AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		17

2. AMENDMENT/MODIFICATION NUMBER	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQUISITION NUMBER	5. PROJECT NUMBER *(If applicable)*
0003	02/19/2021	NA	

6. ISSUED BY	CODE	7. ADMINISTERED BY *(If other than Item 6)*	CODE
Contracting Division USCG, Facilities Design and Construction Center 5505 Robin Hood Road, Suite K Norfolk, VA 23513-2431			NA

8. NAME AND ADDRESS OF CONTRACTOR *(Number, street, county, State and ZIP Code)*	(X)	9A. AMENDMENT OF SOLICITATION NUMBER
	☒	70Z04721RKWDSCN00
		9B. DATED *(SEE ITEM 11)* 12/31/2020
	☐	10A. MODIFICATION OF CONTRACT/ORDER NUMBER
		10B. DATED *(SEE ITEM 13)*
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☒ is extended. ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NUMBER AS DESCRIBED IN ITEM 14.

CHECK ONE	
☐	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NUMBER IN ITEM 10A.
☐	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation data, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
☐	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
☐	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (*Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

REBUILD SECTOR/STATION KEY WEST, USCG SECTOR/STATION KEY WEST, KEY WEST, FL

The due date for receipt of proposals is extended from March 1, 2021 to March 16, 2021. The closing date for submitting RFI's is extended from February 8, 2021 to February 22, 2021.

(SEE CONTINUATION PAGE)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA *(Signature of Contracting Officer)*	16C. DATE SIGNED

SOLICITATION 70Z04721RKWDSCN00 IS AMENDED AS FOLLOWS:

I) Task Order Announcement (TOA)

Additional Clauses:

DELETE clause 3052.222-72 COMBATING RACE AND SEX STEREOTYPING (DEVIATION 2021-01) (NOV 2020)

II) Specification

RFI #17

Paragraph: 1.4 Supplementary Drawing, Reports, and Documents (pp 11 of 726)

Under Attachment D: Reference Drawings

ADD additional bullet: "#17 USCG Station Key West – One Line Diagram".

RFI #19

Paragraph: 1.4 Supplementary Drawing, Reports, and Documents (pp 11 of 726)

ADD additional bullet: "Hydrographic Survey USCG Key West 21 June 2019"

RFI #89

Solicitation missing Attachments A, B, and C.

ADD Following Documents:
a. Attachment A – Geotechnical Engineering Report
b. Attachment B – Hazmat Inventory
c. Attachment C – Hazmat Materials Survey

THE FOLLOWING QUESTIONS WERE RECEIVED IN RESPONSE TO THE SOLICITATION (NUMBERING CONTINUED FROM AMENDMENT 0002):

14. "Please confirm dispensing flow rate for Diesel dispensing for boats (40 GPM has be used previously on projects), and please confirm the dispenser is new and quantity.
- Is a non API vertical turbine pump acceptable (i.e. Red Jacket, FE Petro) for dispensing?
- Is double wall piping system conforming to UL-971 (double wall non-metallic piping system) acceptable to be installed between the tank storage facility and the dispenser?
- Metering is required per RFP is this for just offload, dispensing or both?"

RESPONSE:
1. 40 gpm is acceptable, 35 gpm minimum.
2. One new dispenser is required.
3. Non API rated pump is acceptable for dispensing.
4. UL-971 is required.
5. Both

15. Please confirm each generator set have a subbase or day tank which the generator transfer pump(s) will fill? Is underground piping required between the Building and the Generator building, or is aboveground piping allowed? Please confirm type of delivery truck to be filled at 150 GPM, and type of coupler. API coupler? "

RESPONSE:
1. Each generator set will come standard with a sub-base tank.
2. The intent is for piping to be aboveground for this facility.
3. In general, loading equipment configuration should follow UFC 3-460-01 para 7-3.11.

16. Para (c) states the steel columns shall be “encase” 3 ft above 100 yr flood.
What is an approved method/process for “encase”.

RESPONSE: Carport columns are intended to be concrete-encased 3-ft. above the 100-yr flood level to corrosion-protect steel structure through washout-level.

17. Partial One Line Diagrams on Sheet E200 and E201 only describe the various proposed power distribution options required per the task order, they do not show the existing power distribution equipment, i.e., switches, switchgear, building generators, pad-mounted transformers, circuit breaker panels, etc., scheduled to be replaced and raised to a minimum of 3 feet above 100-year flood elevation.

Electrical Site Plans on Sheet E130 through E134 indicate quantities and locations of this base electrical equipment but, there is no corresponding one-line diagram showing existing equipment ratings, feeder sizes, and wiring configurations. Please provide As-Built One-Line Diagrams of the existing power distribution system for the entire base containing this information"

RESPONSE: Reference attached one-line diagram for the base. See Amendment.

18. According to RFP Electrical Section 12.4.4, Inventory and Mapping appears to be required for all utilities, not just electrical. In past USCG projects, we have seen this scope completed prior to issuing a design/build RFP. Please confirm this is to be performed within the design/build package scope.

RESPONSE: Confirmed, this is to be performed within the design-build package scope.

19. Is there any hydrographic soundings of the waterfront areas? Does the USCG have typical maintenance dredging of the waterfront areas and if so, are dredging plans available?

RESPONSE: There is a hydrographic survey performed in June 21, 2019. See Amendment.

20. RFP Section 01800 – Structural - Waterfront Page 7 (Travel Lift Pier) indicates that the travel lift pier design live load is 400 psf. Is this 400 psf applied to only the travel lift crane beam or on both the deck access next to the travel lift crane beam and the travel lift crane beam?

RESPONSE: Section 7.5.1.3(a) calls for 400 psf live load design. This applies to the crane beam. Live load design for the deck shall be in accordance with UFC 4-152-07 paragraph 6-3.2 for Unrestricted Pedestrian Access.

21. Please provide CADD Files for Appendix A Drawings

RESPONSE: We are unable to upload the requested files via Beta.Sam.Gov. If you wish to receive AutoCad files, please contact Cheryl Allen (Cheryl.P.Allen@uscg.mil) to receive the drawings via DOD SAFE.

