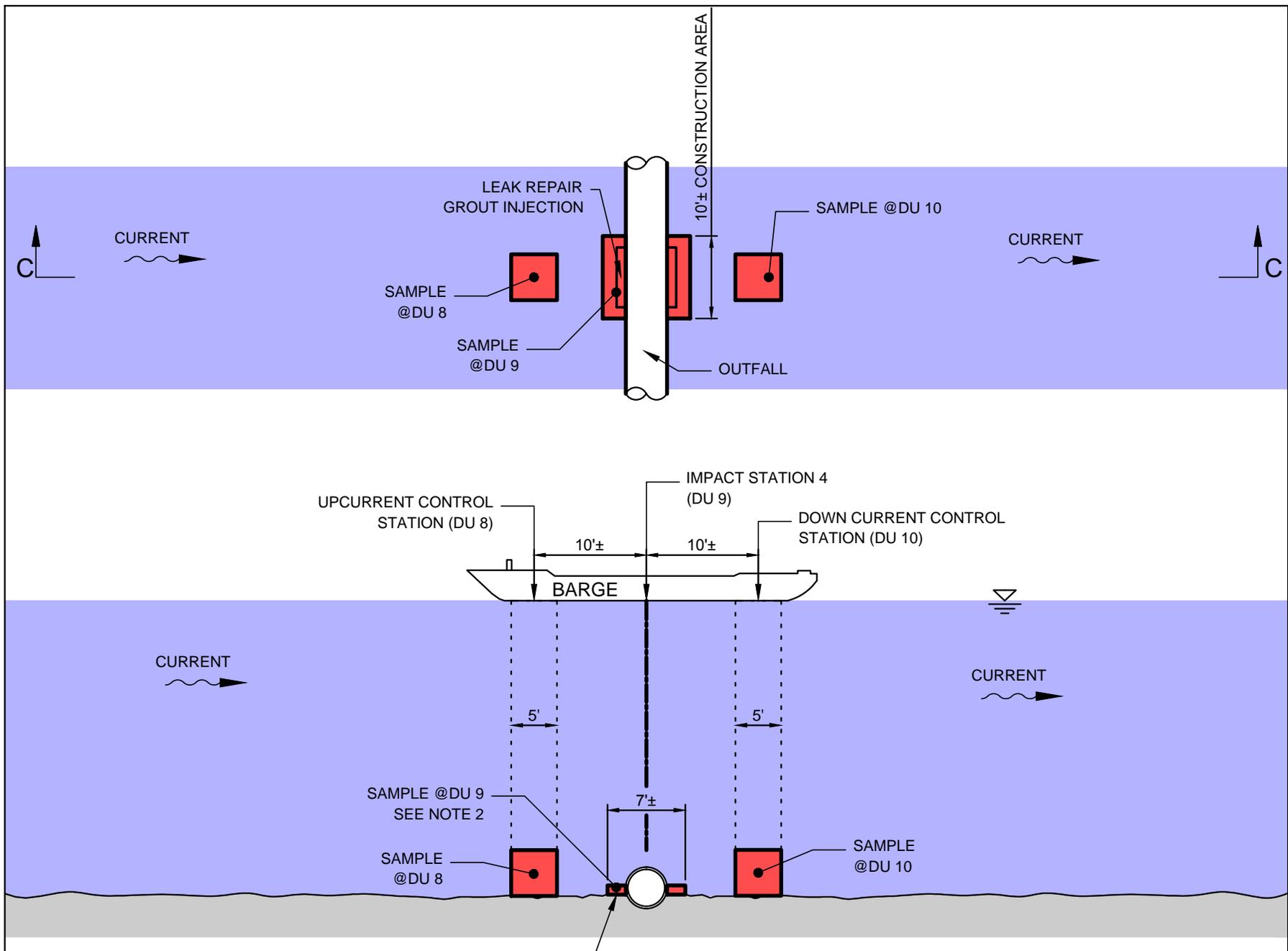


NOTES

1. THE UPCURRENT CONTROL STATION, IMPACT STATION AND DOWNCURRENT CONTROL STATION SHALL BE IN-LINE WITH THE CURRENT.
2. SAMPLE SHALL BE TAKEN WITHIN 12" FROM THE TOP SURFACE OF GROUT INJECTION AT DU6.

**FIGURE 4
DECISION UNIT DETAIL
AT STA 8+55**

**PROPOSED HILO WWTP
OUTFALL REPAIRS
HILO BAY, HAWAII**



NOTES

1. THE UPCURRENT CONTROL STATION, IMPACT STATION AND DOWNCURRENT CONTROL STATION SHALL BE IN-LINE WITH THE CURRENT.
2. SAMPLE SHALL BE TAKEN WITHIN 12" FROM THE TOP SURFACE OF GROUT INJECTION AT DU9 AND DU10.

FIGURE 5
DECISION UNIT DETAIL
AT STA 41+46
PROPOSED HILO WWTP
OUTFALL REPAIRS
HILO BAY, HAWAII

Attachment B
Field Sampling Form

**PROPOSED CORAL AVOIDANCE AND MITIGATION PLAN (CAMP)
FOR RELOCATION OF CORALS AT THE SITE
OF THE HILO WASTEWATER TREATMENT PLANT
OCEAN OUTFALL REPAIRS**

Prepared for:

**County of Hawaii
Wastewater Division**

Prepared by:

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Revised

May 4, 2016

INTRODUCTION and BACKGROUND

In 2013, reports were prepared that documented the existing marine biological setting in the vicinity of the County of Hawaii Hilo Wastewater Treatment Plant Ocean Outfall. A section of the pipe traverses a sand and rubble filled channel that is oriented in a roughly east-west direction perpendicular to the outfall pipe. Likely as a result of wave and current driven movement of sedimentary material through the channel, the outfall pipe has been undercut, resulting in an area where there is little solid support of the bottom of the pipe. Such undermining of the pipe is causing potential instability which could result in breakage

or leakage of the pipe. In order to eliminate the potential for such damage to the pipe, planning to repair the undercut is underway.

Repairs will require placement of stabilizing materials in some form of concrete that would be injected into a formed bag on the seafloor adjacent to the existing pipe. As these actions will affect the existing marine community structure in the area, some form of mitigation will be required.

In addition, inspection surveys have revealed several breaches in the integrity of the discharge pipe resulting in small leaks. Identification of leaks was based on diver observations of small plumes of effluent emanating from the pipe. In order to confirm the number and location of previously observed leaks, as well as to identify any additional leaks, a test was conducted on October 24, 2014 by injecting fluorescein tracer dye into the pipe and surveying the pipe for visible evidence of tracer dye flowing from the pipe.

Two of the previously observed leaks were confirmed by dye discharge. No new leaks were encountered. One confirmed leak at location 41+46 occurred in the undercut region of the pipe, while another confirmed leak consisted of a partial separation of a joint in the pipe at location 8+55. A third leak noted in previous surveys was not located or identified by any dye discharge, while a fourth potential leak area proved to be a natural spring discharge of freshwater and not a leak in the pipe.

As a first step in developing a mitigation protocol, it was necessary to gain a quantitative understanding of the biotic composition of the area of potential effect. A report provided results that quantified biotic community structure, particularly in terms of reef coral community structure on the outfall pipe itself as well as in the adjoining areas of the reef potentially affected by repairing the undercut sections of the pipe.

Subsequent to completion of the biotic assessment, engineering studies have been completed to characterize the specific areas of the pipe and adjoining reef that will be affected by placement of supporting structures to fill the undercut areas. These supporting structures will be placed below the centerline of the pipe, and within a rectangular area that extends 15 feet out from both sides of the pipe, and extends the length of the undercut area.

Based on the engineering design, an evaluation was conducted of the marine data that provided quantitative estimates of the number of coral colonies that would be destroyed as a result of construction activities to shore up the undercut should no remediation actions occur. With respect to the pipe *per se*, survey methodology did not differentiate location of corals on the vertical aspect of the pipe, although qualitative observations indicated

that corals were relatively uniformly distributed on the top and sides. As a result, a conservative estimate of 75% of all corals on the pipe is used as a surrogate value for the corals on the lower 75% of the pipe. While the engineering estimates indicated that support materials would not extend above the centerline of the pipe, another 25% was added as a buffer.

With respect to the reef areas on either side of the pipe, transects ET-1 and ET-2 extended 5 meters (approximately 15 feet) from the edge of the pipe to the east, while transect WT-1 extended approximately the same distance to the west of the pipe. Tables 1A, 2A and 3A provide values of coral community structure within the area where support materials will be placed.

Inspection of Table 2-A indicates that 376 corals will be affected, with the highest number (265) on the reef to the east of the pipe. In terms of individual species, the two most common species are *Montipora patula* (177) and *Montipora capitata* (128), followed by *Porites lobata* (87) (Table 3-A).

Owing to the flat encrusting growth forms of many of the corals actually growing on the pipe, the colonies below the midline of the pipe within the zone that will be covered by shoring materials will likely be lost, as removal of such growth forms is not possible without severe fragmentation. However, most of the existing colonies, and other macrofauna, growing on the rubble bed within the 15-foot boundaries can be relocated to nearby areas with similar physical characteristics with minimal or no losses. The newly placed material to shore up the pipe will also likely represent a more stable substratum for future coral settlement relative to the existing rubble bed.

A "limit of construction" zone has also been established that consists of a square 48 feet on a side centered at the midpoint of the pipe, and encompassing the length of pipe where construction activities will take place. Beyond this boundary, construction activities will be restricted to prevent damage to any corals inhabiting the area.

PROPOSED METHODS FOR CORAL RELOCATION

The primary task to be completed by the proposed work is to:

- 1) Remove easily movable non-encrusting corals (those with robust 3-D morphology as opposed to flat encrusting corals) from points of attachment within the footprint of the pipeline shoring features.

2) Relocate corals to a suitable relocation area, out of the project's region of influence where corals are attached to the substratum using suitable adhesive materials. Relocation areas will be of similar geomorphic and biotic composition as donor areas.

3) Any Species of Special Concern (SOSC) including mollusks or other non-attached invertebrates found to occupy the area where pipe-shoring will occur will also be moved out of the area of project influence.

With respect to these tasks, the following criteria will be applied:

a) In-water construction, including coral transplantation, must be scheduled to avoid the peak coral spawning period of June 1 to August 31. Work must also be scheduled to avoid forecasted adverse weather or wave conditions and halted under unforeseen circumstances until ambient conditions resume.

a) Appropriate habitat for receiving relocated corals will be identified prior to removal. It is anticipated that suitable habitat space is available on the reef bench adjacent to the outfall pipe within 50 m of the project site.

b) Coral colonies will be removed from the reef substratum in a manner that reduces the potential for breakage or injury, and shall be handled carefully to avoid injury or damage during the relocation process. The field team that will be tasked with the work will be required to have substantial experience in similar relocation efforts, and will have developed techniques for successful removing attached corals with minimal damage.

c) At no time will corals be removed from the water and exposed to the atmosphere. In addition, the time between removal and relocation will be minimized, likely to a matter of minutes. Immediately following removal, corals will be hand-carried by divers to the relocation site where reattachment will take place immediately.

d) Corals will be cemented to the new substratum using a mix of Portland cement and Plaster-of-Paris mixed on the support boat and lowered to the work site in buckets. Coral colonies will be cemented to the substratum in a manner that minimizes the likelihood of dislodgement and maximizes potential survivability. Such likelihood will be based in part of the existence of naturally occurring corals in the same location at the relocation site.

e) During the relocation process, each relocated coral will be photographed and catalogued with an identification code. The latitude and longitude of each relocation site

will also be recorded using differential Global Positioning System instrumentation. Recordation of location and initial condition of relocated corals will be conducted with the intent that the site can be re-visited at a future date to determine the rate of success of the operation in terms of survivability of individual coral colonies.

d) Following the completion of the field work for the relocation project, a report will be prepared documenting the operation. Post-transplantation monitoring must occur at 3-, 6-, 12-, 18- and 24-months post-transplant. A proximal reference (control) site must be identified and monitored to determine whether uncontrollable (natural) environmental variables affected the success of the transplanting operation. The monitoring reports will include a description of the current condition of the receiver site(s), including the number of coral colonies, size classes and species transplanted; receiver site(s) location data (e.g., coordinate location, size, water depth, etc.); date of the monitoring; general site conditions during monitoring; names and qualifications of the monitor(s); the methodology employed to conduct the monitoring; photographic surveys; evidence of coral recruitment and percentage of live coral cover; quantifications of transplanted coral colony mortality and partial mortality (e.g., percentage live tissue); and observations of indicators of reattachment, growth, disease, potential biotic or abiotic threats/stressors to survivorship, invasive species, and overall health. The summary report will also include narrative on suggested potential improvements to the operation that could be of value for future projects. Monitoring reports must be submitted to the Corps via email at CEPOH-RO@usace.army.mil, Attn: Paahana, within 30-days after each survey.

BEST MANAGEMENT PRACTICES and PROCEDURES

The National Marine Fisheries Service has prepared a Best Management Practices and Guidance for a similar coral relocation project at Roi-Namur, Marshall Islands. As that project was comparable in scope and intent as the Hilo Sewage Outfall coral relocation effort, relevant points are presented below which will be followed during field operations:

1. Work days will be selected when swell conditions are mild in order to prevent wave forces from dislodging corals prior to complete hardening of cement mixture.
2. Transplantation sites will be of approximately similar depth that contains similar types of corals. Transplantation sites will contain sufficient "non-coral" substratum to provide adequate space for transplanted corals to be attached without interfering with pre-existing corals. At each site, wire brushes will be used to scrub the substratum clean of

biofilms and filamentous micro-algae to ensure the best possible adhesion. The base of each transplantation colony will also be scoured with a wire brush prior to attachment.

3. Corals will be carefully removed from points of attachment with a hammer and chisel, and hand carried by divers to the relocation site. When possible, contact with corals should be from the base, rather than upper surfaces, particularly hand-contact with cement mixture.

4. Work boat will be positioned with multi-point moorings above the relocation site. Adhesive mixture will consist of a mix of Portland cement, Plaster-of-Paris, sand and water mixed in a trough on the deck of the work boat. Mix is transferred to 5-gallon buckets which are lowered over the side to waiting divers at the relocation sites. The proportions of mix are dictated by the estimated time between adding water to the mix and emplacing corals into the cement. The higher the proportion of Plaster-of-Paris, the stronger the bond, but shorter the work time before set-up.

5. On the bottom, buckets are inverted on the bottom over the relocation site and tapped sharply which releases the mix into a mound. The mound is molded into a thick circular pancake shape on the order of 2-3" thick. As a general rule, the diameter of the pancake should be at least one-half the diameter of the widest lateral diameter of the coral colony. Once the base is formed, the base of the coral is firmly embedded into the cement mound using a twisting motion. If the insertion does not result in a firm union, the coral is held in place for several minutes to ensure that the base hardening secures the coral. Several colonies may be placed within the same cement mound, particularly if the multiple colonies consist of fragments.

PROPOSED METHOD FOR LEAK REPAIR

As a general condition, Should in-water work generate a turbidity plume, work must cease until corrective action is taken to reduce turbidity and must not resume until marine waters have reached ambient levels.

Leak 41+46.00

All of the leaks identified in all surveys are considered small, based on the diminution of dye plumes within less than one foot of the point of discharge. The leak at location 41+46.00 is noted as a diffuse leak emanating from underneath the pipe in the inner region of the undercut section (red circles in Figure 1). Corals are growing on the pipe adjacent to the

leak area, while the reef surface consists of unconsolidated rubble. The area containing the leak at 41+46.00 is within the boundary of the undercut pipe where cement bags will provide shoring. Hence, mitigation of corals in this area will fall under the procedures outlined for the pipe of the undercut section described above. However, as can be seen in Figure 1, with the exception of several flat encrusting colonies of *Montipora* spp. growing on the diffuser pipe there are no corals in the immediate vicinity of the leak.



Figure 1. Location of leak 41+46.00 in section of pipe where undermine of pipe occurs.

Leak 8+55

The leak at location 8+55 consists of a partial separation of a joint at the base of the exposed pipe (red circles in Figure 2). Several colonies of living corals are attached to the pipe and adjacent reef in close proximity to the joint

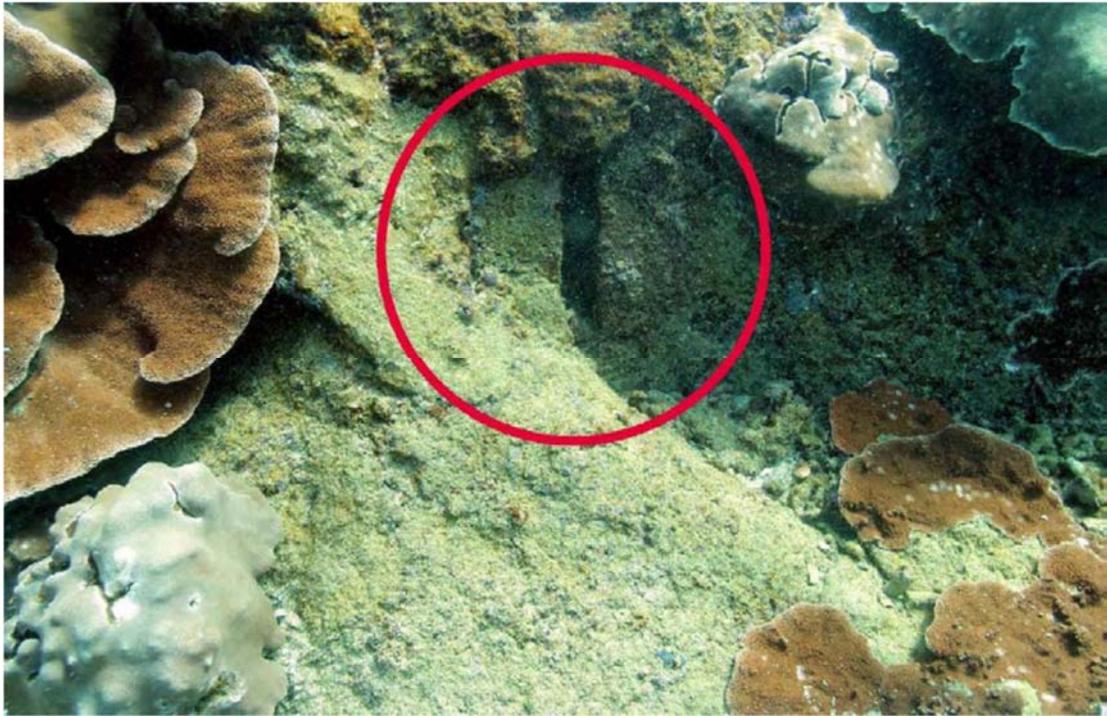


Figure 2. Red circle shows leak in pipe at location 8+55.

TABLE 1A. Size class distribution of coral colonies estimated to be within the area where support structures will be placed to fill undercut scoured area of Hilo Wastewater Treatment Plant Ocean Outfall. It is estimated that support structure will cover bottom 75% of pipe (ON PIPE), and reef surface within 15 feet of the pipe to the east (ET-1, ET-2) and west (WT-1).

ON PIPE	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>		0	0	3	5	2	0	0	11
<i>Pocillopora eydouxi</i>		0	2	1	0	0	0	0	2
<i>Pocillopora meandrina</i>		2	1	5	0	0	0	0	8
<i>Montipora capitata</i>		0	8	5	8	3	2	0	26
<i>Montipora patula</i>		0	4	15	14	3	2	0	38
TOTAL	0	2	13.5	29.25	27.75	8.25	3.75	0	85

ET-1 2 m E Pipe	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>					2				2
<i>Pocillopora meandrina</i>			2	5					7
<i>Montipora capitata</i>			5	13	5				23
<i>Montipora patula</i>			5	20	9	3			37
TOTAL	0	0	12	38	16	3	0	0	69

ET-2 5m E Pipe	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>			11	14	15	14	7		61
<i>Pocillopora eydouxi</i>		1		1	3				5
<i>Pocillopora meandrina</i>		1	10	9	9				29
<i>Montipora capitata</i>	1		7	9	10	8	5		40
<i>Montipora patula</i>	1		5	9	16	17	7	3	58
<i>Leptastrea purpurea</i>				1					1
<i>Cyphastrea ocellina</i>		2							2
TOTAL	2	4	33	43	53	39	19	3	196

WT-1 W Pipe	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>			5	1	4	3			13
<i>Pocillopora eydouxi</i>				1					1
<i>Pocillopora meandrina</i>		1	3	6	1				11
<i>Montipora capitata</i>		3	5	21	5	5			39
<i>Montipora patula</i>		1	9	23	5	6			44
<i>Leptastrea purpurea</i>		1							1
<i>Cyphastrea ocellina</i>		2							2
TOTAL	0	8	22	52	15	14	0	0	111

TABLE 2A. Summary size class distribution of all coral colonies within the area that will be covered by support structures to remedy the undercut of the Hilo Wastewater Sewage Treatment Plant Ocean Outfall Pipe in Hilo Bay, Hawaii. These size class distributions were created by assuming corals growing on the lower 75% of the pipe ("OP") will be covered while the remaining corals growing on the upper 25% of the pipe will remain undamaged. Corals growing within 15 feet to the east of the pipe ("ET-1, ET-2") and 15 feet to the east of the pipe will also be covered. Also shown are the percentage of total coral colonies on each transect, number of species of coral on each transect (Sp. #), Shannon-Weiner diversity index for total colony counts per transect (H'), and Swartz's Species Dominance (SSD) for each transect.