22. What edition of ASME A17.1, Safety Code for Elevators and Escalators, applies to the elevator design, construction, and certification for this project?

RESPONSE: The latest edition available at the time of the design phase.

23. For each jurisdiction and locality, there is an Authority Having Jurisdiction (AHJ) that determines criteria, specifications, and building and safety code interpretation and application. Who is the AHJ for this project? State of Florida, USGC, Other?

RESPONSE: The AHJ is the Coast Guard.

24. Is this project required to comply with DoD Elevator Design Criteria UFC 3-490-06?

RESPONSE: No, the project does not have to comply with UFC 3-490-06.

25. Does the AHJ have any specific requirements for elevator design criteria?

RESPONSE: No, Propose as is.

26. Is this project required to comply with DoD Elevator Unified Facility Guide Specification (UFGS) Section 14 Conveying?

RESPONSE: See RFI #24 response.

27. Does the AHJ have specific requirements for elevator specifications?

RESPONSE: No, Propose as is.

28. We recognize that the TO Announcement places a significant emphasis on environmental impact and compliance. Given that, we have the following questions: a. Is it permissible to utilize a direct plunger hydraulic elevator with an in-ground hydraulic cylinder? b. If permissible, the cylinder well would have to be drilled into the ground approximately 45 feet for Building #101 and 35 feet for Building #105. Is the use of an in-ground elevator considered to be a negative alternative ?

RESPONSE: Negative, provide geared /traction type elevator currently specified.

29. Current ASME A17.1 requires compliance with SEI/ASCE 24. SEI/ASCE 24 requires that an elevator machine room must be located a minimum of one floor above flood zone elevations. For each building, please identify the flood zone elevation and the floor level that will meet this requirement.

RESPONSE: Please see Section 01800 paragraphs 5.5.8.9b and 5.6.8.10b: "All machinery critical to elevator operations to be located at the Second Floor or above." Refer to civil for flood zone elevation general requirements. Contractor is responsible for identifying the flood zone elevations, based on survey data.

30. The elevator safety code requires elevator acceptance inspection and testing to be conducted by a QEI Certified Elevator Inspector for ASME A17.1 Safety Code Certification. Is it intended for the DB effort to conduct QC Commissioning prior to final inspection and testing by the AHJ authorized safety code inspector?

RESPONSE: Yes, that is correct.

31. In the event of loss of normal building power, the elevators in Buildings 101 and 105 will stop running, regardless of where they are in the hoistway. Given that, a. Is it the intent of the RFP for the elevators to run in normal operation on the building emergency power generator, at rated speed, with rated load, in the event of building power failure? b. If no, should the elevator power and controls be designed to lower the elevators to the lowest landing, and open the doors, prior to being removed from service?

RESPONSE: The elevators shall operate in regular mode at loss of power, as they are on an emergency power.

32. Has a minimum size and capacity been determined for the elevators in Bldg 101 and 105?

RESPONSE: "Please see Section 01800 paragraphs 5.5.8.9b and 5.6.8.10b:

- Rated load capacity: 5,000 lb.
- Minimum Car Inside Dimensions: 6 feet 8.5 inches wide, 5 feet 6-3/16 inches deep and 8 feet 0 inches high (stretcher compliant).

The above should be considered minimums."

33. The RFP Space Adjacency Diagram indicates that Building 101 will be a 4 story building. As such, it is required to comply with “IBC 3002.4 Elevator car to accommodate ambulance stretcher. Where elevators are provided in buildings four or more stories above, or four or more stories below, grade plane, not fewer than one elevator shall be provided for fire department emergency access to all floors. The elevator car shall be of such a size and arrangement to accommodate an ambulance stretcher 24 inches by 84 inches radius corners, in the horizontal, open position.” Does this requirement provide sufficient elevator size and capacity for all of the vertical transportation needs for Building 101?

RESPONSE: The RFP Space Adjacency Diagram for Building 101 shows a three story building with a tall lower level to accommodate shop spaces. The bottom most massing represents the consolidation of the individual massing for each level provided above. In the middle of the drawing, the general spaces

to be provided for each of the three stories is listed. The same is true for the adjacency diagram provided for the Sector Building (105), except this building is only two stories.

In addition, please refer to responses to questions 31 and 34 above and Section 01800 paragraphs 5.5.8.9 and 5.6.8.10. Elevators shall be sized to be stretcher compliant. These are minimum requirements, door size and configuration need to be considered in determining cab size.

34. Re: Elevator Capacity & Loading, a. Is it intended for the elevator in Building 105 to have the same size and capacity as the elevator in Building 101? b. If no, what is the minimum size and capacity that is required for the Building 105 elevator?

RESPONSE: Yes, the size and capacity indicated for both buildings are minimum requirements.

35. Does the USCG have any special equipment that will need to be moved between floors of each building? a. If yes, what are the dimensions and weight of the largest piece for Building 101? b. If yes, what are the dimensions and weight of the largest piece for Building 105?

RESPONSE: No, propose as is.

36. RFP Para 1.5.6. (Electrical) Are any of the existing medium voltage cable fire proofing wraps that are known to contain asbestos contamination?

RESPONSE: This condition is unknown, beyond what was tested in the hazmat survey contained in Attachment C of the solicitation.

37. RFP Attachment D. . (Electrical) Are there any best available existing electrical one-line diagram drawings of the complete base wide electrical distribution system available? In PDF or DWG format? None could be found in the RFP, only a new concept base wide electrical plan.

RESPONSE: See response to RFI #17.

38. RFP Para 12. (Electrical) Is the existing incoming electrical utility from Keys Energy Services multi grounded, non-grounded or high resistance grounded system?

RESPONSE: The incoming service is multigrounded.

39. RFP Para 12.3.1.2. (Electrical) This paragraph requirement is unclear. It indicated emergency generators, but the content indicates pole lighting. Please clarify this paragraph content requirement.

RESPONSE: The paragraph is stating that the existing medium voltage equipment on the site should be replaced with new and raised, the existing building level emergency generators should be replaced with new, the existing wood poles should be replaced with new concrete poles, and the existing site pole light fixtures should be replaced with new LED heads.

40. RFP Para 12.3.1.4. (Electrical) Is the berthing of an OPC and NSC at piers D1 and D2 additional shore power loading for the piers or replaces exiting pier electrical loading? Do we add these two cutters electrical loads to the existing base electrical loading for calculations?

RESPONSE: The new NSC and OPC are bid option items (refer to drawing E-200), which would only receive utility power. Their loads would only be added if that option is exercised.

41. RFP Para 12.4.2.1. (Electrical) Please clarify. Is direct buried PVC schedule 40 conduit acceptable for just the lighting circuits?

RESPONSE: Yes, the lighting circuits can be direct buried.

42. RFP Para 12.4.6.3. (Electrical) What is the required time in minutes or hours that the BESS must provide? 1 minute or less for the Type 10 generators to be up in 10 seconds, or longer time?

RESPONSE: In the event of a power outage, the BESS should provide power for 30 minutes. The emergency loads will need to energize within 10 seconds.

43. RFP Para 12.3. (Electrical) What are the minimum primary conductor size and characteristics required for this project? 1 / C – 15KV – 350 Kcmil – Copper – EPR – Tape Shield, 133% insulation, PE jacket? Or at the electrical engineer's discretion?

RESPONSE This is to be determined by the DB electrical engineer.

44. RFP Para 1.4.1., OPTIONAL ITEM 0009: UPS Battery System and Para 12.4.1.1, BESS. (Electrical) The RFP indicated to provide as Option Item 009, a Battery Energy Storage System (BESS), also identified as a UPS (Uninterruptible Power Supply). Since this is new technology, expensive initial capitalization systems, maintenance intensive, and costly battery replacement life cycle, we wish to confirm this system is preferred for this project? Indicated in the documents is that this system was to provide "no break" power to the base, except D1 and D2 cutters, until the central generator plant has reached voltage and speed and accepted full load; type 10 is 10 seconds or less to accept load. Proposed alternatives that could provide reliable transfer to generator emergency power: 1. Option 1. A rotary UPS system instead of BESS. 2. Option 2. A small self contained UPS, such as APC, in the few strategic locations that need "no break" power. These locations could be telephone closet equipment, computer or comm rack locations. These self contained UPS would provide no break electrical for these locations maintaining communications and security until the generators are online. Other systems would incur a 10 second power outage and then power restored. These systems are typically not critical.

RESPONSE: The primary intent of the UPS is to clean the incoming power and to provide 30 minutes of power to the entire base in the event of a power outage.

Alternate means of achieving this requirement may be proposed, subject to review and approval by the USCG.

45. Missing Attachments A-D from the Solicitation

RESPONSE: See Response to RFI #89.

46. Are any of the codes listed under UFC 3-600-01, 4-47 Waterfront Facilities applicable?

RESPONSE: UFC 3-600-01 applies to this project, all parts to include section 4-47. It's up to the DB team to determine if this section has application to this project.

47. Will the fire suppression systems be required to comply with UFC 3-600-01?

RESPONSE: Yes

48. Will the fire alarm systems be required to comply with UFC 3-600-01?

RESPONSE: Yes

49. RFP Section 01 80 00, 9.0 does not identify any fire protection or fire alarm systems for the Central Generation Plant. Are fire suppression, fire alarm and detection or mass notification systems required for the Central Generation Plant. If so, will they follow UFC 4-021-01?

RESPONSE: A fire suppression system is not required for the Central Generator Building.

50. RFP Section 01 80 00, 12.5.20.3 notes that fire alarm pull stations and speaker strobes are to be provided at the piers. Does include all three (D1, D2, and D3) piers?

RESPONSE: This is referring to covered piers (the new covered mooring between D1 and D2).

51. For the fire alarm speakers located on the piers, is it acceptable to use High-Power Speaker Arrays (HPSA) or omni-directional speakers?

RESPONSE: A combination speaker/strobe (weatherproof) is required.

52. RFP Section 01 80 00, 12.5.20 notes SLC circuits shall be Class A, Style 7 but also notes SLC circuits must be Class A, Style 6. Are SLC circuits required to be Style 6 or 7?

RESPONSE: Style 7.

53. What quantity and spacing requirement should be followed for the placement of Local Operating Consoles (LOC)?

RESPONSE: Please see Command Center Space Criteria Sheet and Room Outfitting Plan for Guidance on quantity and spacing requirements.

54. Are Emergency Air Distribution Shutoff switches required at each LOC or where should these be placed?

RESPONSE: Provide Emergency Air Distribution Shutoff switches at appropriate exit doors.

55. Has the Coast Guard started any regulatory process related to the soils contamination beyond the soils report in the RFP?

RESPONSE: The Florida Department of Environmental Protection has been notified of the discovery of contaminants in the soil and provided a copy of testing reports performed to date. However, no official regulatory processes have commenced pursuant to that initial communication.

56. Is there any groundwater quality data available?

RESPONSE: No, there is no groundwater quality data available.

57. Spec sections 01800 6.3.1.3 and 01800 6.4.1.3. The RFP discusses the use of access flooring, however, the RFP does not designate loccations or additional requirement details, please advise.

RESPONSE: RFP spec sections 01800 6.3.1.3 & 6.4.1.3 provide minimum load criteria for conditions that are generally found in similar facilities. Use load magnitudes per these sections as appropriate for proposed design.

58. 01800 5.5.8.9b Elevator Spec requests a geared elevator. Please advise if a gearless elevator is acceptable?

RESPONSE: Please refer to Section 01800 paragraphs 5.5.8.9 and 5.6.8.10 for minimum requirements. Geared elevators should be assumed for bidding purposes. Hydraulic elevators are not allowed.

59. 01800 5.5.8.9b Elevator Spec requests a speed of 200 fpm. 200 fmp doesn't work for a 3 stop elevator. Please confirm 150 fpm is acceptable.

RESPONSE For a geared elevator as specified, 200 FPM should be achievable.