TRANSECT	SIZE CLASS (cm)								TOTAL	% TOTAL	Sp. #	H'	SSD
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160					
OP	0	2	14	29	28	8	4	0	85	22.5	5	1.3	2
ET-1	0	0	12	38	16	3	0	0	69	18.4	4	1.03	2
ET-2	2	4	33	43	53	39	19	3	196	52.1	7	1.51	3
TOTAL ET	2	4	45	81	69	42	19	3	265	70.5	7	1.23	2
WT-1	0	8	22	52	15	14	0	0	111	29.5	7	1.37	3
TOTAL	2	12	67	133	84	56	19	3	376				

TABLE 3A. Summary counts of coral colonies for all species on each survey transect in the undercut zone on the Hilo Wastewater Treatment Plant Ocean Outfall Pipe in Hilo Bay, Hawaii. These corals include 75% of corals growing on the pipe (OP) and those within the area extending 15 feet on both the east (ET-1, 2) and west (WT-1) side of the pipe which will be covered with supporting materials to shore up the undercut pipe.

SPECIES	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>									
OP				3	5	2			11
ET-1					2				2
ET-2			11	14	15	14	7		61
WT-1			5	1	4	3			13
TOTAL	0	0	16	18	26	19	7	0	87

SPECIES	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Pocillopora eydouxi</i>									
OP			2	1					3
ET-2		1		1	3				5
WT-1				1					1
TOTAL	0	1	2	3	3	0	0	0	9

SPECIES	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Pocillopora meandrina</i>									
OP		2	1	5					8
ET-1			2	5					7
ET-2		1	10	9	9				29
WT-1		1	3	6	1				11
TOTAL	0	4	16	25	10	0	0	0	55

SPECIES	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Montipora capitata</i>									
OP			8	5	8	3	2		26
ET-1			5	13	5				23
ET-2	1		7	9	10	8	5		40
WT-1		3	5	21	5	5			39
TOTAL	1	3	25	48	28	16	7	0	128

SPECIES	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Montipora patula</i>									
OP		4	15	14	3	2			38
ET-1			5	20	9	3			37
ET-2	1		5	9	16	17	7	3	58
WT-1		1	9	23	5	6			44
TOTAL	1	5	34	66	33	28	7	3	177

SPECIES	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Leptastrea purpurea</i>									
ET-2				1					1
WT-1		1							1
TOTAL		1		1					2

SPECIES	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Cyphastrea ocellina</i>									
ET-2		2							2
WT-1		2							2
TOTAL		4							4

**INVESTIGATION OF LEAKS IN THE
HILO WASTEWATER TREATMENT PLANT
OCEAN OUTFALL PIPE
EFFECTS TO CORAL REEF RESOURCES**

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I. EXECUTIVE SUMMARY

The County of Hawaii discharges treated effluent from the Hilo Wastewater Treatment Plant Ocean Outfall into Hilo Bay through a multi-port diffuser approximately 4,400 feet long, at a water depth of approximately 45-50 feet. The marine environment in the area of the outfall pipe consists of a well-developed living coral reef. Approximately 40 feet of the pipe immediately landward of the outfall diffusers traverses a sand and rubble filled channel where the outfall pipe has been undercut, resulting in an area where there is little or no solid support of the bottom of the pipe. In order to eliminate the potential for damage to the pipe, planning is underway to repair the undercut section.

In addition, inspection surveys have revealed several breaches in the integrity of the discharge pipe resulting in small leaks. Identification of leaks was based on diver observations of small plumes of effluent emanating from the pipe. In order to confirm the number and location of previously observed leaks, as well as to identify any additional leaks, a test was conducted on October 24, 2014 by injecting fluorescein tracer dye into the pipe and surveying the pipe for visible evidence of tracer dye flowing from the pipe.

Two of the previously observed leaks were confirmed by dye discharge. No new leaks were encountered. One confirmed leak at location 41+46 occurred in the undercut region of the pipe, while another confirmed leak consisted of a partial separation of a joint in the pipe at location 8+55. It appears that both of these leaks can be filled by hand placement of an underwater adhesive with minimal or no damage to the surrounding corals growing close to the leaks. A third leak noted in previous surveys was not located or identified by any dye discharge, while a fourth potential leak area proved to be a natural spring discharge of freshwater and not a leak in the pipe.

In summary, repair of the undercut section of the pipe is presently critical as the undercutting appears to be progressing owing to the observed increase in open space under the pipe in sequential surveys in March 2013 and October 2014. Repair of the undercut will likely involve placement of cement filled bags to shore up the undercut sections. Mitigation of coral resources in the footprint of the repair bags may be accomplished by removal and relocation of corals to adjacent sites (details of the mitigation plan are presented in another report). Repair of the two leaks detected in the dye survey can be accomplished by hand placement of patch material with minimal effects to the surrounding reef habitat.

II. INTRODUCTION and BACKGROUND

A. Dye Study

The County of Hawaii discharges treated effluent from the Hilo Wastewater Treatment Plant Ocean Outfall into Hilo Bay through a multi-port diffuser approximately 4,400 feet long, at a water depth of approximately 45-50 feet. The marine environment in the area of the outfall pipe consists of a well-developed living coral reef, characterized by mounds and ridges formed by the accretion of calcifying organisms. The mound and ridge system is bisected by numerous submarine channels that are filled with sand and limestone rubble. Several inspection surveys of the entire outfall pipe have identified several structural weaknesses in the diffuser pipe. Approximately 40 feet of the pipe immediately landward of the diffusers traverses a sand and rubble filled channel that is oriented in a roughly east-west direction perpendicular to the outfall pipe. Likely as a result of wave and current driven water-driven movement of sedimentary material through the channel, the outfall pipe has been undercut, resulting in an area where there is little solid support of the bottom of the pipe. In the most seaward area of the undercut, removal of supporting reef material is complete resulting in a section approximately two feet wide where there is a complete lack of solid footing supporting the bottom of the pipe. Such undermining of the pipe is causing potential instability which could result in breakage or leakage of the pipe should substantial wave forces occur. In order to eliminate the potential for such damage to the pipe, planning is underway to repair the undercut section.

In addition, inspection surveys have revealed several breaches in the integrity of the discharge pipe resulting in small leaks. Identification of leaks was based on diver observations of small plumes of effluent emanating from the pipe. As the effluent consists primarily of water with very low salinity relative to seawater, leaks were identifiable by distinctive regions of cloudy water resulting from density differences between the freshwater and seawater. Two of these previously observed leaks consisted of small separations located at joints of the diffuser pipe. One leak, located in the undercut region of the pipe was detected as diffuse discharge of effluent through the rubble surface adjacent to the pipe. A fourth potential leak area was observed where a distinct discharge of freshwater was noted adjacent to the pipe.

In order to confirm the number and location of previously observed leaks, as well as to identify any additional leaks, it was deemed necessary to conduct a program employing the use of fluorescein tracer dye injected into the pipe through a manhole located on land near the entry point of the pipe into the ocean (Figure 1). Following calculation of the

amount of dye injection required to provide an unambiguous signal through the entire length of discharge pipe, an AECOM Technical Services, Inc. (AECOM) non-diver injected dye into a land-based effluent manhole (ID: 18897) in sufficient quantity to be visually detected along the length of the outfall.

A distinct surface plume of fluorescent green directly over the diffusers provided confirmation that the dye was traversing the entire length of the pipeline. Two members of the three-man dive team entered the water and confirmed that substantial dye was discharging from the diffusers (Figure 2). When dye flow was verified, the dive team inspected the entire pipe to visually identify any evidence of dye emanating from leaks. The entire length of the pipe was videotaped during the diver swims except at the landward end of the pipe where wave wash made access impossible, and for a short stretch where the camera malfunctioned. However the entire pipe was visually surveyed. At each identified leak, the location was recorded using GPS instrumentation by swimmers positioned directly over the leak location. At each leak site, the surrounding biotic composition was photo-documented. The GPS coordinates of each leak was used as the study locations for the biological survey. These biological results will be used in support of the County of Hawaii's repair permit applications.

Specific details for this dye testing is describe below.

- The type of dye used was fluorescein, which is highly visible and well suited for salt water application. The dye is also very environmentally safe and breaks down rapidly in sunlight.
- The dye was injected into the manhole for 6 hours to allow time to visually survey the entire pipe.
- Approximately 8 pounds of dye was used.
- The dye powder was mixed with 15 liters of water in a 15-liter container on site.
- The dye was initially injected at 0.67 gallons per hour using a calibrated electric pump beginning at 8:30 am.
- The dive team entered the water at 10:45 am and reported no visual signs of the dye.
- The injection rate was increased to 0.80 gallons per hour.
- Additional dye pellets were dropped directly into the manhole at 12:00PM and dye was sighted by the dive team a 12:20pm.
- The injection was increased to 1 gallon per hour and remained throughout the balance of the visual inspection.

Once it was determined that sufficient dye was present for visual inspection the divers then began their inspection. The results of that inspection are described below.

- The visual inspection started a 12:32 pm and completed at 3:30 pm.
- The visual dye inspection detected small amounts of dye discharge from the pipe at locations STA 8+55 and STA 41+46. These areas had previously been identified.
- STA 5+95 was the site of what had previously been identified as a leak. During the dye test, freshwater was detected but no dye. Owing to the lack of visible dye this discharge is believed to be a naturally occurring groundwater spring, and not a leak in the sewer pipe.
- STA 41+51 was also the site of a previously identified leak. No dye was detected at this site either. There has been significant coral growth on the pipe at this location and it is possible that the coral has grown over and stopped the leak.
- No discharge of dye was detected at any other location along the pipe.

B. Previous Surveys and Reports

In 2013, reports were prepared that documented the existing marine biological setting in the vicinity of the County of Hawaii Hilo Wastewater Treatment Plant Ocean Outfall, primarily in the region where the pipe is undermined. Repairs will likely require placement of stabilizing materials in some form of concrete that would be injected into a formed bag on the seafloor adjacent to the existing pipe. As these actions will affect the existing marine community structure in the area, some form of mitigation will be required. As a first step in developing a mitigation protocol, it was necessary to gain a quantitative understanding of the biotic composition of the area of potential effect. A report provided results that quantified biotic community structure, particularly in terms of reef coral community structure on the outfall pipe itself as well as in the adjoining areas of the reef potentially affected by repairing the undercut sections of the pipe.

Subsequent to completion of the biotic assessment, engineering studies were completed to characterize the specific areas of the pipe and adjoining reef that will be affected by placement of supporting structures to fill the undercut areas. These supporting structures will be placed below the centerline of the pipe, and within a rectangular area that extends 15 feet out from both sides of the pipe, and extends the length of the undercut area.

Based on engineering data, an evaluation was conducted of the marine data that provided quantitative estimates of the number of coral colonies that would be destroyed as a result of construction activities to shore up the undercut should no remediation actions occur. With respect to the pipe *per se*, survey methodology did not differentiate location of corals on the pipe, although qualitative observations indicated that corals were relatively uniformly distributed on the top and sides. As a result, a conservative estimate of 75% of the all corals on the pipe is used as a surrogate value for the corals on the lower 75% of the pipe. While the engineering estimates indicated that support materials would not extend above the centerline of the pipe, another 25% was added as a buffer.

With respect to the reef areas on either side of the pipe, it is estimated that 376 corals will be affected, with the highest number (265) on the reef to the east of the pipe. In terms of individual species, the two most common species are *Montipora patula* (177) and *Montipora capitata* (128), followed by *Porites lobata* (87).

Owing to the flat encrusting growth forms of many of the corals actually growing on the pipe, the colonies below the midline of the pipe within the zone that will be covered by shoring materials will likely be lost, as removal of such growth forms is not possible without severe fragmentation. However, most of the existing colonies, and other macrofauna, growing on the rubble bed within the 15-foot boundaries can be relocated to nearby areas with similar physical characteristics with minimal or no losses. The newly placed material to shore up the pipe will also likely represent a more stable substratum for future coral settlement relative to the existing rubble bed.

The proposed method for mitigation of corals in the vicinity of the undercut pipe is to move non-encrusting corals (those with robust 3-D morphology as opposed to flat encrusting corals) from points of attachment within the footprint of the pipeline shoring features. These corals would be relocated to a suitable relocation area, out of the project's region of influence where corals are attached to the substratum using suitable adhesive materials. Relocation areas will be of similar geomorphic and biotic composition as donor areas.

Corals will be cemented to the new substratum using a mix of Portland cement and Plaster-of-Paris mixed on the support boat and lowered to the work site in buckets. Coral colonies will be cemented to the substratum in a manner that minimizes the likelihood of dislodgement and maximizes potential survivability. Such likelihood will be based in part of the existence of naturally occurring corals in the same location at the relocation site.

During the relocation process, each relocated coral will be photographed and catalogued with an identification code. The latitude and longitude of each relocation site will also be recorded using differential Global Positioning System instrumentation. Recordation of location and initial condition of relocated corals will be conducted with the intent that the site can be re-visited at a future date to determine the rate of success of the operation in terms of survivability of individual coral colonies.

III. MITIGATION OF CORALS IN THE VICINITY OF LEAKS

A. General Conditions

Results of the dye study found that all of the previously identified leaks in the pipe were re-located and confirmed. No additional leaks were identified. During the entire survey period, dye was passing through the pipe as confirmed by observation of dye discharge from the diffusers at both the beginning and end of the survey.

The physical and biotic setting of the marine environment where the outfall is located consists of an undulating surface of limestone composition. The existing reef is characterized by very high cover of living corals, primarily of the genera *Montipora*, *Porites* and *Pocillopora* (Figure 3). Of note is that the great majority of the corals assume a flat encrusting growth form, with virtually no colonies consisting of either branching or columnar forms. Such a preponderance of flat growth forms is likely a response to the wave climate of the area, which consists of periodic large long-period north swells. Episodes of large surf impacting the area will result in extreme turbulence and concussive forces prevent the establishment of mature colonies of less sturdy growth forms. As a result, which coral cover is surprisingly high in the area, all colonies assume sturdy, wave-resistant growth forms.

A unique feature of the area is the presence of the diffuser pipe as an additional substratum for biotic colonization. All areas of the outfall pipe from the point nearest to shore to the offshore terminus are heavily colonized by living corals. In particular, colonies of *Montipora patula* and *M. capitata* assume flat circular growth forms that cover the tops and sides of the pipe (Figure 4). In the area where vertical diffusers extend from the outfall pipe, coral cover is high on all of the outfall structures (Figure 5).

B. Leak 41+46.00

All of the leaks identified in all surveys are considered small, based on the diminution of dye plumes within less than one foot of the point of discharge. The leak at location 41+46.00 is

noted as a diffuse leak emanating from underneath the pipe in the inner region of the undercut section (red circles in Figure 6). Corals are growing on the pipe adjacent to the leak area, while the reef surface consists of unconsolidated rubble. A suggested method of repair is to excavate the rubble adjacent to the pipe until the leak in the pipe is exposed. Following exposure, underwater non-shrink hydraulic cement or equivalent material will be placed by hand into the separation to seal it shut. Following setting of the patch material, rubble material will be replaced around the sealed leak. The area containing the leak at 41+46.00 is within the boundary of the undercut pipe where cement bags will provide shoring. Hence, mitigation of corals in this area will fall under the procedures outlined for the pipe of the undercut section described above. However, as can be seen in Figure 6, with the exception of several flat encrusting colonies of *Montipora* spp. growing on the diffuser pipe there are no corals in the immediate vicinity of the leak.

C. Leak 40+51.00

The leak at location 40+51.00 was apparently identified in previous surveys as a small breach on the upper surface of the pipe. Although the area was inspected multiple times during the dye survey no discharge of dye was detected in the area. As a result, this leak is not included in the mitigation plan.

D. Leak 8+55

The leak at location 8+55 consists of a partial separation of a joint at the base of the exposed pipe (red circles in Figure 7). Several colonies of living corals are attached to the pipe and adjacent reef in close proximity to the joint. However, by exercising care, it is likely that placement of underwater patch material could be inserted into the separation with minimal or no damage to surrounding coral colonies. Based on the encrusting growth form of the corals in the immediate vicinity of the separation, it is not likely that removal and relocation prior to filling the separation would result in a substantially higher probability of maintaining the integrity of the corals.

E. Natural Spring at 5+95

During the outfall pipe inspection in March 2013, a discharge of freshwater was detected emanating from a small undercut ledge adjacent to the pipe (Figure 8). Inspection of the area during the dye study revealed that while there was still visible discharge of freshwater from under the ledge, there was no dye present in the discharge. As a result, it is determined that the discharge is a naturally occurring groundwater spring. The Hilo

coastline is characterized by substantial discharge of groundwater near the shoreline, so the observation of such a spring adjacent to the pipe cannot be considered unusual. As the feature is not connected to a leak in the outfall pipe, no mitigation is necessary.

IV. BEST MANAGEMENT PRACTICES and PROCEDURES

The National Marine Fisheries Service has prepared a Best Management Practices and Guidance for a similar coral relocation project at Roi-Namur, Marshall Islands. As that project was comparable in scope and intent as the Hilo Sewage Outfall coral relocation effort at the undercut area, relevant points are presented below which will be followed during field operations:

1. Work days will be selected when swell conditions are mild in order to prevent wave forces from dislodging corals prior to complete hardening of cement mixture.
2. Transplantation sites will be of approximately similar depth that contains similar types of corals. Transplantation sites will be checked to ensure there is no existing corals. At each site, wire brushes will be used to scrub the substratum clean of biofilms and filamentous micro-algae to ensure the best possible adhesion. The base of each transplantation colony will also be scoured with a wire brush prior to attachment.
3. Corals will be carefully removed from points of attachment with a hammer and chisel, and hand carried by divers to the relocation site. When possible, contact with corals should be from the base, rather than upper surfaces, particularly hand-contact with cement mixture.
4. Work boat will be positioned with multi-point moorings above the relocation site. Adhesive mixture will consist of a mix of Portland cement, Plaster-of-Paris, sand and water mixed in a trough on the deck of the work boat. Mix is transferred to 5-gallon buckets which are lowered over the side to waiting divers at the relocation sites. The proportions of mix are dictated by the estimated time between adding water to the mix and emplacing corals into the cement. The higher the proportion of Plaster-of-Paris, the stronger the bond, but shorter the work time before set-up.
5. On the bottom, buckets are inverted on the bottom over the relocation site and tapped sharply which releases the mix into a mound. The mound is molded into a thick circular

pancake shape on the order of 2-3" thick. As a general rule, the diameter of the pancake should be at least one-half the diameter of the widest lateral diameter of the coral colony. Once the base is formed, the base of the coral is firmly embedded into the cement mound using a twisting motion. If the insertion does not result in a firm union, the coral is held in place for several minutes to ensure that the base hardening secures the coral. Several colonies may be placed within the same cement mound, particularly if the multiple colonies consist of fragments.



FIGURE 1. Upper photo shows manhole just inland from shoreline where fluorescein dye was pumped into discharge pipe. Dye mixture is in white bucket; pump apparatus is sitting on manhole cover. Bottom photo shows exposed portion of discharge pipe entering Hilo Bay. Photographs taken of October 24, 2014.



FIGURE 2. Two views of diffuser ports of Hilo Wastewater Treatment Plant Ocean Outfall discharging effluent marked with fluorescein dye tracer responsible for bright green color. Note living corals on diffuser structures in both photos. Photographs taken of October 24, 2014.

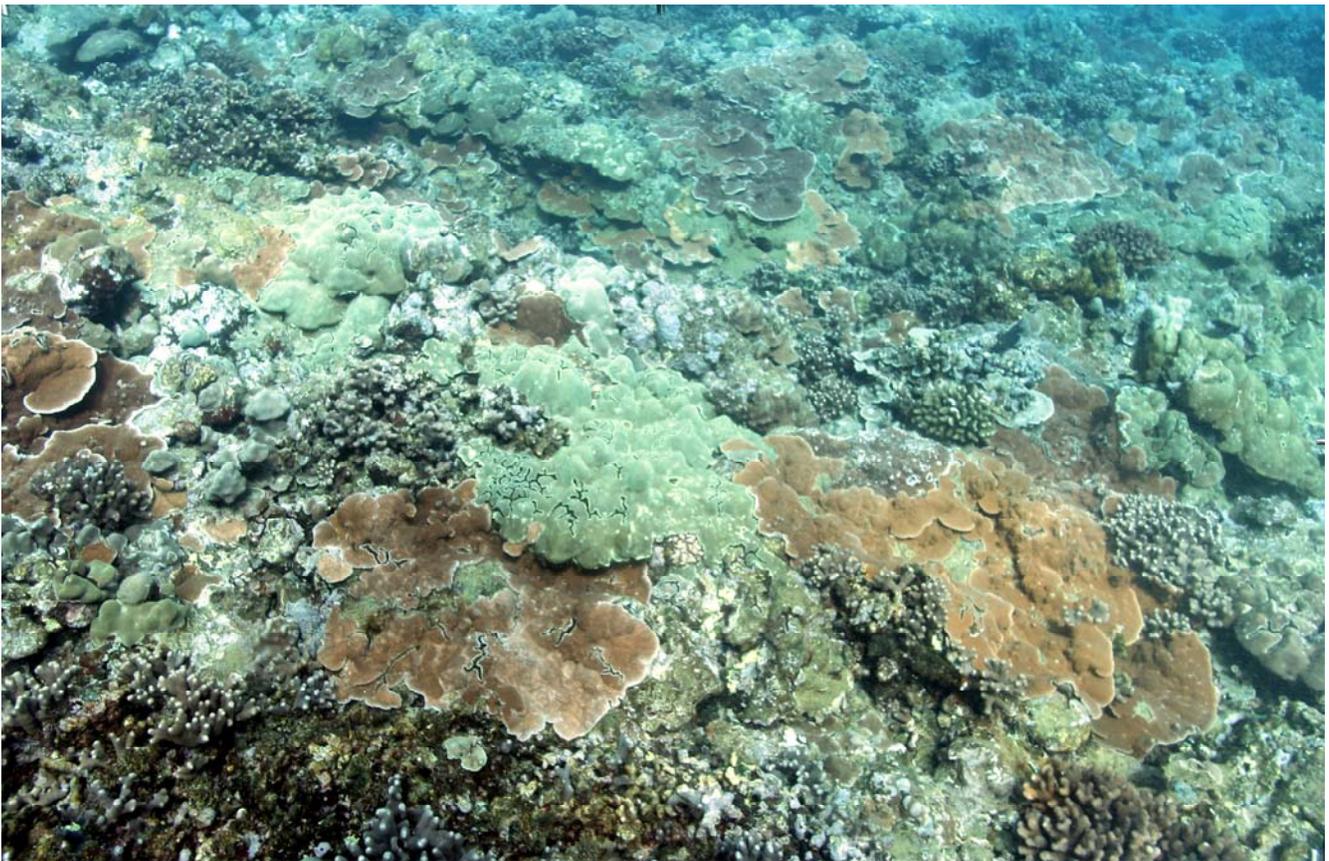
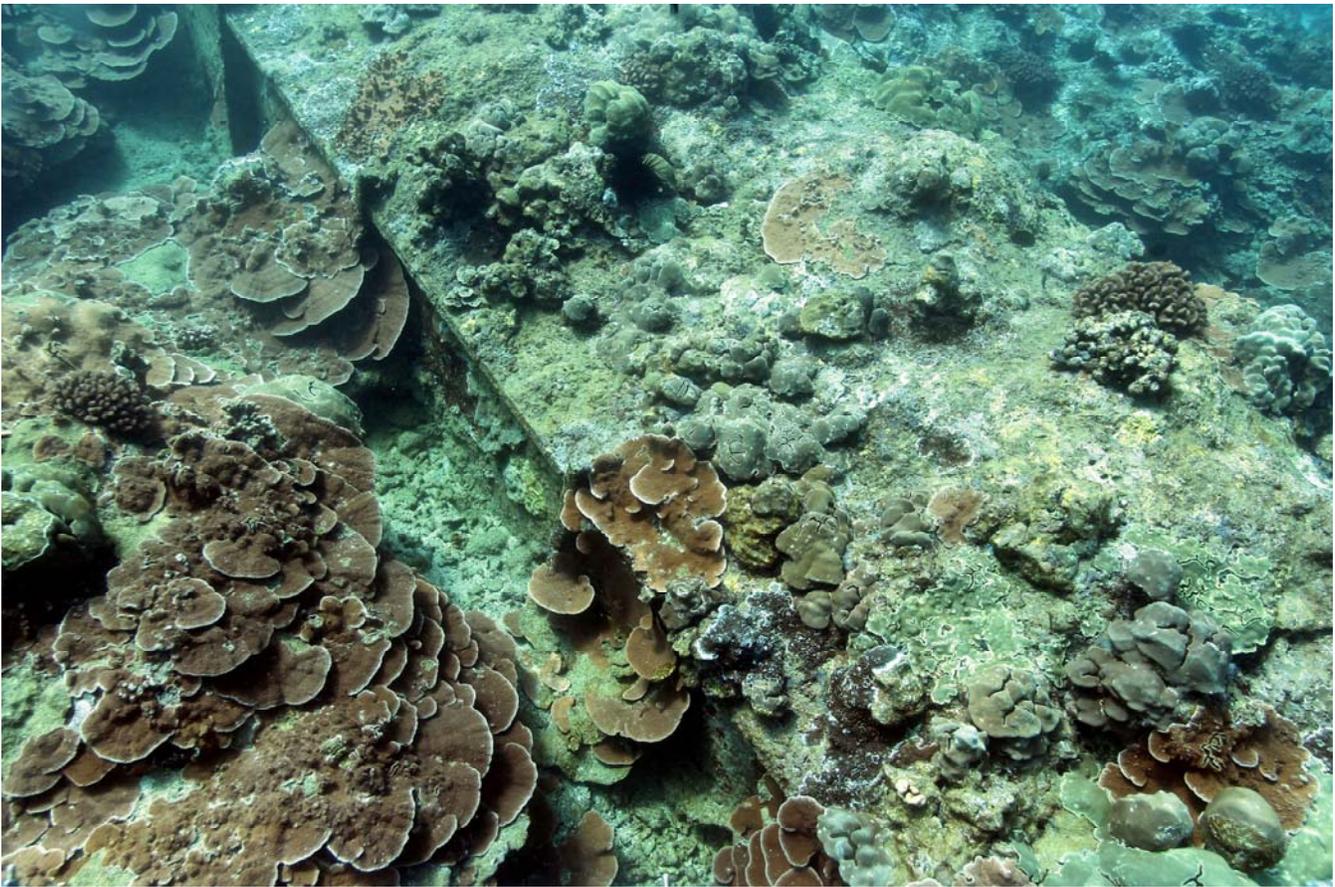


FIGURE 3. Upper photo shows close-up of junction box where ocean outfall pipe changes angle. Lower photo shows area of reef adjacent to outfall pipe. Both photos show abundant growth of live corals that occurs throughout the area that outfall pipe traverses

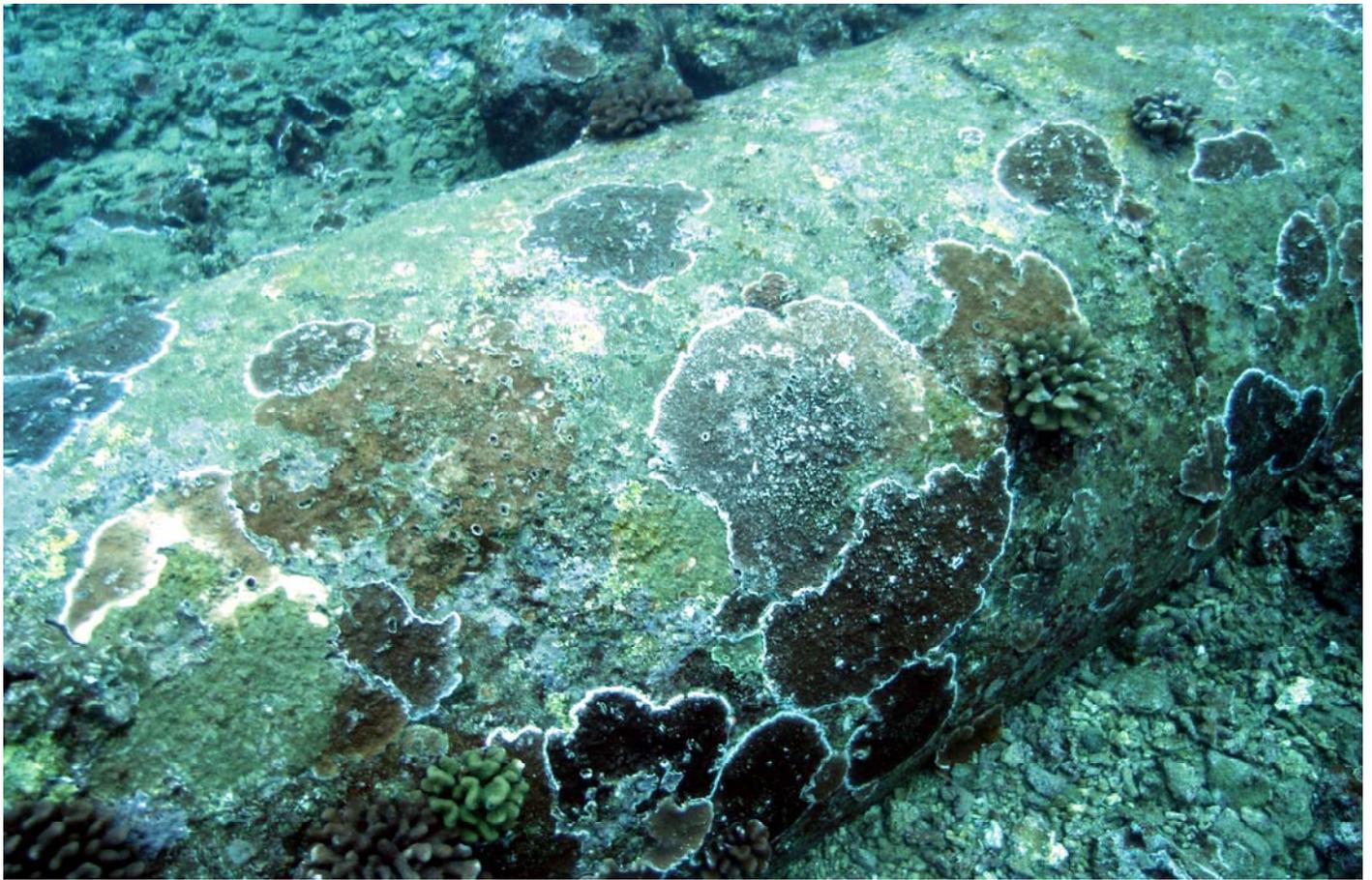


FIGURE 4. Photographs of corals growing on exposed section of west side of Hilo Wastewater Treatment Plant Ocean Outfall. Flat, mostly circular encrusting brown colonies are *Montipora* spp. Hemispherical branching corals are *Pocillopora meandrina*.



FIGURE 5. Two views of diffuser ports at terminus of Hilo Wastewater Treatment Plant Ocean Outfall. Note abundant growth of coral on diffuser structures and surrounding reef area.

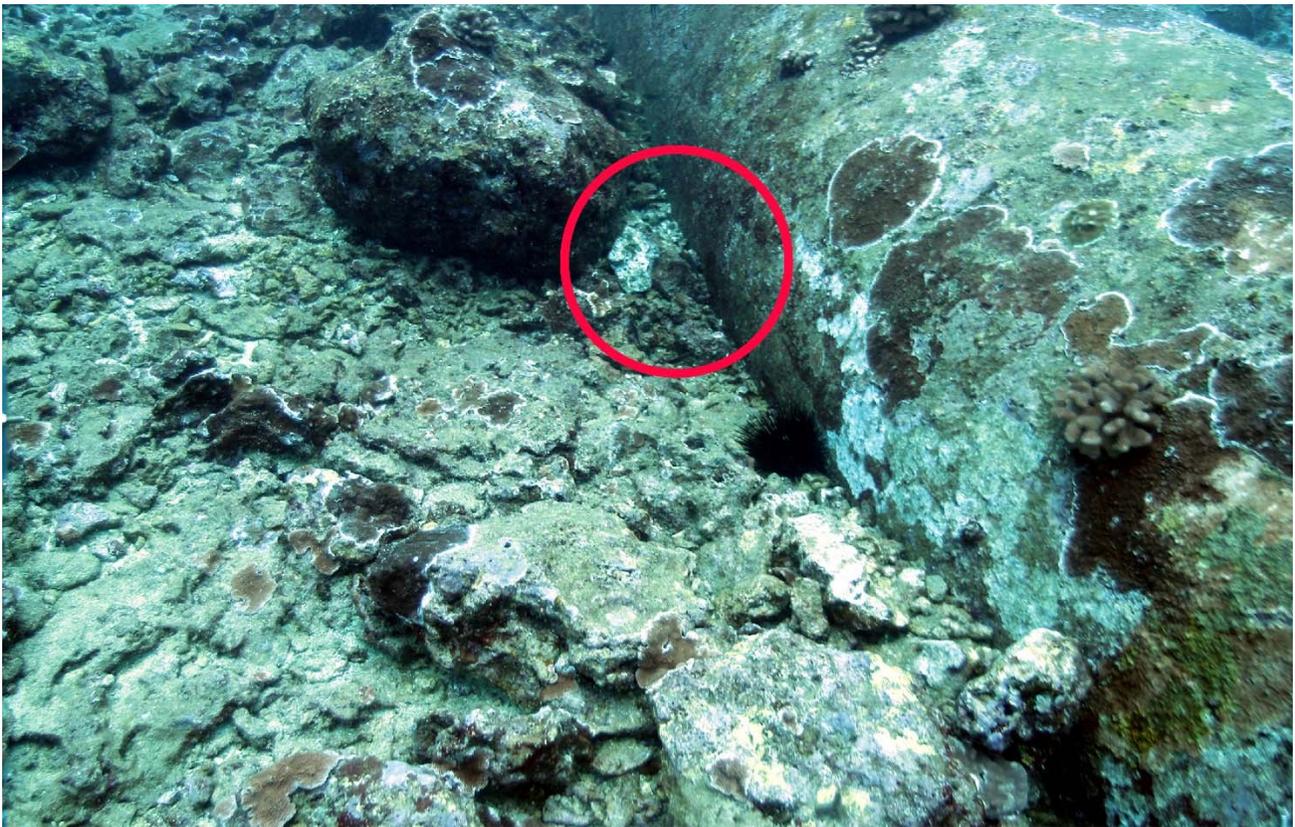


FIGURE 6. Photographs of undercut section of Hilo WWTP ocean outfall at location 41+46. Upper photo is taken during dye test on October 24, 2014; bottom photo was taken March 21, 2013. A small discharge of green fluorescein dye was visibly flowing from under the pipe within the red circled area. No crack or separation of the pipe was visible, indicating that the leak occurs within the buried section of the pipe. Note that the size of corals in the vicinity of the leak have increased slightly (or have at least not decreased) within the 19-month interval between surveys.

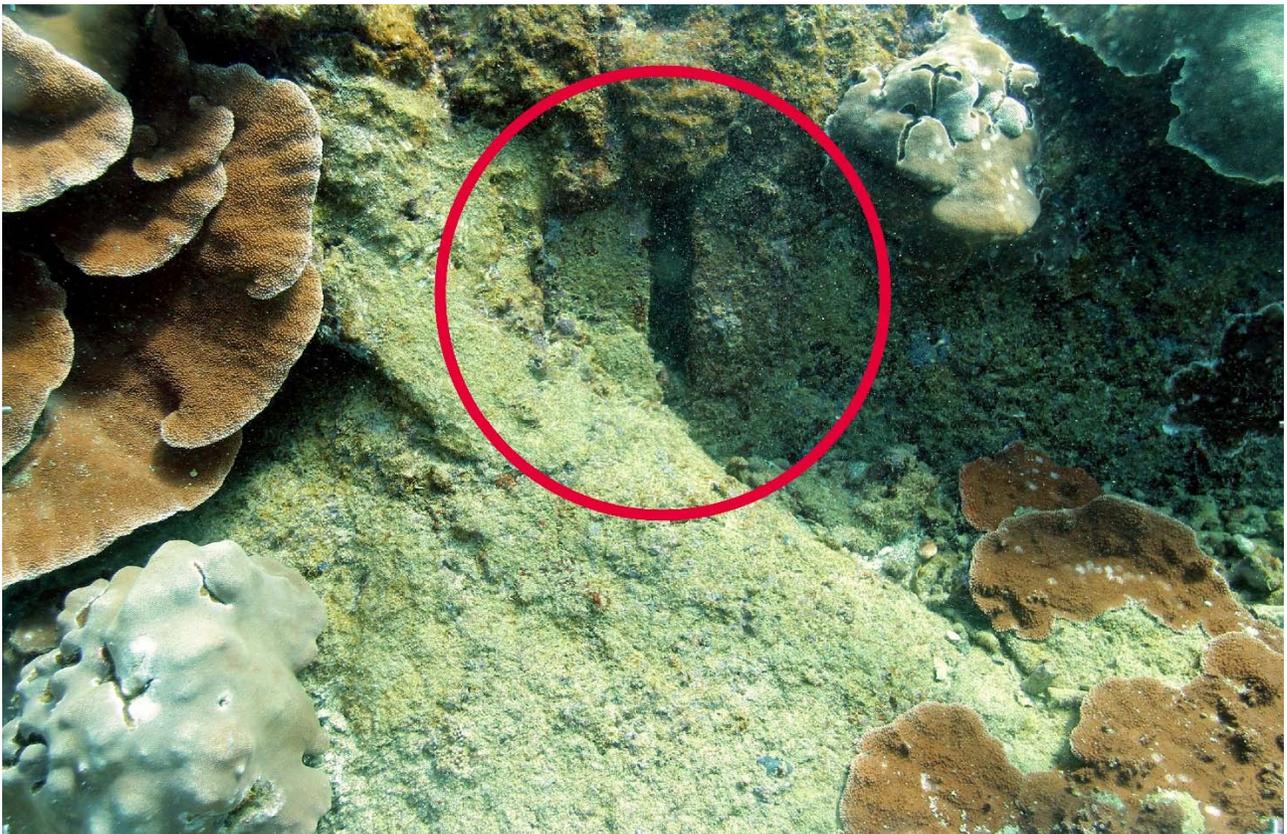


FIGURE 7. Photographs of partially separated joint in Hilo WWTP ocean outfall at location 8+55. Upper photo is taken during dye test on October 24, 2014; bottom photo was taken March 21, 2013. A small discharge of green fluorescein dye was visibly flowing from the area of the partially separated joint within the red circle in the upper photo. Note that the size of corals surrounding the joint have increased slightly (or have at least not decreased) within the 19-month interval between surveys.



FIGURE 8. Photographs of undercut ledge venting a groundwater spring adjacent to the Hilo WWTP ocean outfall Pipe at location 5+95. Upper photo is taken during dye test on October 24, 2014; bottom photo was taken March 21, 2013. While groundwater discharge was evident during both surveys from area bounded by red circles, no discharge of dye was observed.

**AN ASSESSMENT OF THE MARINE BIOLOGICAL
COMMUNITY STRUCTURE AT THE SITE OF THE HILO WASTEWATER
TREATMENT PLANT OCEAN OUTFALL REPAIRS**

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EXECUTIVE SUMMARY

The County of Hawaii uses the Hilo Wastewater Treatment Plant Ocean Outfall to discharge treated effluent into Hilo Bay through a multi-port diffuser approximately 4,400 feet long, in a water depth of approximately 45-50 feet (Figure 1). The marine environment in the area of the outfall pipe consists of a well developed coral reef, characterized by mounds and ridges formed by the accretion of calcifying organisms. The mound and ridge system is bisected by numerous submarine channels that are filled with sand and limestone rubble. A section of the discharge pipe just shoreward of the diffuser ports traverses one of these channels that is oriented in a roughly east-west direction perpendicular to the outfall pipe. Likely as a result of wave and current driven movement of sedimentary material through the channel, the outfall pipe has been undercut, resulting in a region where there is little solid support of the bottom of the pipe. Such undermining of the pipe results in potential instability which could result in breakage or leakage. In order to avoid damage to the pipe, repairing the undercut is required.

Repairs will require placement of stabilizing materials on the seafloor adjacent to the existing pipe. As these actions will affect the existing marine community structure in the area, it is necessary to gain a quantitative understanding of the biotic composition of the region of potential effect. The purpose of this report is to provide results from field surveys carried out on March 20-21, 2013 to quantify the community structure of the region that is likely to be affected by repairing the undercut sections of the pipe. In addition, during past surveys of the outfall pipe, several areas of interest have been identified. A secondary goal of the field survey was to identify these areas of interest, and evaluate the biotic composition of the area immediately adjacent to these areas.

During field surveys, coral community composition within the region expected to be affected by the pipe repairs was quantified in terms of size-class distribution of colonies as well as 2-dimensional percentage cover of bottom by each species. Results of these surveys revealed a total of 583 coral colonies growing on the pipe and within the rubble bed depression adjacent to the pipe in the area needing repair. The dominant corals in the area consist of two species of the genus *Montipora*, which are apparently adapted to proliferate under the physical setting of the area to a greater degree than other corals which are typically found in higher abundance than *Montipora* on most reefs in Hawaii. It is of note that the most abundant species in the area, in terms of both number of colonies and percentage bottom cover (*Montipora patula*) is presently listed as a candidate species for the Endangered Species Act. Should this listing become accepted, mitigation for the proposed project will likely become a more complex process.

Other non-coral macroinvertebrates are extremely uncommon throughout the survey area, and are limited to sea urchins living wedged against the outfall pipe. Likewise populations of frondose algae are essentially absent from the area, even in areas adjacent to active discharge of treated sewage effluent. Populations of fish in the vicinity of the undercut region of the pipe consist of typical assemblages found on Hawaiian reefs, although there is a paucity of larger individuals of species generally regarded as food fish.

As the repair work will involve placement of material over the existing rubble substratum adjacent to the undercut areas of the pipe, it is inevitable that some corals would be covered without a program to minimize or eliminate such losses. Owing to the flat encrusting growth forms of many of the corals actually growing on the pipe, any of these colonies that occur within the area where shoring materials would meet the pipe would likely be unavoidably lost. However, most of the existing colonies, and other macrofauna, growing on the rubble bed adjacent to the pipe could probably be relocated to nearby areas with similar physical characteristics with minimal or no losses. The newly placed material to shore up the pipe would likely represent a more stable substratum for future coral settlement relative to the existing rubble bed.