60. 01800 5.5.8.9b Elevator Spec requests that all machinery critical to elevator operations need to be located on the 2nd floor or above. Is a hydraulic elevator acceptable?

RESPONSE: Please refer to Section 01800 paragraphs 5.5.8.9 and 5.6.8.10 for minimum requirements. Hydraulic elevators are not allowed.

61. The current closing date for proposals of March 1st falls on a Monday. In order to better support the finalization of bids, which requires close coordination with the subcontractor/vendor communities, would the Government please reassign the bid closing date to a midweek date?

RESPONSE: Proposal Due Date is extended to March 16, 2021.

62. Would the Government please provide copies of all solicitation drawings in native AutoCAD (.dwg) format?

RESPONSE: We are unable to upload the requested files via Beta.Sam.Gov. If you wish to receive AutoCad files, please contact Cheryl Allen (Cheryl.P.Allen@uscg.mil) to receive the drawings via DOD SAFE.

63. There is very little information regarding scope of desired landscape design. Existing landscape conditions are minimal with a majority of site is sodded. What standard is required for the planting in

terms of fullness and lushness? Is there a code minimum or is the goal simply as much that the budget allows?

RESPONSE: The landscape is anticipated to be restrained to be consistent with the existing site and security requirements but to include additional planting areas and planting types beyond sodding. The planting should be focused on providing water quality and heat island benefits per the Florida Friendly Landscape design principles by maximizing tree canopy cover and replacing sod areas with low-water use native ground covers or shrubs where consistent with security requirements.

64. The NMACC IDIQ includes FAR 52.211-15, Defense Priority and Allocation Requirements; however there was no DPAS Rating in the TOA. Will this task order be a rated order? If yes, what is the rating?

RESPONSE: No.

65. The TOA includes 4 Base Items and 9 Option Items. Will the Government please confirm that if the options are NOT exercised at the time of award, they cannot be awarded unilaterally.

RESPONSE: Confirmed.

66. The TOA includes 3052.222-72 Combating Race and Sex Stereotyping (Deviation 2021-01)(NOV 2020). This clause implements Executive Order 13950, however on December 22, 2020 a nationwide preliminary injunction was issued by the US District Court for the Northern District of California prohibiting OFCCP from implementing portions of this order. And on January 20, 2021, Executive Order 13985 revoked Executive Order 13950. Will the Government please remove this clause from the solicitation?

RESPONSE: Yes, the Government will remove the clause. See Amendment.

67. The requirements of the Locker Rooms – Women's/Men's Restroom, Lockers, and Showers: Common Wash-Down/Drying Area described on pages 523/724 – 530/724 are unclear. The plan shown on page 523/724 does not illustrate the requirements described on the pages that follow. It looks like the wrong Room Outfitting Plan may have been inserted. The same plan was shown on page 480/724. Would the Government please clarify and/or provide the appropriate Room Outfitting Plan?

RESPONSE: "The plans for these specific spaces are intended to be conceptual and do not provide a requirement for a final layout. They are provided for reference only.

Please refer to note 2 at the bottom of the Room Outfitting plans:
""Example plan provided to indicate general layout intent for reference only. All required FF+E not shown on plan above. See individual space data sheets for complete FF+E requirements, BFR maximum area allowances, and additional notes.""

This is because these spaces should be combined with the restroom and shower rooms and possibly other similar spaces such as wash-down and drying rooms depending on the final configuration to be determined by the Contractor during the design process. In addition, final plumbing fixture counts and associated restroom and shower room areas need to be sized based on the Contractor's proposed design as noted on the relevant Space Criteria Sheets:

Minimum plumbing fixture count shower and toilet areas shall be sized per the occupancy load, classification, and gender split per the International Plumbing Code (IPC). Plumbing fixture count may be increased to accommodate mission/crew needs.

The FF+E quantities and program areas listed on the Space Criteria Sheets for these spaces provide accurate minimum requirements to establish a baseline for bidding purposes. "

68. Drawings C110 and C111 indicate the first and second floor elevations for Bldg. 101 to be +6.5 and +31.5 respectively, resulting in a floor-to-floor height of 25 feet. Would the Government please confirm this requirement?

RESPONSE: The elevations shown on the civil drawings are schematic. Contractor DB design team shall design the buildings as required to meet the specific building needs and requirements.

69. Drawings C120 and C121 indicate the first and second floor elevations for Bldg. 105 to be +5.5 and +25.5 respectively, resulting in a floor-to-floor height of 20 feet. Would the Government please confirm this requirement?

RESPONSE: See #68 response.

70. Should all the Central Generation Plant spaces be elevated above the 100-year flood plain elevation?

RESPONSE: Central Generation Plant shall be designed such that the equipment and systems contained within are operational in an emergency (including 100-year flood event). Elevating all critical equipment and systems at least 3 feet above the 100-year flood elevation is one design option.

71. Paragraph 11.8.6 is titled ""LOCKER RROM/LAUNDRY REQUIREMENTS"" and 11.8.6.1 further describes the dehumidification for ""wet locker rooms"". There is not a reference in paragraph 11.8.6.1 regarding Laundry Rooms. As the only laundry room is for Personnel Support and the Space Criteria Sheet does not indicate dehumidification is required, would the Government please confirm that this space does not need to meet the requirements of paragraph 11.8.6.1?

RESPONSE: The Space Criteria calls for supply air from a building AC system, thus implying the space will be provided with sufficient supply air (directly or air transfer) to compensate for dryers exhaust; thus no dedicated dehumidification unit is required.

72. Regarding paragraph 11.8.9.2, would the Government please confirm that supply air ductwork shall be sized with a maximum air pressure drop of 0.08""/100 LF includes ductwork upstream of VAV boxes?

RESPONSE: The supply and return ductwork for air conditioning systems shall comply; return air plenums are not permitted.

73. Space Criteria Sheet for Boat Bay states dehumidifiers to maintain 50-60% relative humidity. Paragraph 11.10.2 states that ""Boat maintenance bays shall not be conditioned"". Would the Government please confirm that dehumidification is not required?