Repair of the small points of interest elsewhere along the pipe can likely be accomplished using hand-placed grouting materials. With care, such operations could be accomplished with no impacts to neighboring biotic resources.

I. BACKGROUND and PROPOSED ACTION

The County of Hawaii uses the Hilo Wastewater Treatment Plant Ocean Outfall to discharge treated effluent into Hilo Bay through a multi-port diffuser approximately 4,400 feet long, in a water depth of approximately 45-50 feet (Figure 1). The marine environment in the area of the outfall pipe consists of a well developed coral reef, characterized by mounds and ridges formed by the accretion of calcifying organisms. The mound and ridge system is bisected by numerous submarine channels that are filled with sand and limestone rubble. A section of the discharge pipe just shoreward of the diffuser ports traverses one of these channels that is oriented in a roughly east-west direction. Likely as a result of wave and current driven movement of sedimentary material through the channel, the outfall pipe has been undercut, resulting in a region where there is little solid support of the bottom of the pipe. Such undermining of the pipe results in potential instability which could result in breakage or leakage. In order to avoid damage to the pipe, repairing the undercut is required.

Repairs will require placement of stabilizing materials on the seafloor adjacent to the existing pipe. As these actions will affect the existing marine community structure in the area, it is necessary to gain a quantitative understanding of the biotic composition of the region of potential effect. The purpose of this report is to provide results from field surveys carried out on March 20-21, 2013 to quantify the community structure of the region that is likely to be affected by repairing the undercut sections of the pipe. In addition, during past surveys of the outfall pipe, several areas of interest have been identified. A secondary goal of the field survey was to identify the effects of these areas of interest, and evaluate the biotic composition of the area immediately adjacent to these areas.

II. METHODS

A. In-situ Survey Methods

Methods employed in the present assessment follow to the extent possible the techniques set out in the “Draft Planning Aid Report-Marine Biological Survey Protocols” prepared for the Army Corps of Engineers (ACOE) by the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS).

In-water surveys were carried out on March 20-21, 2013 by divers using SCUBA and operating out of a 22-foot boat. Dr. Steven Dollar supervised all field operations, assisted by Chris Goody, Andrea Von Burg Hall and Matthias Kusch.

As described above, the goal of the survey was to characterize the existing marine community structure within the vicinity of the outfall pipe that could be affected by operations to repair the undercut section of the pipe. The naturally excavated channel that the pipe bisects forms two roughly triangular shaped depressions, one on either side of the pipe. These depressions will constitute the region that will contain the repair materials to stabilize the undercut. Because these triangular areas are relatively small in size, it was deemed a suitable sampling protocol to assess the entire benthic and fish communities within entire triangular areas in the vicinity of the pipe (the lower photo in Figure 2 and the lower photo in Figure 3 show the approximate dimensions of the triangular areas on the west and east sides of the pipe, respectively). Such coverage was accomplished by laying

transect lines parallel to the outfall pipe and evaluating macrobenthos on 2-meter wide belt transects, with the center of the belt determined by transect line. In addition, all benthos occurring on the outfall pipe was quantified within the section of pipe that traverses the reef depression. Using this methodology, all corals and other attached macrofauna within the area of potential effects from pipe repair were quantified. The specific metrics are shown below.

1. Coral Community Survey Metrics

a. Coral Colony Abundance and Size

Quantitative *in-situ* evaluation of stony corals was accomplished by measuring the length of the longest axis in centimeters of each coral colony. This method employed is used in the QUEST program and uses a 1.6 m PVC rod marked with colored tape to designate the boundaries of seven size-classes (<2 centimeters (cm), >2≤5 cm, >5≤10 cm, >10 ≤20 cm, >20≤40 cm, >40≤80 cm, >80≤160 cm, and >160 cm). Measurements were made by a two-person dive team moving along the transect lines, with one diver holding the rod over the longest axis of each colony, while another diver recorded presence within the size-class and species on waterproof data sheets. With replicate examination of all areas by two investigators, observation and measurements of all coral colonies within the 2-meter wide belt transects was considered to be complete. In cases where multiple colonies appeared to have coalesced into a single amalgamated colony with no distinct margin, the amalgamated structure was considered a single colony. In cases where large colonies had experienced partial mortality creating bare areas between living tissue, the investigator determined by best judgment if the remaining living tissue was the remnants of the single older colony, or from recent settlement of multiple new colonies on the bared limestone substratum. Working in a team fashion to record size-class data proved to be an efficient method for rapid, yet thorough documentation of the whole survey area.

b. Morphological Growth Form and Evidence of Stress

Colonies were also classed into growth form categories (e.g., branching, encrusting, and plating). Also noted were visible signs of disease, sediment stress, bleaching, or necrotic tissue. Evidence of fragmentation was not noted owing to growth primarily on vertical surfaces which did not retain fragments. Fission was also not noted, as all colonies were identified as single units of calcium carbonate deposition.

c. Two-dimensional Area Cover

In addition to size-frequency measurements, photo-quadrat transecting was also conducted. Following the size-frequency measurements, photographs of the reef surface were obtained using a digital camera equipped with a wide-angle lens mounted with four legs above a 1 x 0.66 meter PVC frame. The quadrat frame was moved along the transect line with continuous photos recording the entire length of the line. Hence, the photo-transects covered about one-half of the survey area. In addition, photographs recorded general views of the survey areas, some of which are included as Figures in this report to provide the reader with visuals of the somewhat unique communities and habitats under study.

e. Coral Community Statistics

Following tabulation of all colonies by size-class per sector, several indices of community structural biodiversity were calculated. These include Species Richness, which is the number of species encountered, and Swartz's Index of Species Dominance, which is the number of species that accounts for 75% of the total number of coral colonies. The Shannon-Weiner Diversity Index (H') takes into account relative abundance of species and includes both species richness and evenness. Communities with a large number of species that are evenly distributed are the most diverse and communities with few species that are dominated by one species are the least diverse. The Shannon-Weiner index is defined as:

$$H' = -\sum[(n_i/N) \times \ln(n_i/N)], \text{ where } n_i = \text{number of colonies of species } i, N = \text{total number of colonies, and } \ln = \text{natural log.}$$

2. Non-Coral Macro-invertebrate Community Metrics

All non-coral macro-invertebrates observed within the transects were noted.

3. Algae Community Metrics

In contrast to benthic invertebrates (i.e., corals) algae were not an abundant colonizer of the subject area. As a result, algal transect-quadrat surveys were not deemed necessary. In the few instances where algae was observed, species were noted as part of the coral and invertebrate assessments.

4. Fish Community Metrics

Numerical abundance of individuals by species (or lowest possible taxonomic level) was recorded along the length of each transect.

5. Incidental Sightings of Threatened and Endangered Species

Incidental sightings of protected and endangered marine mammals and reptiles were noted, along with estimates of species, size, tumors, obvious injuries and any other distinguishing markings. However, during the course of fieldwork, no marine mammals or turtles were observed.

6. Regulated and Invasive Species

Data collection included notation of regulated and introduced species, as well as candidate species for endangered status.

III. RESULTS and DISCUSSION

A. Physical Structure

The overall physical structure of the region of Hilo Bay where the outfall structure is placed consists of an undulating surface of limestone composition (Figures 4 and 5). While it appears that the limestone structures are of biotic origin, it is not possible to readily tell if the reef is actively accreting from living corals, or is a remnant fossil reef formed during a previous geologic period that now contains of thin upper veneer of living coral. Regardless of the origin, the existing reef is characterized by what can be considered high cover of living corals for wave-exposed reefs, with the primary coral species consisting of the genera *Montipora*, *Porites* and *Pocillopora*. Of note is that the great majority of the corals assume a flat encrusting growth form, with virtually no colonies consisting of either branching, plating or columnar forms. Such a preponderance of flat growth forms is likely a response to the wave climate of the area, which consists of periodic large long-period north swells. Episodes of large surf impacting the area will result in extreme turbulence and concussive forces prevent the establishment of mature colonies of less sturdy growth forms. As a result, while coral cover is surprisingly high in the area, all colonies assume sturdy, wave-resistant growth forms.

In addition, the rigorous physical conditions of the area result in both the creation of large beds of rubble and sand. As noted above, in the area of the outfall pipe bisects a depression filled with rubble fragments. Wave generated resuspension and movement of these rubble beds through the channel system are likely responsible for the undercutting of the outfall pipe.

A unique feature of the area is the presence of the diffuser pipe as an additional substratum for biotic colonization. All areas of the outfall pipe from the point nearest to shore to the offshore terminus are heavily colonized by living corals. In particular, colonies of *Montipora patula* and *M. capitata* assume flat circular growth forms that cover the tops and sides of the pipe (Figure 6). In the area where vertical diffusers extend from the outfall pipe, coral cover is high on all of the outfall structures (Figures 7-8).

B. Biotic Community Structure

1. Coral Communities

Colonization of existing hard substratum, including both the natural substratum and man-made structures by corals was observed throughout the survey area of Hilo Bay. As described above, the specific region of study was the triangular shaped depression bisected by the outfall pipe. Adjacent to the pipe along the western side of the pipe bottom composition consisted primarily of rubble fragments (Figures 2-6). Moving away from the pipe, coral colonies consisting primarily of flat encrustations of *Montipora* spp. colonized large rocks and limestone fragments. On the east side of the pipe, the depression extended substantially farther from the pipe relative to the east, and continued in an easterly direction as a rubble and sand filled channel (Figure 4). As on the west side of the pipe, corals were abundant along the east side, growing primarily on rocks and large rubble fragments elevated above the channel floor (Figure 3). Corals were more abundant along the edges of the depression relative to the center region, which contained more small rubble fragments. Along

the eastern side of the depression corals occurred within approximately 75 feet of the pipe; beyond that distance, the channel floor consisted of only rubble and sand.

Table 1 shows results of all size-class measurements of each coral species collected on the pipe, along the three transects to the east of the pipe, and the single transect to the west of the pipe. Table 2 summarizes these data in terms of all species pooled within each sector. A total of 583 coral colonies were measured, with counts ranging from a low of 69 (Transect ET-1) to a high of 193 (Transect ET-2). Total counts in individual size classes ranged from 3 colonies in the <2 and >160 cm classes, to 222 in the $10 \leq 20$ cm class. The number of coral species encountered within sectors ranged from 111 (WT) to 359 (ET). Shannon-Wiener diversity indices ranged from 0.67 (Sector C) to 1.23 (ET) to 1.37 (WT). Swartz's Species Dominance, defined as the number of species that account for 75% of the colonies, was 2 or 3 at all sectors (Table 2). The peak number of colonies in the East sector is a result of the larger area of this region. The similar number of species, diversity (H') and Swartz's Species Dominance in all sectors indicates that the overall coral community structure is similar in all three survey areas.

Seven species of coral were encountered over the course of the survey. Size-class counts of colonies in each sector are shown for these coral species in Table 3. When all sectors are pooled, the species with the most colonies is *Montipora patula* (218), followed by *Montipora capitata* (189) and *Porites lobata* (99). These three species account for about 87% of the total observed colonies. The dominance of the coral community by *Montipora* spp. is somewhat unusual for Hawaiian reefs. Generally this genera is far less abundant than *Porites* or *Pocillopora*. It is possible that the dominance is a result of the flat encrusting growth form of *Montipora*, often approaching a "wall-paper" effect that has a selective advantage in the Hilo Bay habitat that is subjected to periodic extreme surf. In any event, the resulting community structure results in a very high cover of available substratum by living coral. Other species that occurred in what can be considered "rare" abundance were *Cyphastrea ocellina* and *Leptastrea purpurea*, both of which occurred as small colonies with less than five observations throughout the entire survey area.

Porites compressa, commonly referred to as "finger coral" is often one of the most abundant corals in wave-sheltered Hawaiian environments and on deep reef slopes. No colonies of *P. compressa* were observed on any of the transects within the survey area of Hilo Bay. The lack of this species also indicates that the survey area is subjected to wave energy sufficient to prevent colonization of branching species.

Table 4 shows results of evaluating 2-dimensional cover from analysis of photo-quadrats (all photo-quadrats are shown in Appendix A). Total coral cover for all transects averaged 28.6% of bottom cover. The highest cover on individual transects occurred on the outfall pipe (OP) with 47.6% of the pipe covered with coral. The lowest average coral cover occurred on Transect ET-2 (15.9%) located in the approximate center of the rubble filled depression on the east side of the outfall pipe.

With respect to average coral cover of individual species, *Montipora patula* was the most abundant coral, with cover of 12.8% of the bottom, followed by *Montipora capitata* comprising 8.2% of bottom cover. Thus, the two species of *Montipora* were the most abundant corals in terms of both benthic

cover and number of colonies. Similarly, *Porites lobata* was the third most abundant coral in terms of both cover and number of colonies throughout the sampling area.

In addition to measuring the long axis of each coral colony, qualitative notation of growth form was also a component of the survey. While noting growth forms during the surveys, it quickly became apparent that each species assumed a specific growth form that remained consistent throughout the survey. To this effect, it can be stated that *Montipora* spp. always occurred as flat encrusting forms, often in roughly circular shapes; *Porites lobata* always occurred in rounded flattened lumpy mounds, while *Pocillopora* spp. always occurred as short branched hemispherical colonies. Hence, there were no species that occurred in distinctly different growth forms within the survey area.

A consistent characteristic of nearly every colony was the lack of any accumulated deposited sediment or associated underlying non-living tissue. In addition there were no observations of distinctly bleached coral or coral disease. Several of the larger heads of *Porites lobata* contained numerous white marks, but it was judged that these were the result of fish grazing rather than disease. Unattached fragments of colonies were also rare, as was “fission” of living colonies. The lack of deposited sediment and unattached fragments is likely a result of the high wave energy that routinely sweeps the area precluding any sediment deposition, or viability of unattached fragments.

It is also apparent that the outfall pipe and diffuser structure provide a suitable habitat for coral colonization. As seen in Figure 7, the actively discharging diffusers provide a suitable settling surface for the same species that occur elsewhere in the survey area (particularly *Montipora* spp.). Corals are particularly abundant at the distal end of the diffuser portion of the outfall where discharge is not presently occurring (Figure 8).

At present, the Center for Biological Diversity is petitioning the National Oceanographic and Atmospheric Administration (NOAA) to list 66 species of reef building corals as endangered species. Contained in this list are one species (*Montipora patula*) that was observed during the Hilo Bay surveys. In fact, *M. patula* was the most abundant species in the survey area in terms of both number of colonies and percentage bottom cover of coral. *Montipora patula* is one of the most common corals observed throughout Hawaii on naturally occurring reefs, putting in question the rationale for its listing as a potential endangered or threatened species.

In summary, census of size-classes of species abundance along with estimates of 2-dimensional bottom cover provides a comprehensive depiction of the coral community structure within the area that will potentially be affected by repairs to the undercut section of the Hilo Wastewater Treatment Plant ocean outfall pipe in Hilo Bay. These data, including abundance, diversity and bottom cover provide a quantitative analysis that portrays the coral community. While all species occurring in the area must be considered resistant to physical forces of wave events, it is apparent that individual coral species are particularly adapted to these physical conditions. In particular, *Montipora* spp. proliferates on both the outfall pipe and adjacent rubble lined reef depression in the form of flat encrustations.

In addition to the repair of the undercut section of the outfall pipe, several small areas of interest in the pipe have been detected during routine inspections. Examination of these leak areas where effluent can be detected flowing from the pipe indicates that they are presently not having a

substantial or even noticeable effect on adjacent living reef structures (Figures 9-11). Owing to the small size, it is likely that these areas of interest could be repaired using hand-placed materials that could completely avoid any effects to the neighboring corals or other biota.

2. Non-Coral Macro-Invertebrate Communities

The Hilo Bay survey site is characterized by an extreme paucity of non-coral macrobenthos. The only observed fauna were several long-spined sea urchins (*Echinothrix diadema*) that were wedged in the junction of the bottom of the outfall pipe and the rubble bottom in the undercut region. Virtually no living sponges, tunicates, bivalves and bryozoans were observed within the survey area. It is likely that the paucity of macroinvertebrates is another response to the extreme wave forces that impinge on the area. As most large motile non-coral macrobenthos are not able to firmly attach to the bottom, wave forces will preclude survival on the reef. The few sea urchins that were observed were lodged in an area where they were apparently protected enough from wave action to remain viable.

3. Algal Communities

Similar to macrobenthic invertebrates which were essentially absent throughout the area of study, frondose algae were surprisingly absent at all survey locations. Even in the areas adjacent to actively discharging sewage diffusers, frondose algae were not present. It is apparent that physical conditions within the survey area of Hilo Bay are not conducive to frondose algal growth. However, encrusting coralline algae was evident on some of the bared limestone substratum that was not covered with corals.

4. Fish Communities

In total, 241 reef fish, comprised of 23 species were observed on transects in the undercut area of the Hilo Wastewater Treatment Plant ocean outfall pipe (Table 5). Number of individuals on transects ranged from 38 on the pipe (OP) to 67 individuals in the center of the depression on the east side of the pipe (EP-2).

The most frequently observed fish family within the study site in Hilo Bay were wrasses (Labridae), with 46 individuals comprised of six species. The most common species was the saddle-back wrasse (*Thallosoma duperry*) with a total count of 30 individuals. The most abundant single species was the brown surgeonfish (*Acanthurus nigrofuscus*) which occurred on all transects in numbers ranging from 15 to 35 individuals (Table 5).

While all the fish observed at the transects sites are considered common for Hawaiian reefs, there was a distinct paucity of species and size classes that could be considered preferred "food fish." It is important to note that the entire survey area is not a restricted access zone and likely experiences substantial direct fishing pressure. As a result, community structure of the area of the proposed repair work is likely in response, at least in part, to fishing pressure.

5. Incidental Sightings of Threatened and Endangered Species

Several species of marine animals that occur in Hawaiian waters have been declared threatened or endangered by Federal jurisdiction. The threatened green sea turtle (*Chelonia mydas*) occurs commonly throughout the Hawaiian Islands, and are frequently observed throughout Hilo Bay. The endangered hawksbill turtle (*Eretmochelys imbricata*) is known infrequently from Hawaiian waters. No green sea or hawksbill turtles were observed during the course of underwater surveys in the vicinity of the outfall repair section although turtles undoubtedly occupy the area.

Populations of the endangered humpback whale (*Megaptera novaeangliae*) winter in the Hawaiian Islands from December to April. The present survey was conducted in March when whales are present in Hawaiian waters. During the underwater surveys, sounds from whales were nearly constant throughout the course of the work. Numerous whales were also observed on the surface in the vicinity of the survey area.

The Hawaiian monk seal, (*Monachus schauinslandi*) is an endangered earless seal that is endemic to the waters off the Hawaiian Islands. Monk seals commonly haul out of the water onto sandy beaches to rest. No seals were observed during survey work, although there are areas of the shoreline inshore from the ocean outfall that could serve as haul-out sites.

6. Regulated and Invasive Species,

The State of Hawai'i Department of Land and Natural Resources (DLNR) Division of Aquatic Resources lists a variety of "regulated" marine fishes and invertebrates. Marine invertebrates include primarily species valued as food sources, including abalone, various clams and oysters, crabs, shrimp, lobsters, and sea urchins (for complete list and scientific names of regulated species, see http://hawaii.gov/dlnr/dar/regulated_fish_names.html). As noted above, commercial and recreational fishing operations likely occur in the survey area.

The only regulated species within the Hilo Bay survey area observed during surveys were several fish, of the family Mullidae (two-barred goatfish, *Parapeneus bifasciatus*) With regard to invertebrates, the only listed species observed was a single octopus (*Octopus cyanea*) and several sea urchins *Echinothrix diadema*.

IV. CONCLUSIONS

Repairs to the undercut area of a section of an undercut area of the Hilo Wastewater Treatment Plant ocean outfall will require alteration of the existing structure of the sea floor adjacent to the outfall pipe. The undercutting appears to be a response to the orientation of the outfall pipe across a small submarine canyon or gully that results in a winnowing of nonconsolidated material from under the pipe. Repairing the undercut area will likely involve placement of solid material (i.e., concrete) in some form that will shore up the sides of the pipe to prevent future undercutting. As a result, a portion of the naturally occurring substratum along with colonizing biota adjacent to the pipe will be

covered. The *in-situ* census of marine organisms assembled during for this assessment provide a data base of coral, other macro-invertebrates and fish distribution throughout the potential impact area.

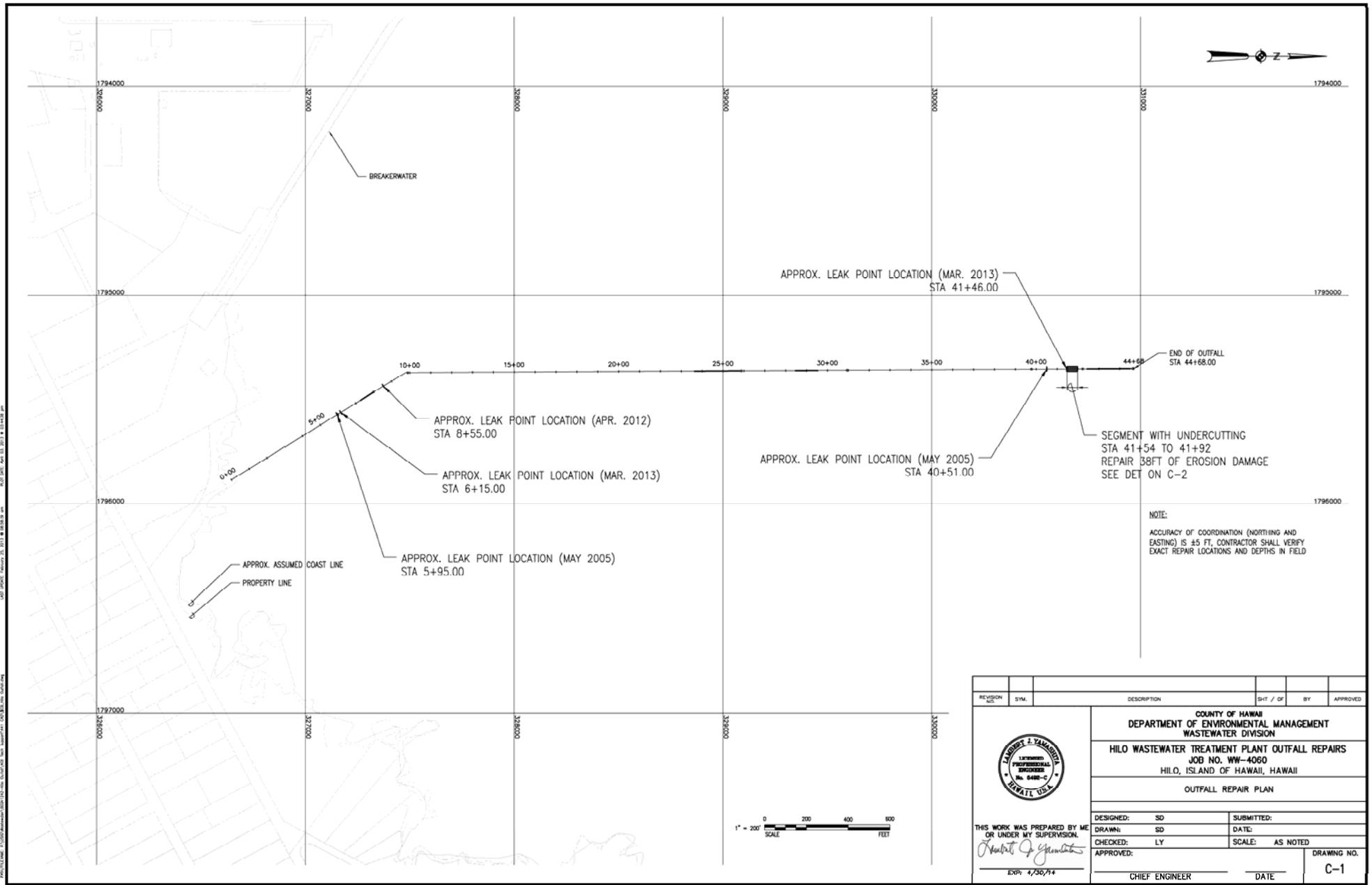
Quantitative and qualitative results of field investigations of the areas of Hilo Bay where the ocean outfall is presented being undercut reveal a somewhat unique habitat and characteristic biotic composition relative to most Hawaiian reefs. The biotic composition of the area in terms of species composition and growth form appears to be a response to physical conditions, particularly impact from long-period ocean swells. In particular, coral community structure in the area of repairs consists of a dominant genus (*Montipora*) that occurs in far greater proportion in this area than on most other Hawaiian reefs. It is likely that such dominance is a result of the ability of *Montiporas* to assume a flat encrusting growth form that makes these corals resistant to significant physical forces associated with breaking waves.

The proposed actions will likely result in complete loss of some portion of the existing habitat occupied by existing invertebrate and fish assemblages, although the exact extent of such loss is not presently known, and will likely vary depending on the selected method of repair. However, replacement of the existing substratum will likely result in man-made surfaces which will afford the same opportunity for settlement and growth of marine species, particularly corals. In fact, the new substratum may be a more solid surface for settlement of corals and other biota. As no dredging or other activities are anticipated that may temporarily increase sediment loading to the water column there is little potential effects to the surrounding reef areas beyond the actual site of material placement designed to eliminate future undercutting. However, as the area is extremely well flushed by wave and current action, even if suspended sediment loading were to occur on a short term basis, it is not likely that it would result in any impact to resident communities as the effects would be very short-lived. As noted at all areas throughout the survey, suspended and deposited sediment are not a dominant component of the existing marine communities.

As it will be unavoidable to cover or remove some of the existing substratum adjacent to the pipe, it will be of concern to evaluate the best methods to prevent or minimize losses of living resources. Results of this survey reveal the outfall pipe itself is populated by numerous coral colonies of a growth form that cannot be readily removed (i.e., primarily flat encrustations of *Montipora* spp.). If the shoring material extends up to a level on the pipe where these corals occur, it is likely unavoidable to prevent covering them. However, most of the corals that occur on the rubble bed adjacent to the pipe in the area where shoring material would be placed are growing on rocks and other forms of substratum that are movable. As a result, moving such objects that contain living corals to nearby locations of similar bottom type would likely be a preferred method of minimizing losses of existing corals. As the most abundant coral in the area is presently a candidate species for listing under the Endangered Species Act (*Montipora patula*), it is likely that special consideration will be given to successful mitigation methods. As such, the ability to move corals with minimum net losses should be an important consideration in the planning phases of the repair project. Several long-spined sea urchins that presently lodge against the pipe could also easily be transplanted to neighboring areas with similar structural features.

It is also likely that repairs of several small areas of interest in the outfall pipe could be repaired with virtually no effects to the existing marine community. As such areas of interest are small and localized, repairing them would likely not require any removal of existing corals or other marine

resources that are adjacent to the areas of interest. Care taken by workers to not damage or break corals during the fill operations should prevent any damage to existing communities.



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FIGURE 1. Engineering schematic diagram of Hilo Wastewater Treatment Plant Ocean Outfall Pipe showing showing location of segment with undercutting, and loctations of noted leaks in pipe.

TABLE 1. Size class distribution of coral colonies in vicinity of undercut scoured area of Hilo Wastewater Treatment Plant Ocean Outfall.

ON PIPE	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>				4	7	3			14
<i>Pocillopora eydouxi</i>			2	1					3
<i>Pocillopora meandrina</i>		3	1	7					11
<i>Montipora capitata</i>			10	7	11	4	2		34
<i>Montipora patula</i>			5	20	19	4	3		51
TOTAL	0	3	18	39	37	11	5	0	113

ET-1 2 m E Pipe	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>					2				2
<i>Pocillopora meandrina</i>			2	5					7
<i>Montipora capitata</i>			5	13	5				23
<i>Montipora patula</i>			5	20	9	3			37
TOTAL	0	0	12	38	16	3	0	0	69

ET-2 5m E Pipe	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>			11	14	15	14	7		61
<i>Pocillopora eydouxi</i>		1		1	3				5
<i>Pocillopora meandrina</i>		1	10	9	9				29
<i>Montipora capitata</i>	1		7	9	10	8	5		40
<i>Montipora patula</i>	1		5	9	16	17	7	3	58
<i>Leptastrea purpurea</i>				1					1
<i>Cyphastrea ocellina</i>		2							2
TOTAL	2	4	33	43	53	39	19	3	196

ET-3 8m E Pipe	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>			1	5	2	1			9
<i>Pocillopora meandrina</i>				4					4
<i>Montipora capitata</i>	1	5	18	24	4	1			53
<i>Montipora patula</i>			7	17	3	1			28
TOTAL	1	5	26	50	9	3	0	0	94

WT-1 W Pipe	SIZE CLASS (cm)								TOTAL
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	
<i>Porites lobata</i>			5	1	4	3			13
<i>Pocillopora eydouxi</i>				1					1
<i>Pocillopora meandrina</i>		1	3	6	1				11
<i>Montipora capitata</i>		3	5	21	5	5			39
<i>Montipora patula</i>		1	9	23	5	6			44
<i>Leptastrea purpurea</i>		1							1
<i>Cyphastrea ocellina</i>		2							2
TOTAL	0	8	22	52	15	14	0	0	111

TABLE 2. Summary size class distribution of all coral colonies combined in the vicinity of the undercut zone of the Hilo Wastewater Sewage Treatment Plant Ocean Outfall Pipe in Hilo Bay, Hawaii. "OP" indicates corals growing on the outfall pipe; "ET" indicates transects on the east side of the pipe; "WT" indicates the transect on the west side of the pipe. Also shown are the percentage of total coral colonies on each transect, number of species of coral on each transect (Sp. #), Shannon-Weiner diversity index for total colony counts per transect (H'), and Swartz's Species Dominance (SSD) for each transect.

TRANSECT	SIZE CLASS (cm)								TOTAL	% TOTAL	Sp. #	H'	SSD
	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160					
OP	0	3	18	39	37	11	5	0	113	19.6	5	1.3	2
ET-1	0	0	12	38	16	3	0	0	69	12.0	4	1.03	2
ET-2	2	4	33	43	53	39	19	3	196	34.0	7	1.51	3
ET-3	1	5	26	50	9	3	0	0	94	16.3	4	1.04	2
TOTAL ET	3	9	71	131	78	45	19	3	359	61.6	7	1.23	2
WT-1	0	8	22	52	15	14	0	0	111	19.3	7	1.37	3
TOTAL	3	20	111	222	130	70	24	3	583				

TABLE 3. Summary counts of coral colonies for all species on each survey transect in the vicinity of the undercut zone on the Hilo Wastewater Treatment Plant Ocean Outfall Pipe in Hilo Bay, Hawaii.

SPECIES	SIZE CLASS (cm)								TOTAL
<i>Porites lobata</i>	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	TOTAL
OP				4	7	3			14
ET-1					2				2
ET-2			11	14	15	14	7		61
ET-3			1	5	2	1			9
WT-1			5	1	4	3			13
TOTAL	0	0	17	24	30	21	7	0	99

SPECIES	SIZE CLASS (cm)								TOTAL
<i>Pocillopora eydouxi</i>	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	TOTAL
OP			2	1					3
ET-2		1		1	3				5
WT-1				1					1
TOTAL	0	1	2	3	3	0	0	0	9

SPECIES	SIZE CLASS (cm)								TOTAL
<i>Pocillopora meandrina</i>	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	TOTAL
OP		3	1	7					11
ET-1			2	5					7
ET-2		1	10	9	9				29
ET-3				4					4
WT-1		1	3	6	1				11
TOTAL	0	5	16	31	10	0	0	0	62

SPECIES	SIZE CLASS (cm)								TOTAL
<i>Montipora capitata</i>	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	TOTAL
OP			10	7	11	4	2		34
ET-1			5	13	5				23
ET-2	1		7	9	10	8	5		40
ET-3	1	5	18	24	4	1			53
WT-1		3	5	21	5	5			39
TOTAL	2	8	45	74	35	18	7	0	189

SPECIES	SIZE CLASS (cm)								TOTAL
<i>Montipora patula</i>	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	TOTAL
OP		5	20	19	4	3			51
ET-1			5	20	9	3			37
ET-2	1		5	9	16	17	7	3	58
ET-3			7	17	3	1			28
WT-1		1	9	23	5	6			44
TOTAL	1	6	46	88	37	30	7	3	218

SPECIES	SIZE CLASS (cm)								TOTAL
<i>Leptastrea purpurea</i>	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	TOTAL
ET-2				1					1
WT-1		1							1
TOTAL		1		1					2

SPECIES	SIZE CLASS (cm)								TOTAL
<i>Cyphastrea ocellina</i>	<2	>2≤5	>5≤10	>10≤20	>20≤40	>40≤80	>80≤160	>160	TOTAL
ET-2		2							2
WT-1		2							2
TOTAL		4							4

FIGURE 4. Percent cover of coral species and rock/rubble on transects located in the undercut area in the vicinity of the Hilo Wastewater Treatment Plant Ocean Diffuser pipe.

<u>TRANSECT</u>	OP	ET-1	ET-2	ET-3	WT-1	AVERAGE
SPECIES						
<i>M. capitata</i>	10.6	7.7	5.4	8.5	8.8	8.2
<i>M. patula</i>	12.4	17.8	7.9	13.0	12.9	12.8
<i>P. lobata</i>	18.0	5.8	2.1	1.3	0.3	5.5
<i>P. meandrina</i>	5.4	1.8	0.6	0.4	0.9	1.8
<i>Cyphastrea ocellina</i>	0.2	0.2	0.0	0.0	0.0	0.1
<i>Porites eydouxi</i>	1.1	0.0	0.0	0.0	0.0	0.2
TOTAL CORAL	47.6	33.3	15.9	23.2	22.9	28.6
ROCK/RUBBLE	52.4	66.7	84.1	76.9	77.1	71.4

TABLE 5. Abundance of reef fish on transects in the vicinity of the scoured undercut area adjacent to the Hilo Wastewater Treatment Plant Ocean Outfall.

Transect Site ID	OP	EP-1	EP-2	EP-3	WP_1	TOTAL
FAMILY						
Species						
CIRRHITIDAE						
<i>Cirrhitops fasciatus</i>		1	1			2
<i>Cirrhitus pinnulatus</i>		1		1		2
<i>Paracirrhites arcatus</i>	2	2	2	2	4	12
<i>P. forsteri</i>				1		1
MULLIDAE						
<i>Parupeneus bifasciatus</i>	2	3	1			6
CHAETODONTIDAE						
<i>C. quadrimaculatus</i>	2				1	3
<i>C. unimaculatus</i>			1	2	2	5
<i>Forcipiger flavissimus</i>					1	1
LABRIDAE						
<i>Bodianus bilunulatus</i>	1			1		2
<i>Gomphosus varius</i>	2		3	1	1	7
<i>Thalassoma duperrey</i>	3	6	6	10	5	30
<i>Halichoeres ornatissimus</i>	1		1			2
<i>Labroides phthirophagus</i>	1		1			2
<i>Stethojulis balteata</i>		1	2			3
ACANTHURIDAE						
<i>A. nigrofuscus</i>	15	25	35	23	22	120
<i>A. olivaceus</i>				1		1
<i>Ctenochaetus strigosus</i>	5	2	4		3	14
BALISTIDAE						
<i>Sufflamen bursa</i>	1	1	3	4	1	10
<i>Melichthys niger</i>			2			2
TETRADONTIDAE						
<i>Canthigaster jactator</i>	3	3	2	3	1	12
BLENNIIDAE						
<i>Cirripectes vanderbilti</i>			2			2
MONCANTHIDAE						
<i>Cantherhines dumerilii</i>			1			1
<i>Monotaxis grandoculis</i>				1		1
NUMBER SPECIES	12	10	16	12	10	23
NUMBER INDIVIDUALS	38	45	67	50	41	241

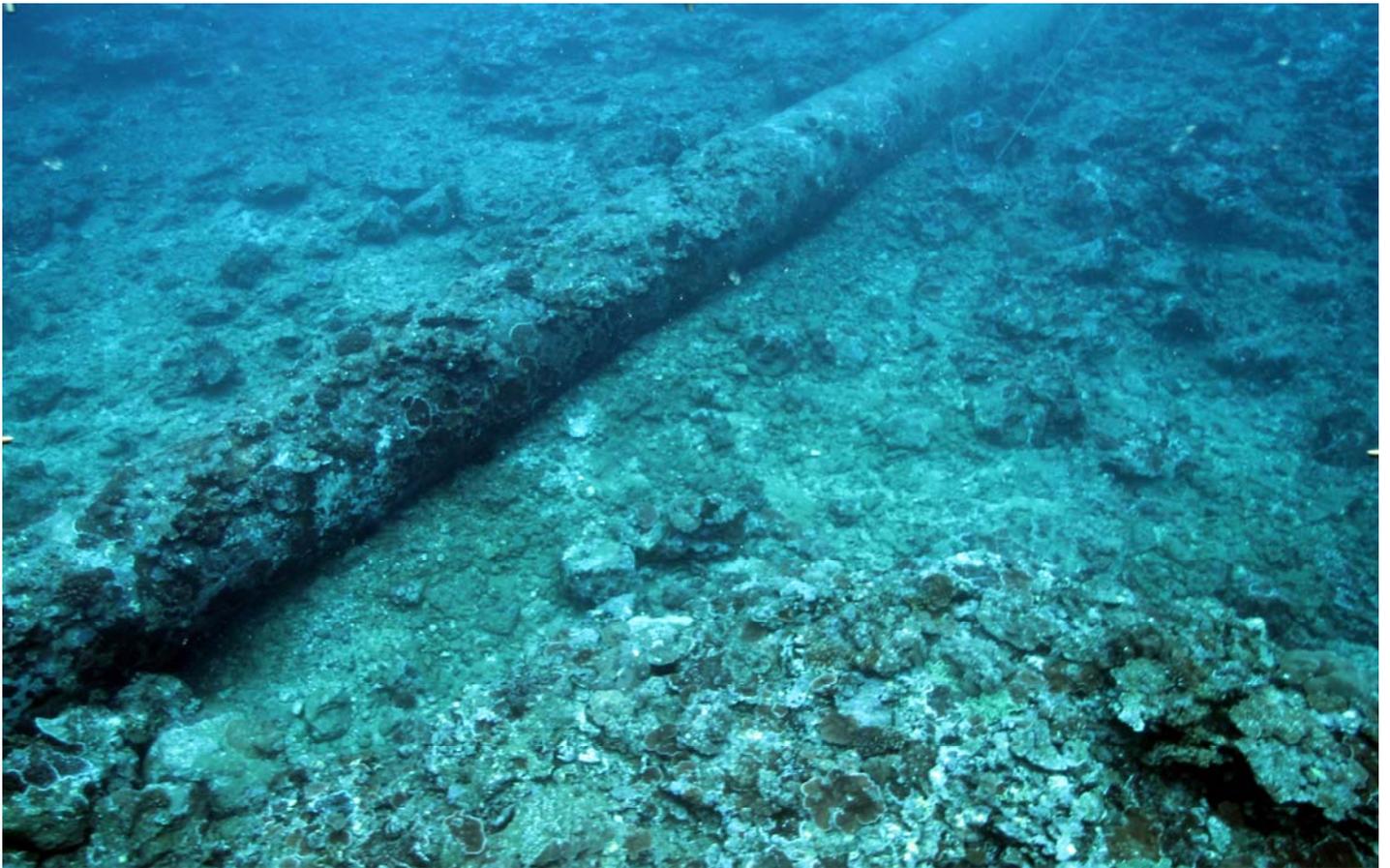


FIGURE 2. Overhead view (top) and side view looking west to east (bottom) of undercut and scoured section of Hilo Wastewater Treatment Plant Ocean Outfall.