RESPONSE: Boat Bay shall be provided with a mechanical ventilation systems sized to keep indoor DB temperature at 10°F (max.) above the outdoor BD temperature. Therefore, dehumidification is not required.

74. Paragraph 11.4.9 makes reference to ""Fiberglass Shops"". These do not appear to be listed on the room list. Would the Government please clarify?

RESPONSE: Fiberglass Shops do not apply to this scope.

75. Paragraph 10.7.4 requires that water heaters are sized per Section 50, Table 10 ""Industrial Plants"" of the ASHRAE Applications Handbook. This table requires 225 GPH demand. When this is multiplied by the 14 showers for the Berthing Rooms, one requires storage of over 3000 gallons. Can the Berthing Rooms and associated kitchen be sized per the ""Apartment House"" column of Table 10 with a separate heating system and the remainder of the Building utilizing the Industrial Plant demand?

RESPONSE: No, it cannot be sized per the "Apartment House" demand. It appears the proposed calculation omitted a Demand Factor of 0.4, which will result in smaller Storage Tank Capacity. However, realizing limitation of the table at small number of fixtures, we sized the Hot-Water demand and Tank capacity for "Club" building type.

76. Will the petroleum-affected soils and groundwater require compliance with Chapter 62-780, Florida Administrative Code (FAC)? Will the Florida Department of Environmental Protection (FDEP) be involved in the regulation or be involved in the review of technical reports?

RESPONSE: Yes, the project will require compliance with the cited Florida Administrative Code and/or Monroe County codes. As such, FEDP and/or Monroe County officials will be involved in the review of technical reports.

77. Will the Aboveground Storage Tanks (AST) removal activities require compliance with Chapter 62-762, Florida Administrative Code (FAC)? Will a Tank Closure Assessment Report (TCAR) be required to document to removal of the ASTs?

RESPONSE: Yes, these activities will require compliance with the cited Florida Administrative Code and/or Monroe County code and will require the development of a TCAR.

78. What is the obligation for remediation during construction? Is the obligation to remediate the 'work zones' completely or is it to only address impacted sediments, soils, and/or groundwater that is disturbed as required for demolition and construction?

RESPONSE: This project's primary purpose is construction, not remediation. As such, the only areas expected to be remediated are those within the footprint of construction. As the Government's previous sampling was very limited in scope, the contractor should assume that additional testing may be required to determine, more definitively, the limits of contamination. From that additional testing, it may be determined that certain areas are free of contaminants altogether or contaminants aren't found at shallower depths and special treatment of soils and groundwater aren't required in those areas.

79. Is there a requirement to provide an Engineering Control cap across the surface of the development? Such a cap would consist of the impervious building and hardscape, but also would require a 2-foot cap of clean soils in landscaped areas.

RESPONSE: The Government does not have a requirement to provide a control cap, but the contractor should refer to the previously cited Florida Administrative Code and/or Monroe County code to determine if those regulatory programs require one.

80. What final environmental closure document(s) are required upon completion of redevelopment activities to document the handing of contaminated materials and the surface closure cap details?

RESPONSE: The Government does not have a requirement to provide a closure document, but the contractor should refer to the previously cited Florida Administrative Code and/or Monroe County code to determine if those regulatory programs require one. If it is determined that there is no state or local requirement to provide a closure document, the contractor should prepare a brief summary report that details the amount of contaminated soil removed from the site and the volume of groundwater treated over the course of the project.

81. Will the FDEP or any other regulatory agency require pre-construction environmental documents, including but not limited to a Soil Management Plan (SMP), Health & Safety Plan (HASP), Air Monitoring Plan (AMP), Soil Re-Use Plan, etc.?

RESPONSE: The contractor should consult the previously cited Florida Administrative Code and/or the Monroe County code to determine if these documents are necessary.

82. Will the excavated soils be allowed to be re-used onsite in utility trenches, foundation backfilling, and/or beneath parking lots and buildings? Will there be any specific environmental capping requirements?

RESPONSE: As detailed in the RFP, all excavated soil should be assumed to be contaminated with diesel range organics and disposed of at an approved disposal facility offsite unless additional testing determines that it is not contaminated.

83. Does the Government have recent groundwater quality data that can be utilized for dewatering effluent treatment calculations?

RESPONSE: The Government has not been monitoring groundwater quality at the site.

84. In the event that petroleum free floating product (FFP) is encountered during excavation within work zones, is there an obligation to further assess or remediate FFP prior to backfilling excavations upon completion of construction activities?

RESPONSE: The contractor should consult the previously cited Florida Administrative Code and/or the Monroe County code to determine the requirements of those regulatory programs.

85. Will the site be made available prior to the onset of demolition and construction work for the collection of soil and groundwater samples for dewatering effluent calculations and landfill pre-approval

disposal soil characterization? Are there existing monitoring wells onsite that can be sampled for this purpose?

RESPONSE: Yes, the site will be made available prior to construction for the collection of additional soil and groundwater samples. There are not existing monitoring wells present onsite.

86. What is the receiving body of water for proposed dewatering effluent? Does the site include a gravity-fed storm water injection well for disposal of dewatering effluent following pre-treatment? Will the dewatering effluent allowed to be discharged to sanitary sewer?

RESPONSE: The site does not currently have a gravity-fed stormwater injection well but the project scope includes the placement of one. The contractor will need to reference requirements of Florida Administrative Code, Monroe County code, and Florida Keys National Marine Sanctuary requirements to determine whether it is permissible to discharge treated effluent and/or construction related stormwater to tidal waters or whether it must be retained onsite. Typically, discharge of effluent to sanitary sewer is not preferred.

87. Are there any project- or base-specific, specialized levels of Personnel Protective Equipment (PPE) required that are not specifically outlined within the RFP?

RESPONSE: There are not any project- or base-specific levels of PPE required. The contractor will be expected to comply with OSHA requirements.

88. Is there project- or base-specific security training or special background check requirements for personnel being on-base?

RESPONSE: No. As far as access procedures go, contractors will need to receive Navy access since Sector is located at the back of the Navy Base. The Navy Pass and ID Office is Located at NAS Key West - Boca Chica Annex. Typically, below is required.
Company Name:
Contractors Name:
Contractors DOB:
Contractors DL Number:
Citizenship Status:

REAL ID rated drivers licenses are required or US. Passport when checking in. Background checks will be completed at that time and if the contractor has had a felony in the past 10 years they will not be allowed on base. Also, if anyone is not a Naturalized citizen they have extra documentation that will be needed. Additionally, they need to have up-to-date vehicle registration and proof of insurance for the vehicle they plan to drive on base.

For COVID precautions, contractors will be required to wear masks at all times while on Base and maintain social distance of 6 feet at all times.

89. Attachments A, B, C & D of Section 4 were not included in the solicitation. Would the Government please make these documents available?

RESPONSE: Please note that Attachment D is not a single document but is a mix of as-built drawings and site photos. Files have already been uploaded on December 31, 2020. See Amendment for Attachment A, B, and C.

90. Would the Government please clarify the datum of the flood zones depicted in the survey? They appear to be based on NGVD datum while the topographic data on the survey is based on NAVD datum. Per the notes on the survey, there is a 1.34' differential between the two datum.

RESPONSE: Reference Surveyor's Report note 6 on survey, sheet 1 of 6. Elevations indicated on the survey are based on NAVD 1988. To convert to NGVD, 1.34' needs to be added to the values shown in the survey.

91. The current closing date for inquiries related to the solicitation is February 8th. Due to the highly complex environmental challenges on this project on both land and water side, would the Government please extend the deadline for questions to February 19th in order to ensure proper scope clarification and subsequent best value proposals to the Government?

RESPONSE: RFI Deadline is extended to February 22, 2021. Any questions received after this date will not be answered.

92. There does not appear to be direction regarding minimum font size to be used in offeror's proposals. Would the Government please confirm that the minimum font sizes to be used in offeror's proposals is 10 pt for narrative text and 8 pt for use in graphics?

RESPONSE: Confirm, the minimum font size of 10 pt for narrative and 8 pt for graphics is acceptable.

93. Can a single line diagram for the existing site medium voltage distribution be provided to show all of the site circuits (conductor sizes and types, duct sizes, etc)?

RESPONSE: See response to RFI #17.

94. Can a new single line diagram be provided showing the expected tie-ins to the existing (to be replaced) site medium voltage circuits?

RESPONSE: See response to RFI #17.

95. Can information on the fuel tank sizes and types (above ground, below, belly, etc) be provided for the six generators to be replaced?

RESPONSE: Building 48 generator has a separate day tank apart from the generator. All others are standard sub-base tanks supplied with the generators.

96. On several electrical site plans, a keyed note #4 reads ""REPLACE EXISTING POLE MOUNTED LIGHT FIXTURE WITH NEW LED EQUIVALENT LIGHT FIXTURE. PERFORM PHOTOMETRICS STUDY TO ENSURE THAT THE REQUIRED LIGHT LEVELS ARE MET…"". It may be that there is no way to achieve required light levels by replacing the fixture heads. New LED fixtures will most certainly provide better, more efficient lighting but existing pole spacing and locations

could be a limiting factor. Can we assume that the intent is to provide at a minimum the current levels of lighting?

RESPONSE: Yes. The intent is to replace the existing heads with a brighter, more energy efficient LED fixture.

97. Paragraph calls for new Fire Alarm system for the new ANT building and Sector Engineering building. Can we assume that the new Central Energy Plant (Option Item 0003) will also require a Fire Alarm system?

RESPONSE: A fire alarm system is not required for the central plant.

98. Has the Government received any feedback/comments from the public agencies that were provided the Draft Environmental Assessment in November 2020? If so, would the Government please provide them as well as any responses?

RESPONSE: The Government received concurrence with a finding of no effect to historic resources and received concurrence with a finding that the project was consistent, to the maximum extent practicable, with the Coastal Zone Management Act. National Marine Fisheries Service ESA and Florida Keys National Marine Sanctuary have asked for additional information in advance of permitting/concurring with the Governments assessment of impacts. These consultations will likely need to be deferred until design has commenced. No responses have been received from the U.S. Fish and Wildlife Service for ESA or from National Marine Fisheries Service for Magnuson-Stevens Fishery Conservation and Management Act.

99. Paragraph 10.7.6, the quantity of air outlets exceeds the quantity indicated on the Room Data Sheets. Please confirm that the quantities shown in Paragraph 10.7.6 supersede those shown on the Room Data Sheets.

RESPONSE: Confirmed that the quantities shown in Paragraph 10.7.6 supersede those shown on the Room Data Sheets.

100. Paragraph 11.8.6 is titled ""LOCKER RROM/LAUNDRY REQUIREMENTS"" and 11.8.6.1 further describes the dehumidification for ""wet locker rooms"". In order to properly size a dehumidification unit the amount of moisture to be removed and the amount of time for removal is required. It would appear that the worst case room is the Common Gear Storage Room with a total of 84 lockers (men's and women's). Can one assume that 2/3 of the lockers contain wet suits holding 2 pounds each of water and the water needs to be removed in a 16 hour period or should other conditions be used? Please confirm that locker rooms are to be maintained at 75 degrees and 60% relative humidity.

RESPONSE: The Common Gear Storage Room shall be air-conditioned form the general building AC system and exhaust system, as specified on Space Criteria Sheets, maintained at 75°F and 60% RH. The proposed water / latent load is reasonable and acceptable.