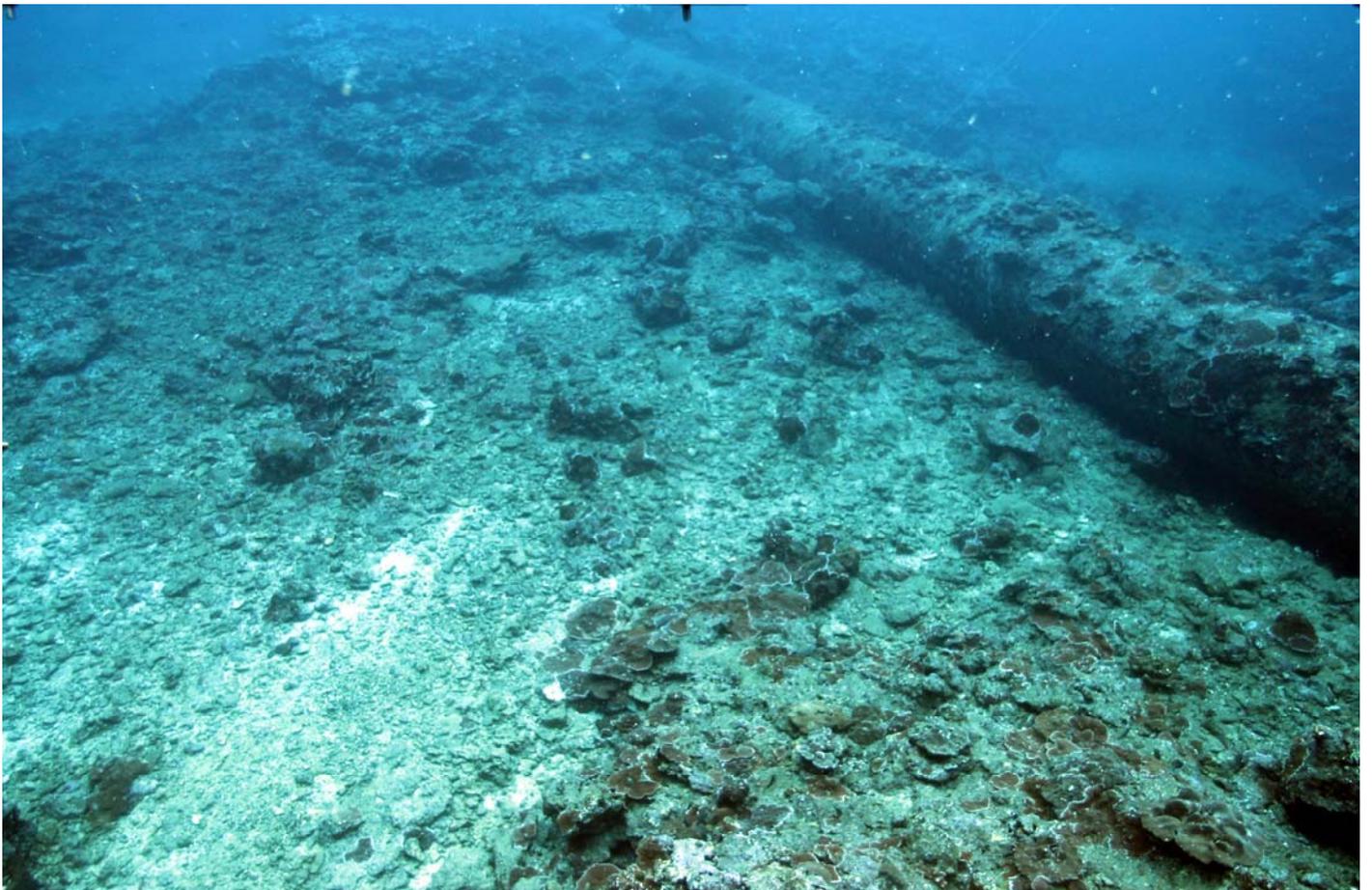
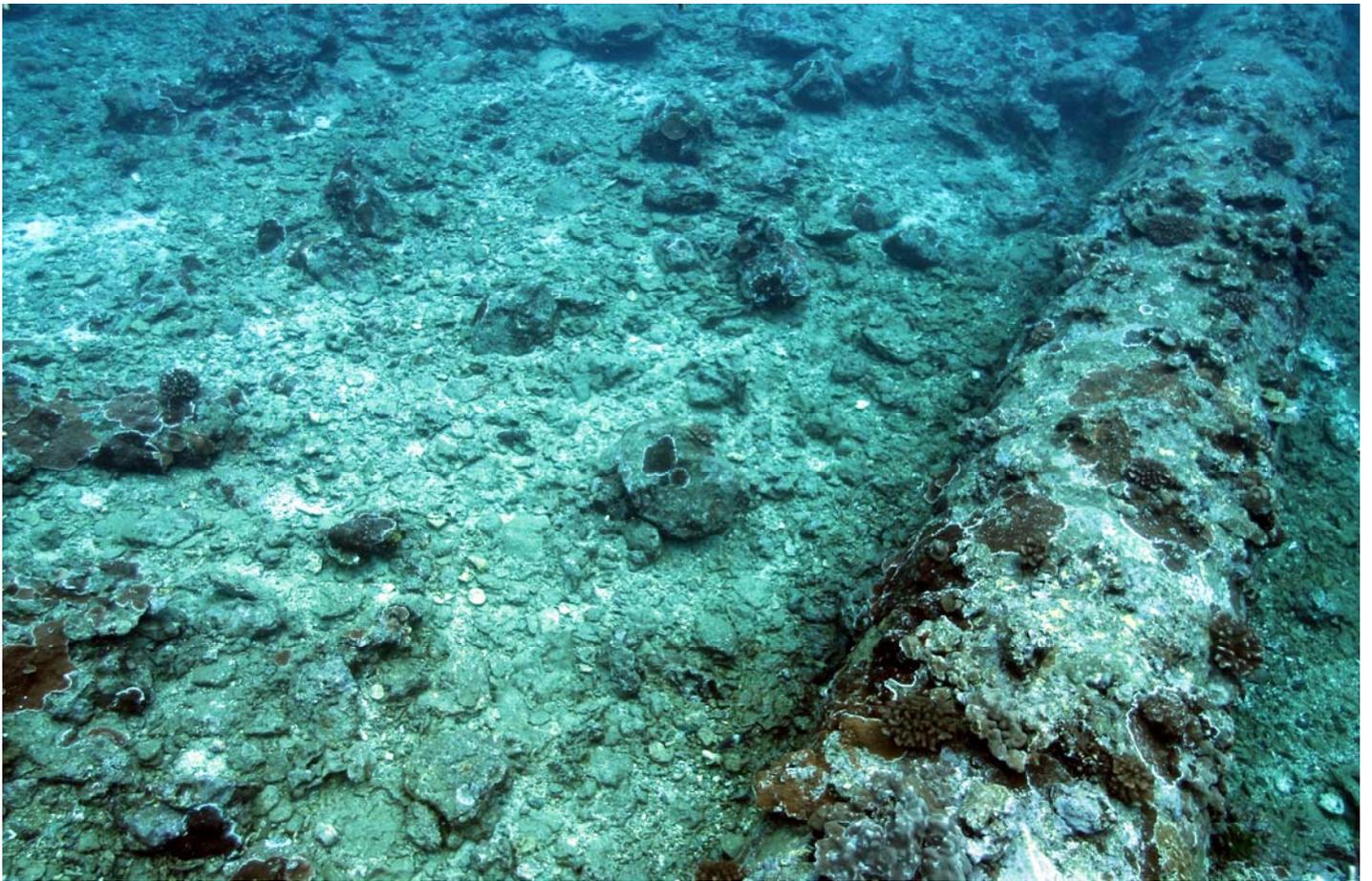


FIGURE 3. Photographs of scour area on east side of Hilo Wastewater Treatment Plant Ocean Outfall. The area adjacent to the Outfall pipe consists of a rubble filled depression cut through the reef platform.

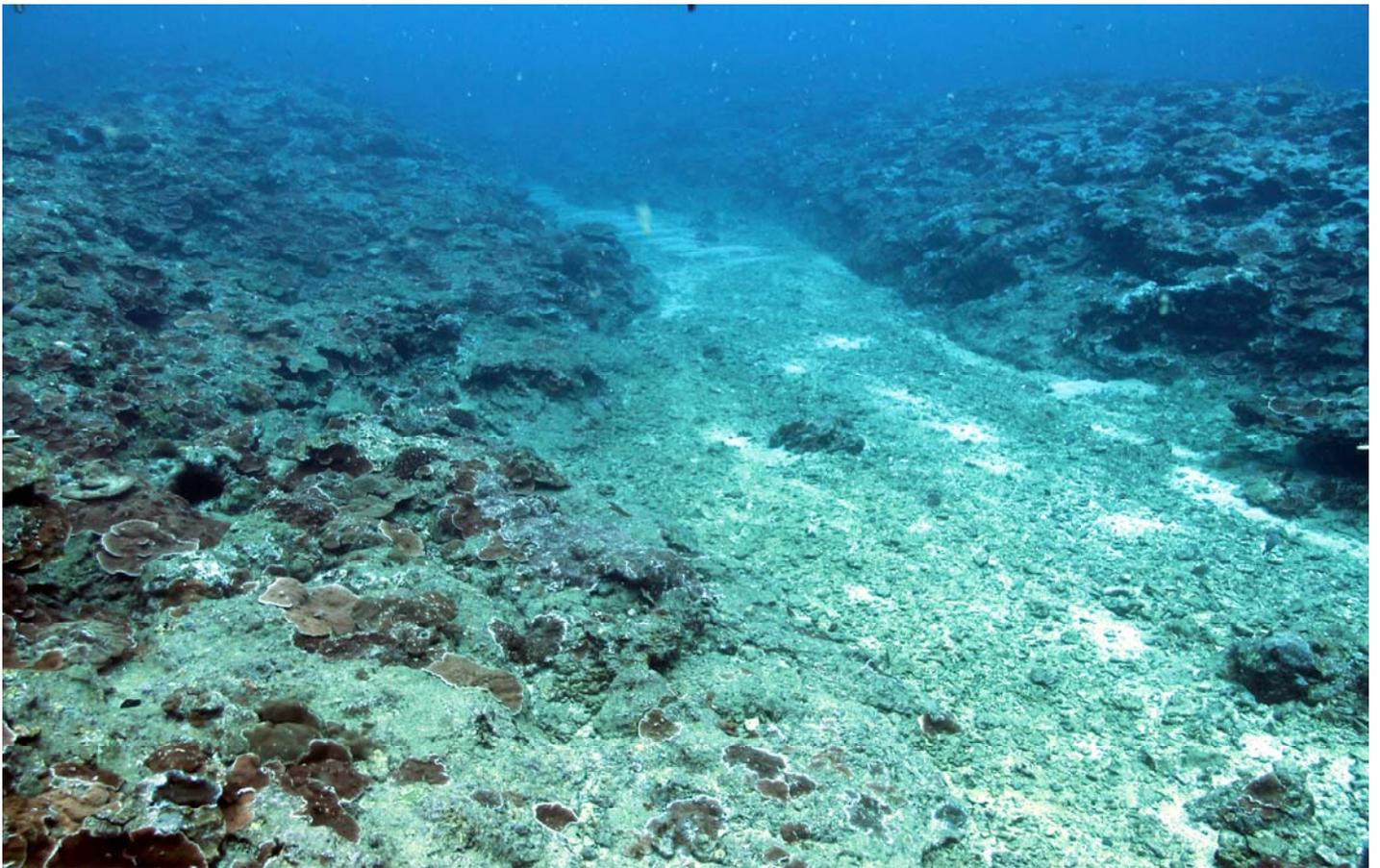
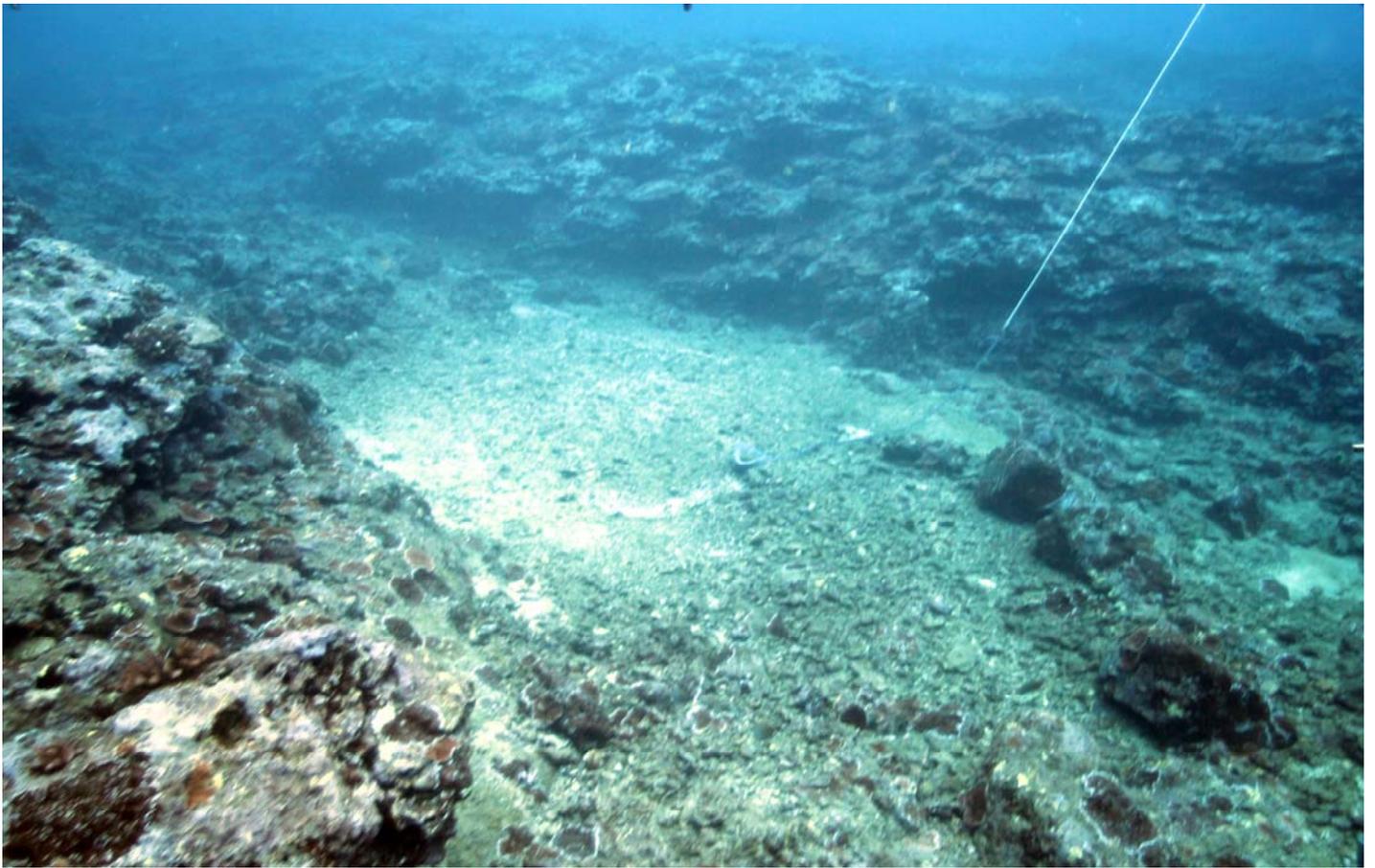


FIGURE 4. Photographs of rubble filled scour channel extending eastward from east side of Hilo Wastewater Treatment Plant Ocean Outfall.

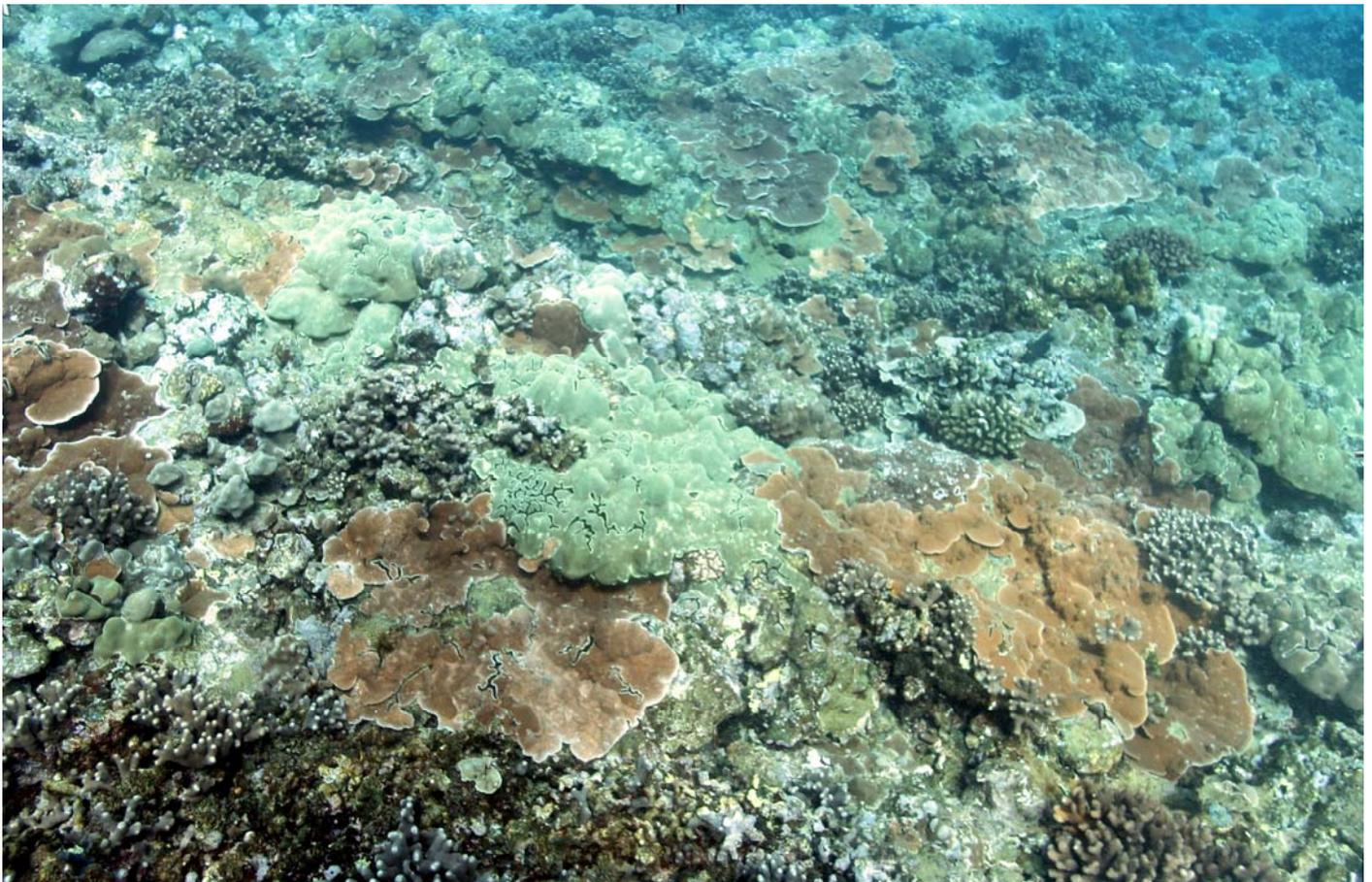


FIGURE 5. Two views of the reef platform in the vicinity of the Hilo Wastewater Treatment Plant Ocean Outfall. Upper photo shows thick reef platform bisected by sand channel. Lower photo shows top of reef with nearly complete coverage of living corals.

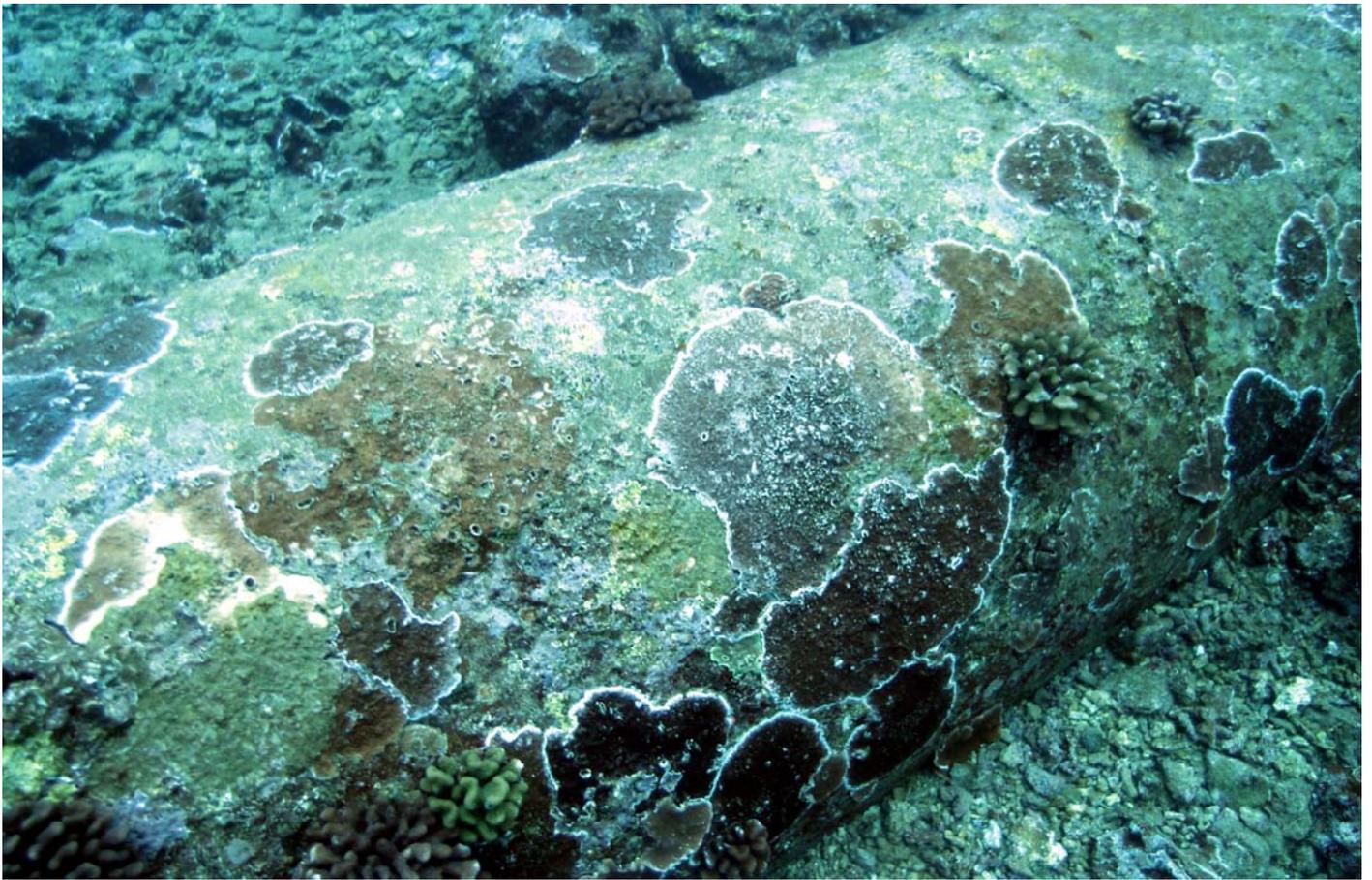


FIGURE 6. Photographs of corals growing on exposed section of west side of Hilo Wastewater Treatment Plant Ocean Outfall. Flat, mostly circular encrusting brown colonies are *Montipora* spp. Hemispherical branching corals are *Pocillopora meandrina*.



FIGURE 7. Photographs of diffuser ports discharging effluent immediately offshore of section of undercut and scoured region of Hilo Wastewater Treatment Plant Ocean Outfall. Note extensive coral colonization on diffuser structures and surrounding substratum.



FIGURE 8. Photographs of diffuser ports that are open but not discharging effluent offshore of section of undercut and scoured region of Hilo Wastewater Treatment Plant Ocean Outfall. Note near complete cover of the diffuser structure with living corals. Most of the coral colonies in these photos is *Porites lobata*.

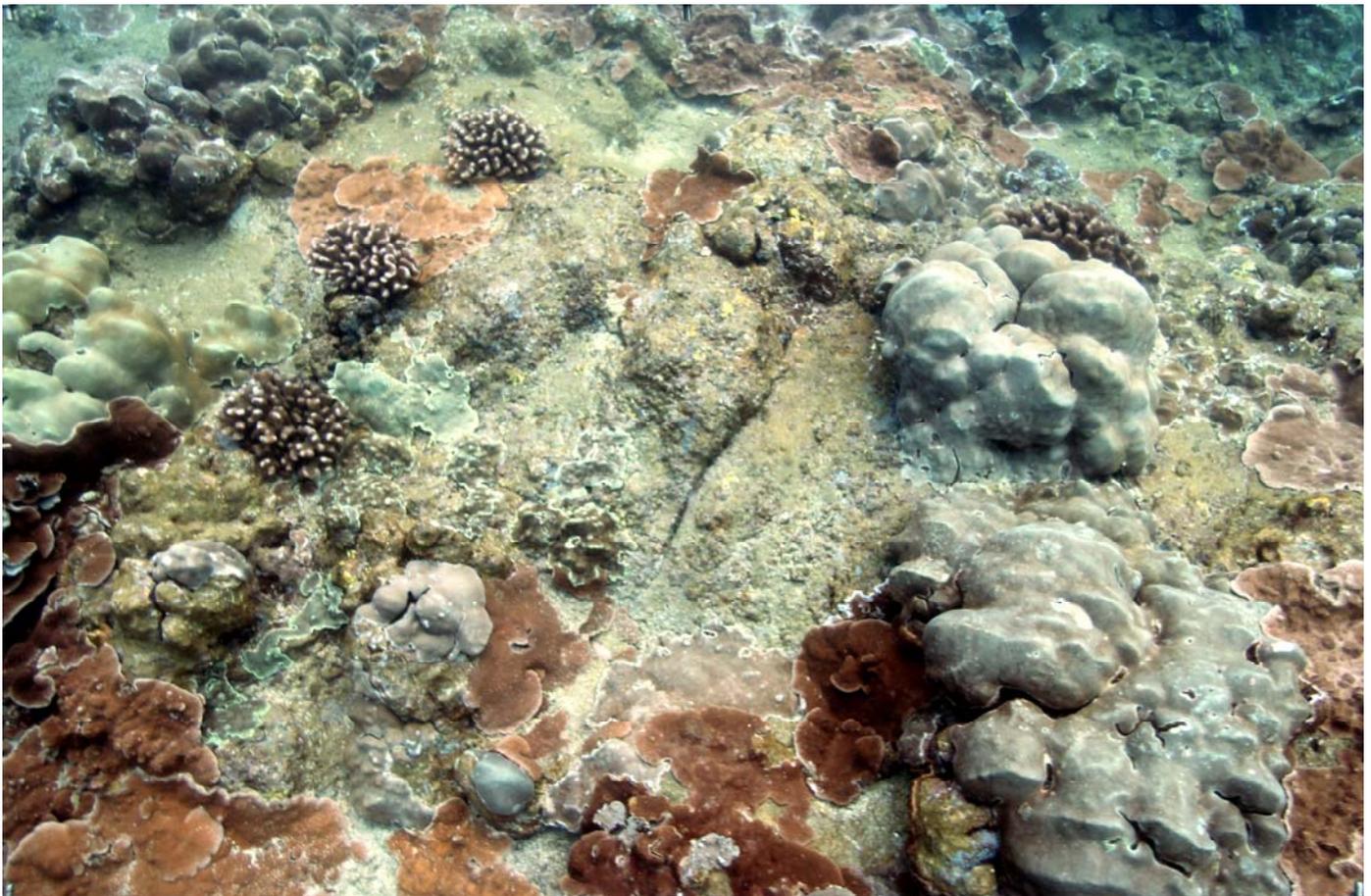
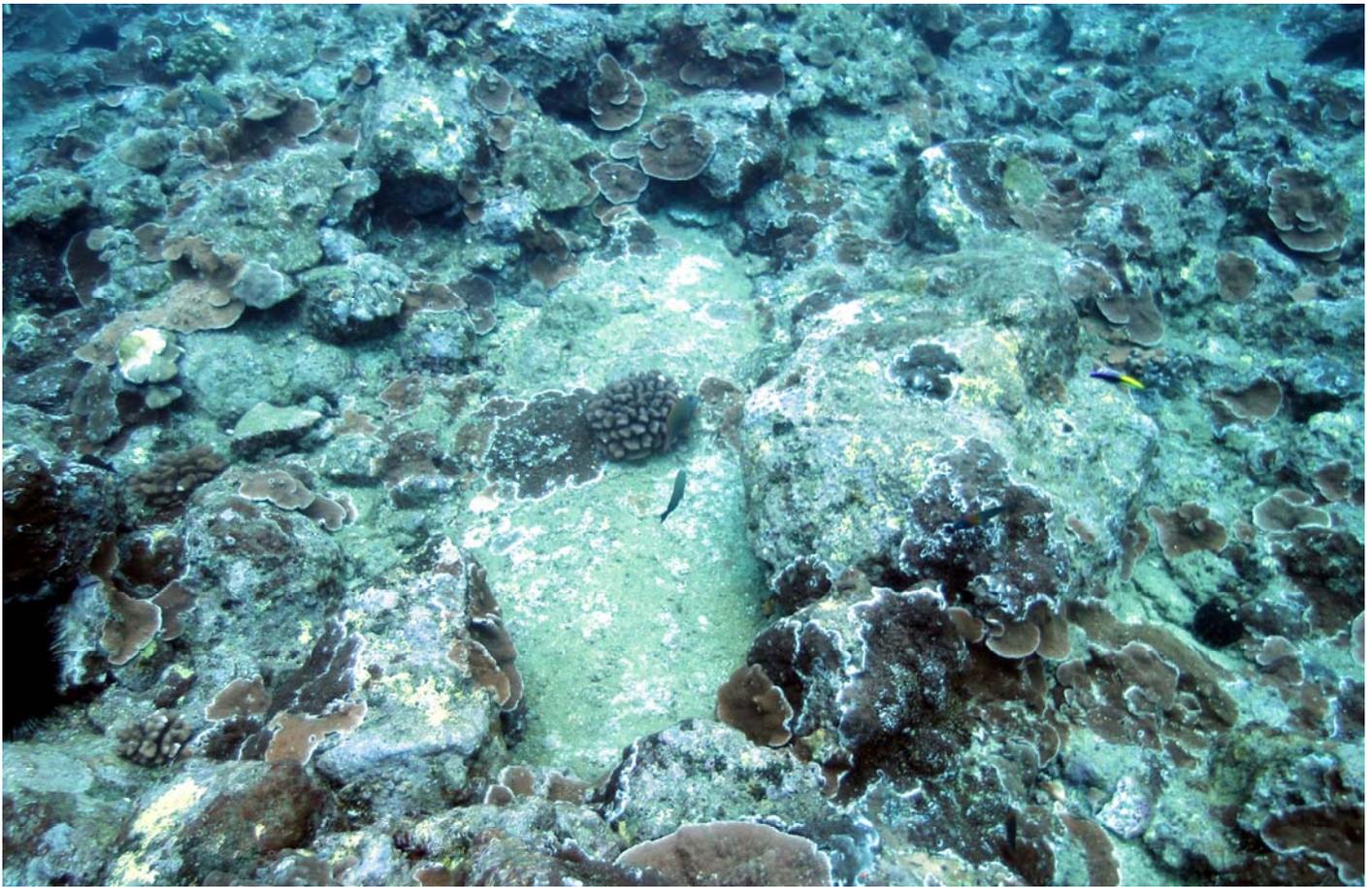


FIGURE 9. Upper photo shows location of area of interest in Hilo Ocean Outfall pipe at STA 8+55.00. Lower photo shows exposed open seam in pipe.



FIGURE 10. Upper photo shows close-up of area of interest in Hilo Ocean Outfall pipe at STA 6+15.00. Lower photo shows wide angle view of same area. Location of area of interest is at right center of lower photo.

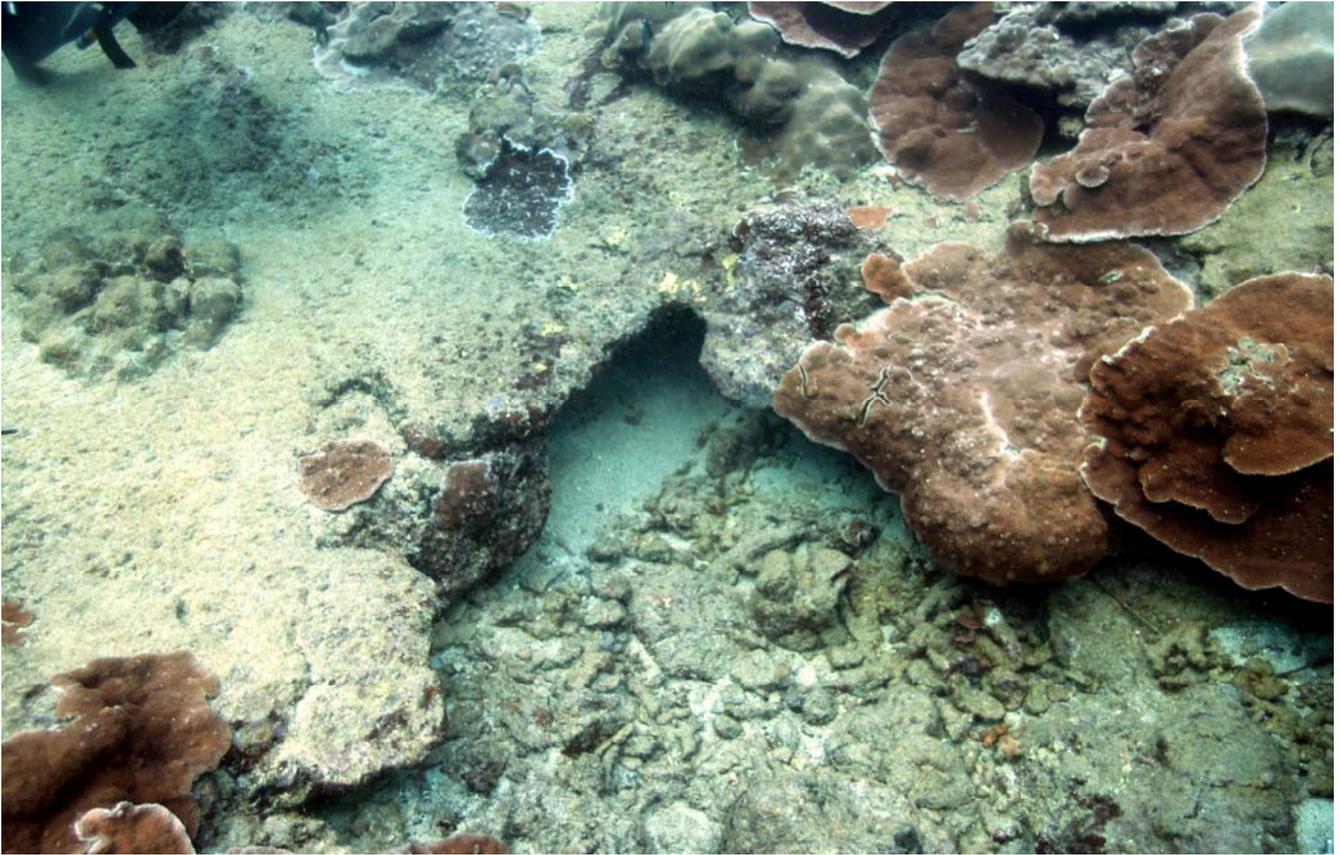
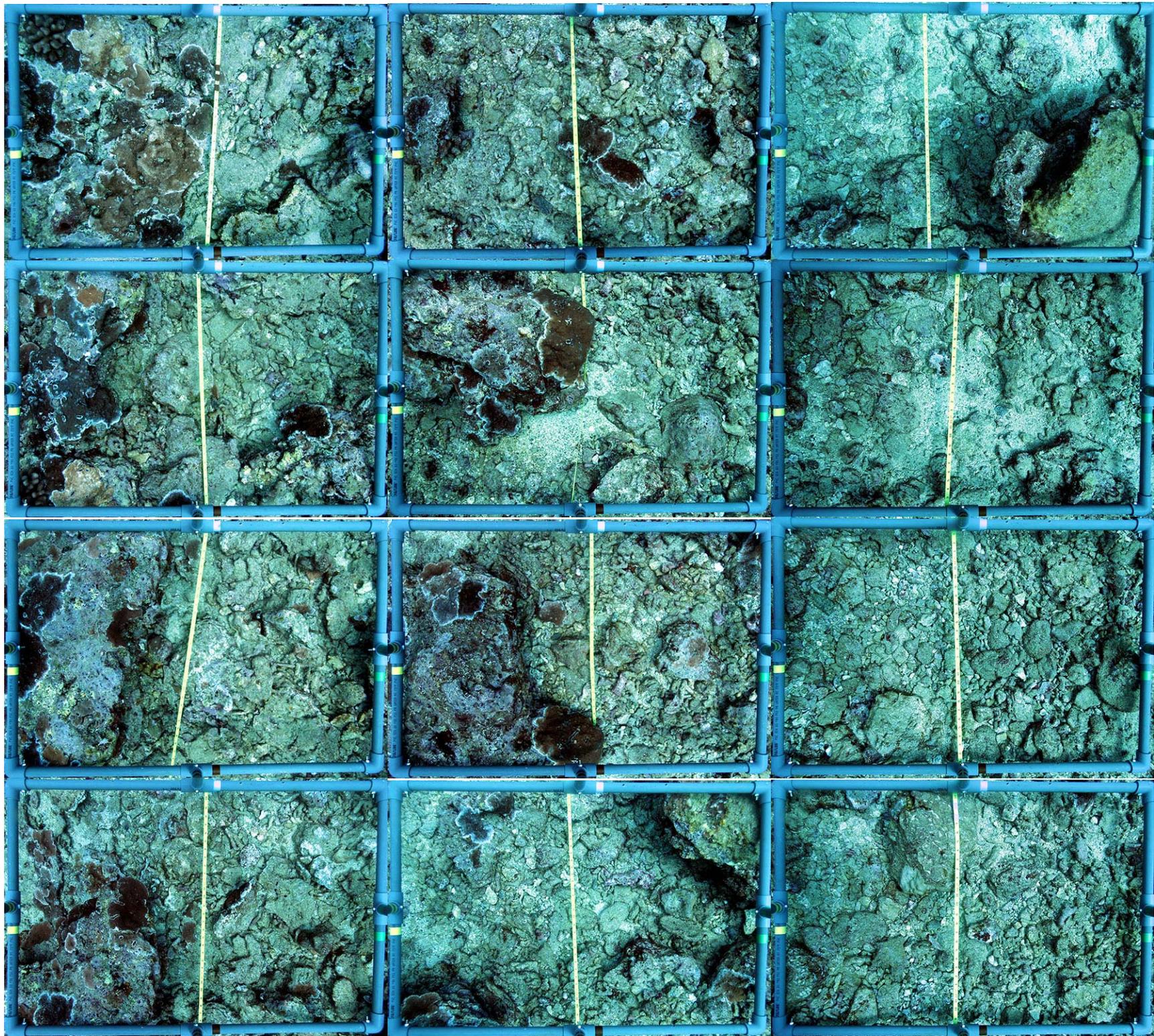
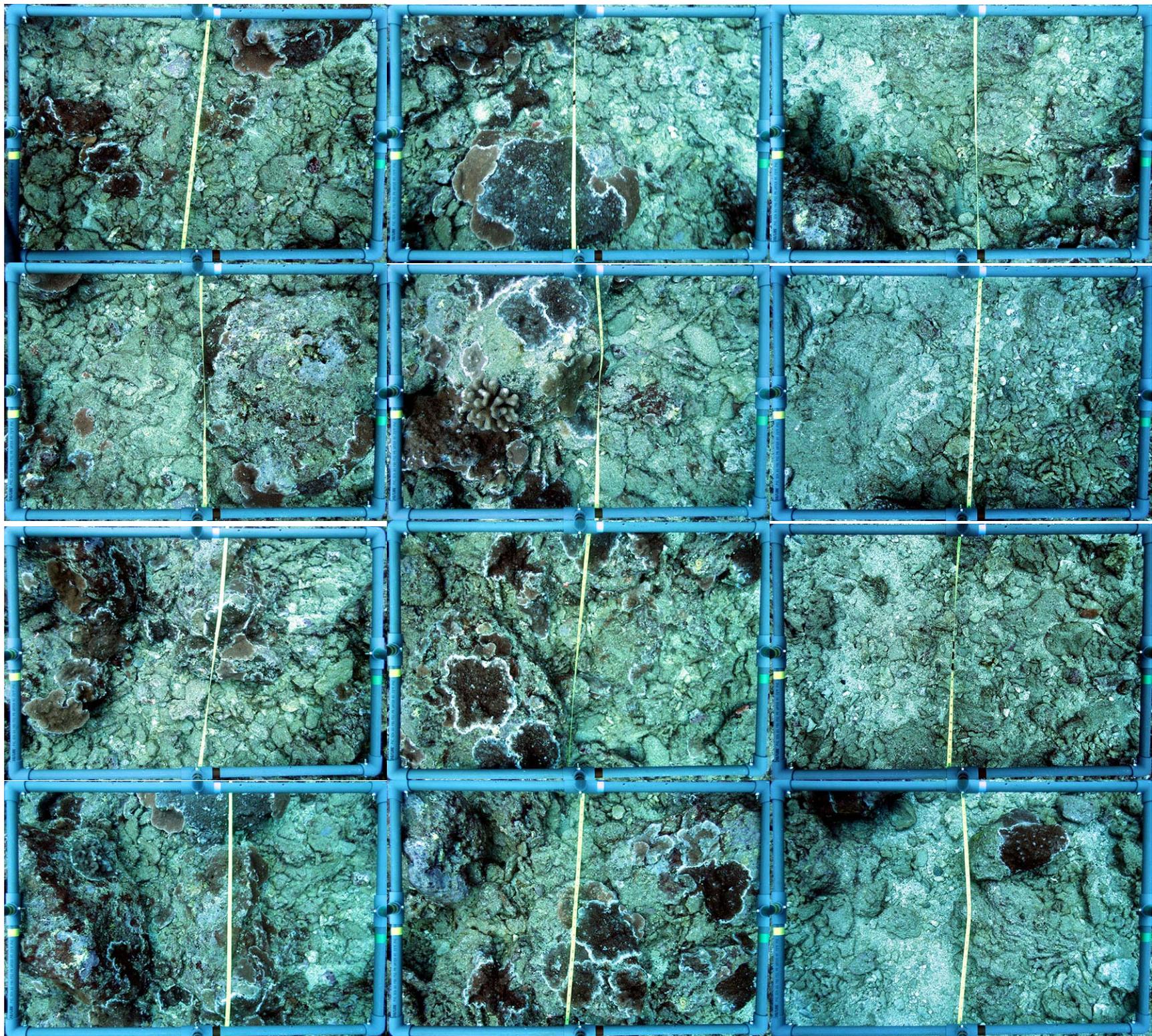


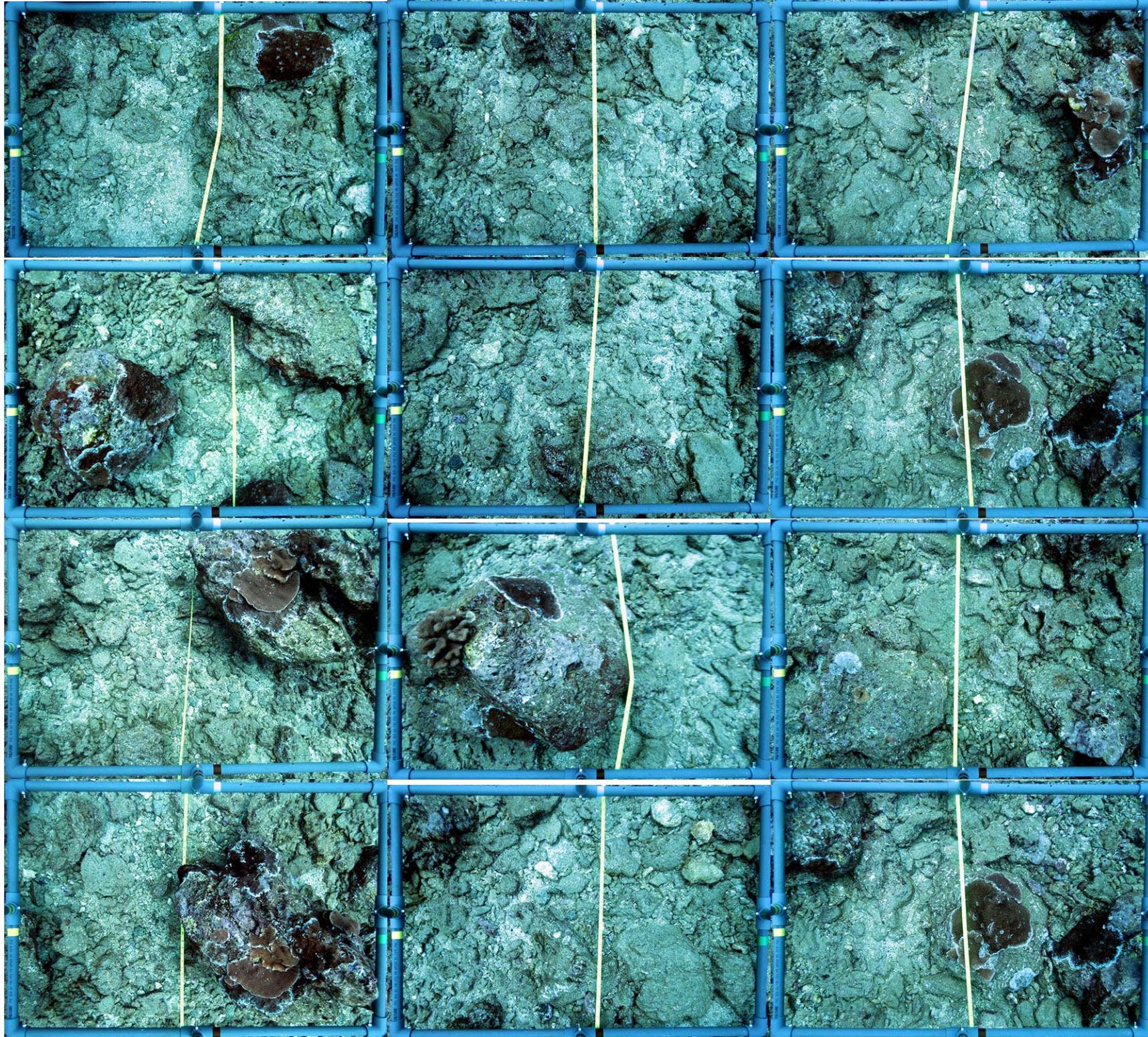
FIGURE 11. Upper photo shows close-up of area of interest in Hilo Ocean Outfall pipe just seaward of STA 6+15.00. Lower photo shows section of junction box where outfall pipe changes angle.