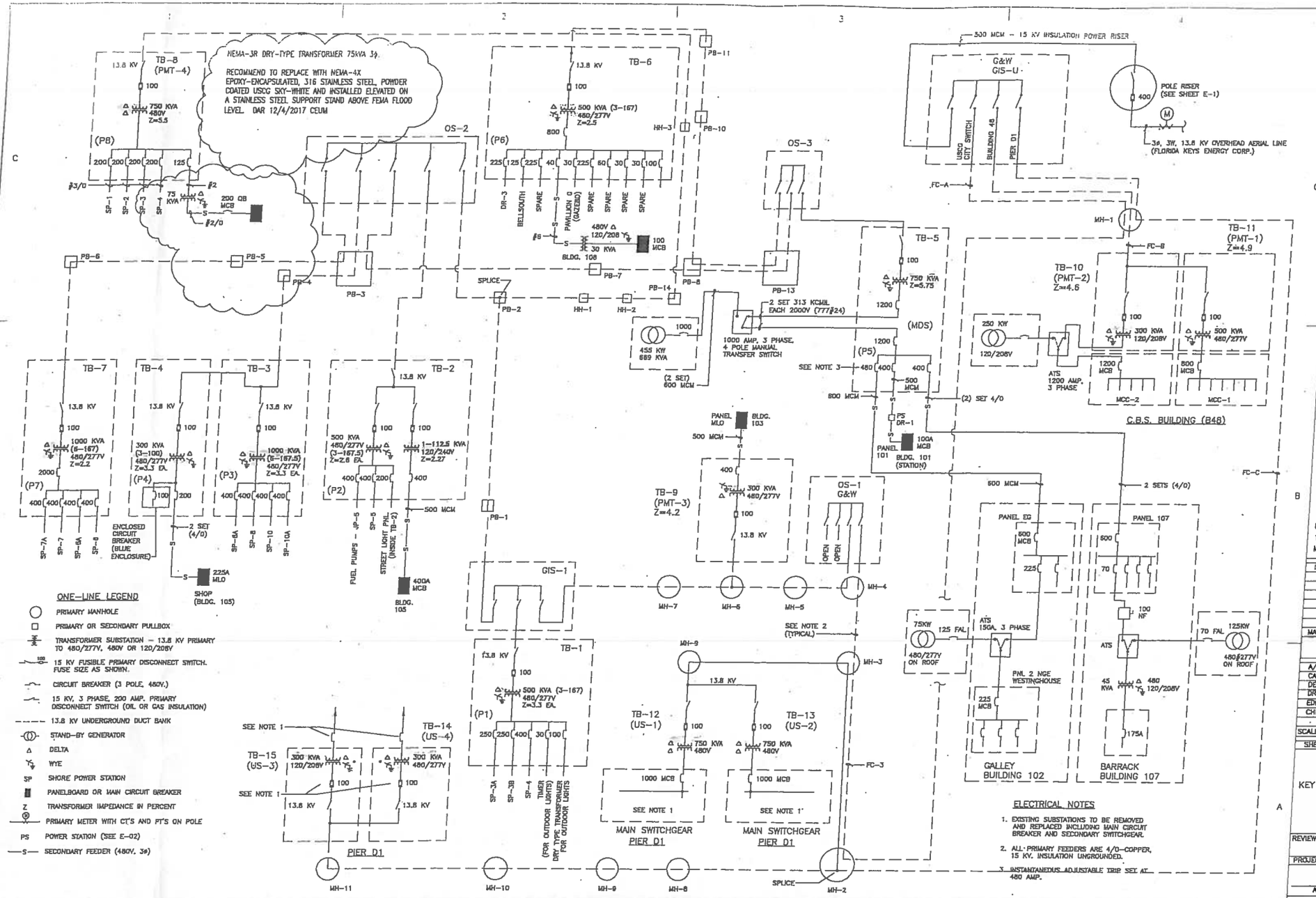
101. Paragraph 11.3.9 states that ""The shop areas and flammable storage areas shall also be heated and cooled except at the boat maintenance bays where refrigerant air conditioning is not required."" The Room Data Sheet for the Boat Bay states to provide dehumidifier sized to maintain 50-60% relative

humidity. Since the relative humidity cannot be maintained without refrigerant air conditioning, please confirm that a dehumidifier is not required.

RESPONSE: Refer to RFI #73 response.

Note

Failure to acknowledge amendments may be cause for rejection of your offer.



13.8 KV ELECTRICAL ONE-LINE DIAGRAM

SCALE: N.T.S.

PBSJ
2601 SW 187TH AVE.
MIAMI, FL 33172-2307
PHONE: 305.592.7275 FAX: 305.597.0229
CONSULTANTS

ENGINEER OF RECORD:
PEDRO L. TREVIN
ELECTRICAL P.E. No. 15309

U. S. COAST GUARD
CIVIL ENGINEERING UNIT
MIAMI

USCG CEU MIAMI
15608 SW 117TH AVE
MIAMI, FLORIDA 33177

ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	
DESIGNED BY:	JH
DRAWN BY:	AR
EDITED BY:	
CHECKED BY:	PLT
SCALE:	PLOT SCALE:

SHEET TITLE

ELECTRICAL EVALUATION
USCG SECTOR KEY WEST
KEY WEST FLORIDA

ELECTRICAL
ONE-LINE DIAGRAM

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR
APPROVING OFFICER		DATE

PROJECT NUMBER	DRAWING NUMBER
07-M04036	M1286-D
DISCIPLINE/SHT NO	SHEET 4 OF 5
E-03	

15,000 KVA

U.S. Department of Homeland Security

United States Coast Guard

Attachment 7

AECOM Imagine it. Delivered.

Final Site Survey Report

USCG Sector Key West
Key West, Florida

U.S. Coast Guard, Civil Engineering Unit Miami

Task Order No. 70Z05018DAECOMT06
AECOM Project No. 60587113

June 21, 2019

Quality information

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Revision	Revision date	Details	Authorized	Name	Position

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1.0 Executive Summary

The United States Coast Guard (USCG) Civil Engineering Unit (CEU) Miami retained AECOM Technical Services, Inc. (AECOM) (Contract No. 70Z05018DAECOMT06) to perform hydrographic survey and benthic survey services in advance of future maintenance dredging and facility repairs at the USCG Sector Key West. The purpose of this project was to conduct a hydrographic survey surrounding the Sector and to conduct a benthic resource survey. The benthic resources survey was conducted to identify the presence and/or absence of stony coral resources attached to the small vessel pier pilings, adjacent bulkheads, and sea floor. The survey also evaluated potential areas for seagrass beds located within the basin.