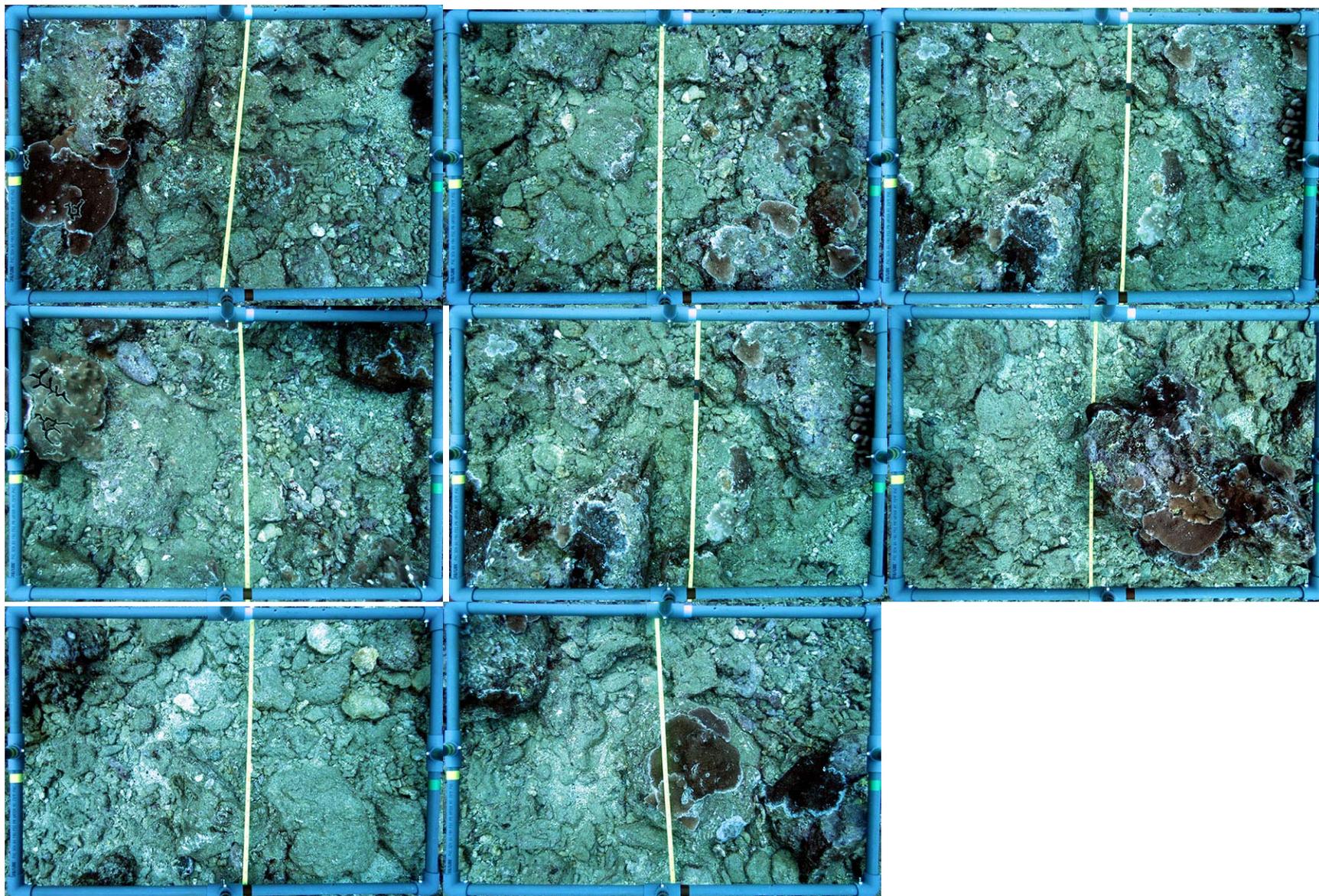
HILO WWTP OUTFALL TRANSECT 2-3



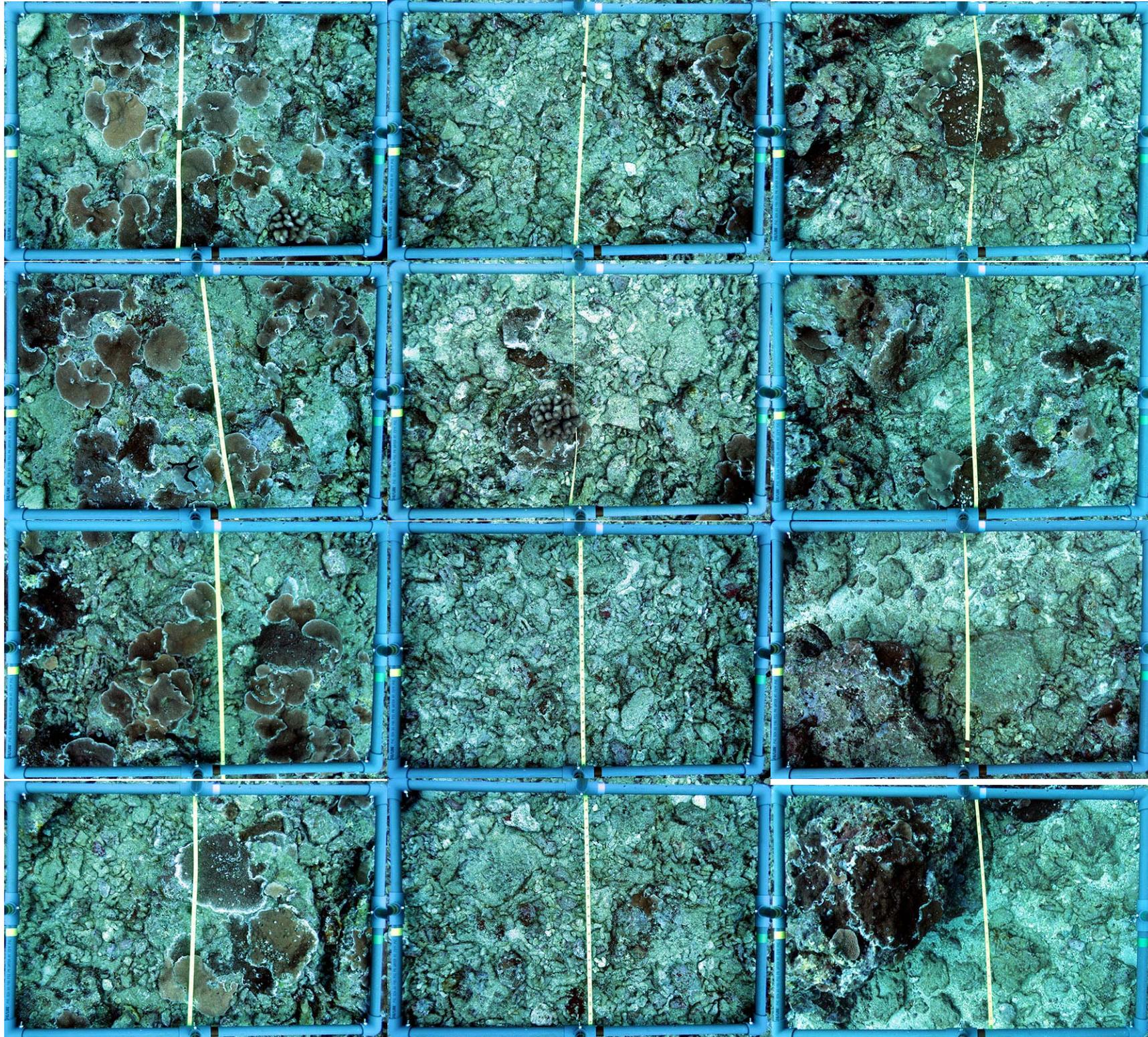
HILO WWTP OUTFALL TRANSECT 3-1



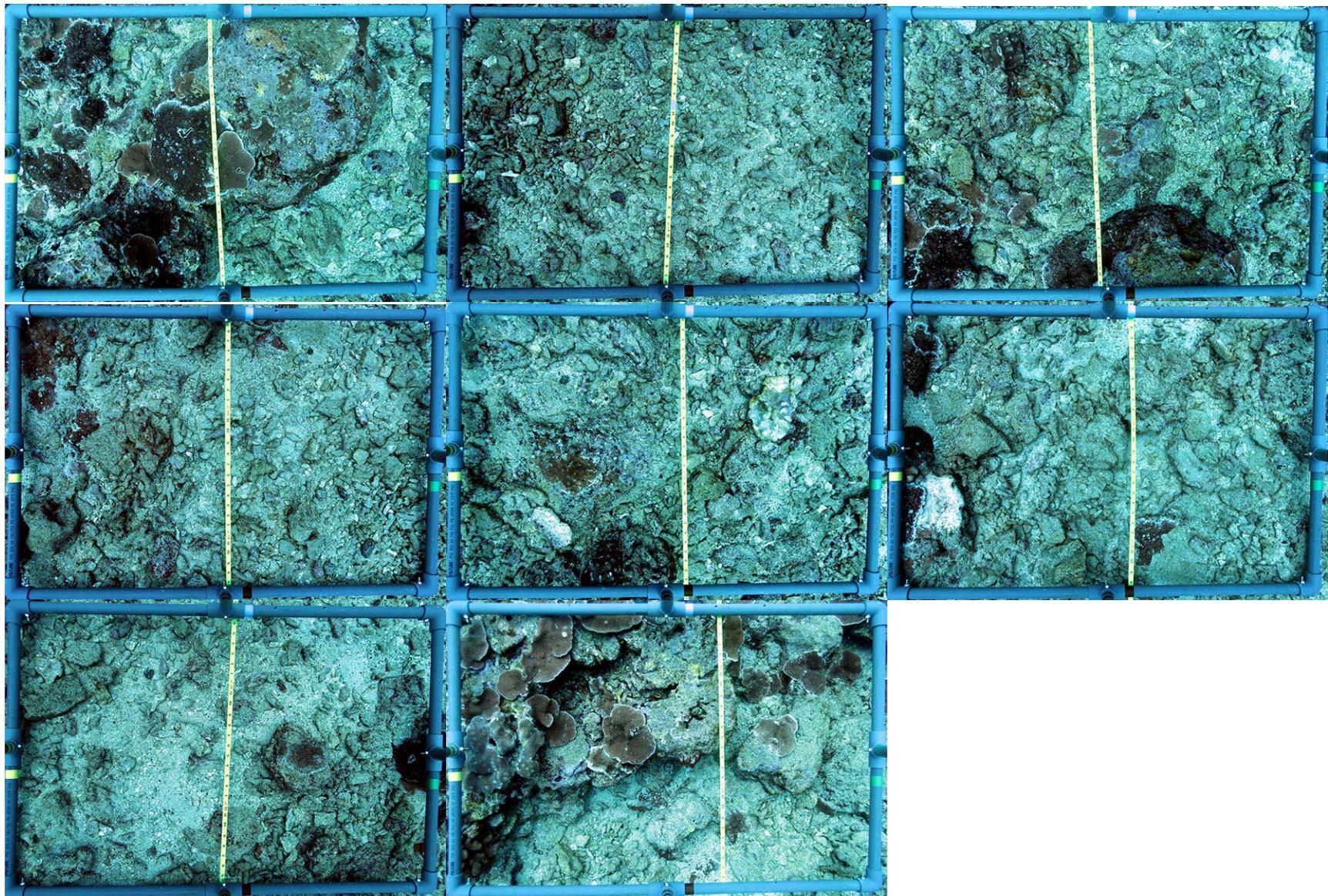
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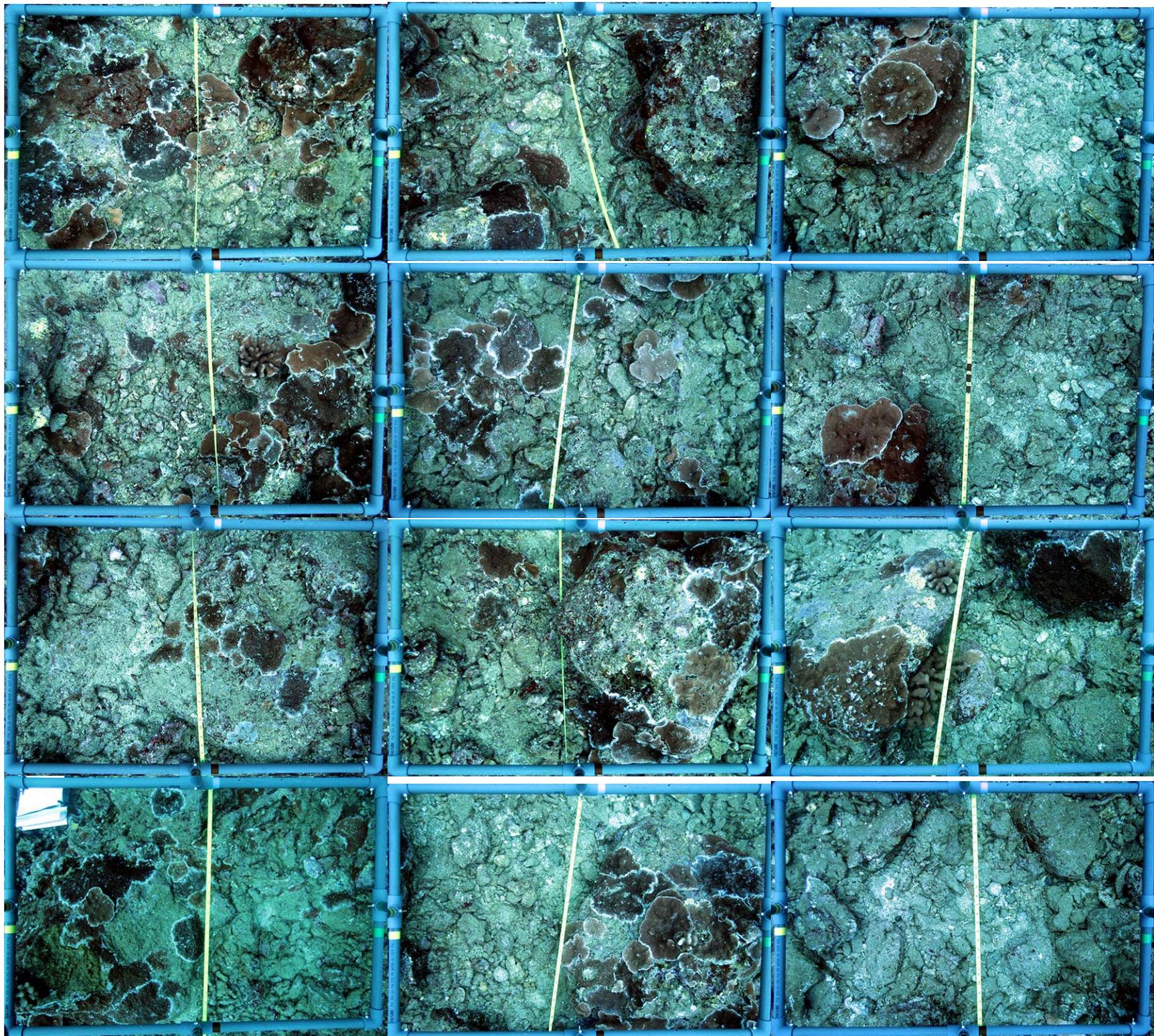
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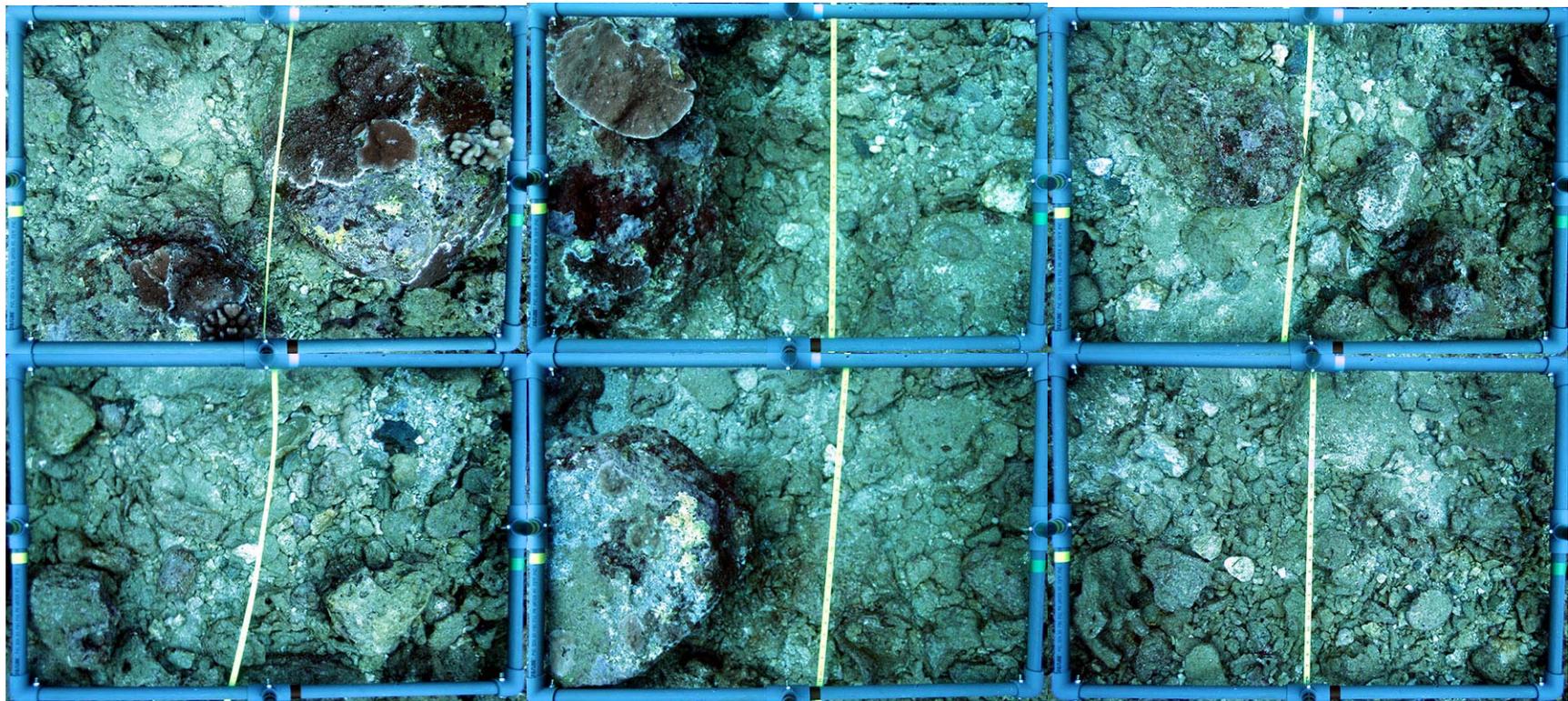
HILO WWTP OUTFALL TRANSECT 4-1



HILO WWTP OUTFALL TRANSECT 4-2



HILO WWTP OUTFALL TRANSECT 5-1



HILO WWTP OUTFALL TRANSECT 5-2