This report provides the results of the hydrographic survey, describes the benthic survey methods, and includes the results from the survey of Sector Key West, conducted on December 3 through December 7, 2018. The following information summarizes this report:

- A hydrographic survey was completed around the basin by Gahagan & Bryant Associates, Inc. during December 3 through December 7, 2018.
- AECOM's Scientific Dive Team (SDT) completed a benthic resource survey, which included documentation of the presence and quantities of coral species. The seagrass survey included the area encompassing the small vessel piers, adjacent bulkheads and immediate basin area.
- Observation data collected along the twelve (12) transects performed within the survey footprint found no areas inhabited by seagrass species.
- A total of one-thousand six-hundred nineteen (1,619) hard (scleractinian) corals were identified and measured by the AECOM SDT within the complete survey area. Twenty-one (21) different species were found, which totaled 209,668 cm^2 in area. The most common three species*, Siderastrea siderea*, *Siderastrea radians*, and *Stephanocoenia intersepta* comprised 53% of the total corals by area. No federally-listed coral species were observed to exist within the project survey limits; however, any construction and/or dredging activities that may impact the stony corals will require regulatory coordination including the United States Army Corp of Engineers, National Marine Fishery Service, Florida Department of Environmental Protection, and Florida Fish & Wildlife Conservation Commission. Work proposed in areas where coral colonies were measured at 10 cm or greater in size may require transplantation to an appropriate recipient site. Additionally, mitigation is likely for corals colonies below the 10 cm size threshold.
- To faciliate various future dredging and construction requirements, coral totals are further broken down in this report into summaries for the following areas: North Bulkhead, East Bulkhead, and Pilings.
- Biological assessment information has been included to supplement the benthic survey.

2.0 Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
BMP	Best Management Practice
CEU	Civil Engineering Unit
DOP/DEP	Dive Operations Plan / Dive Emergency Plan
EFH	Essential Fish Habitat
FDEP	Florida Department of Environmental Protection
FMP	Fishery Management Plan
FWC	Florida Fish & Wildlife Conservation Commission
GBA	Gahagan & Bryant Associates, Inc.
HAPC	Habitat Areas of Particular Concern
˚F	Degrees Fahrenheit
ME1	Maritime Enforcement Officer First Class
MLW	Mean Low Water
NASKW	Naval Air Station Key West
NMFS	National Marine Fishery Service
NOAA	National Oceanographic and Atmospheric Administration
SAV	Submerged Aquatic Vegetation
SDT	Scientific Dive Team
SOW	Scope of Work
USCG	United States Coast Guard
USACE	United States Army Corp of Engineers
USFWS	United States Fish & Wildlife Service

3.0 Introduction

The United States Coast Guard (USCG) Civil Engineering Unit (CEU) Miami retained AECOM Technical Services, Inc. (AECOM) to perform hydrographic survey and benthic survey services in advance of future potential maintenance dredging and facility repairs at the USCG Sector Key West. The contract for this work, 70Z05018DAECOMT06, was awarded on August 16, 2018. The hydrographic survey and benthic survey activities and results are detailed in the following sections.

3.1 USCG Operation of Sector Key West

The USCG Sector Key West is located at 100 Trumbo Road in the town of Key West, Florida (**Figure 1 – Project Location Map**). The USCG maintains several response boats for mission operations, including marine environmental protection, aids to navigation, ports, waterways, law enforcement and search and rescue. Sector Key West has a unique area of responsibility, which includes 55,000 square miles that borders the territorial seas of Cuba and the Bahamas.

3.2 Project Specifics

The Project Title is: Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units

The Project Number is: 10207203

A client kickoff information meeting was held via teleconference between USCG and AECOM staff on September 12, 2018.

3.2.1 Operational Criteria / Requirements

According to the project Scope of Work (SOW), the purpose of this project is “to conduct hydrographic and benthic surveys within the area surrounding the waterfront bulkhead of pier D2, the travel lift pier and adjacent mooring dolphins, and the small boat mooring piers, Pier 1, Pier 2, Pier 3, and Pier 4, including all surrounding dolphins.” Based on input from the USCG during finalization of AECOM’s scope of work, it was clarified that the benthic survey would be limited to Pier D-2’s small boat mooring piers, adjacent mooring dolphins, and adjacent bulkheads. The benthic survey was conducted in accordance with the National Marine Fishery Service (NMFS), Florida Keys National Marine Sanctuary, United States Army Corp of Engineers (USACE), Florida Fish & Wildlife Conservation Commission (FWC), and Florida Department of Environmental Protection (FDEP) regulations as well as the National Oceanographic and Atmospheric Association (NOAA) protocol.

3.2.2 Comments / Suggestions Collected

During the survey, USCG personnel indicated that a derelict vessel was within the basin following Hurricane Irma that was thought to be removed; however, the SDT found a vessel resting on the sea floor at the northern foot of Pier 1. This may be the same vessel. Additionally, the SDT observed an all-terrain vehicle resting upside down on the sea floor under the foot of the easternmost small vessel pier. No additional comments or suggestions were collected from USCG Sector personnel.

3.3 Reference Documents and Drawings

A limited review of several documents was performed in order to gain additional perspective on history and dredge maintenance requirements at this Sector. Documents reviewed included data files provided by the USCG, as well as other documents obtained with internet searches. The filenames, source, dates, and brief descriptions are offered below.

Filename	Source	Dates	Brief Description
1020703_Spec	USCG	7/2017	Section 1.5 Hydrographic Survey
XXXXXXC01.dwg	USCG	8/2008	Hydrographic Survey (USCG Sector Key West)

See **Appendix A - Reference Report Excerpt and Drawing**.

In review of the aforementioned documents, it was evident that the benthic survey area averages approximately 30 feet in depth. Additionally, based on the water depth and geographical location of the on the site, the presence of several coral species would be likely. Based on these documents, AECOM personnel pre-planned the approach to conducting the benthic survey in the Dive Operations Plan/Dive Emergency Plan (DOP/DEP). Additionally, AECOM retained the hydrographic surveyor, Gahagan & Bryant, Associates (GBA), to provide additional safety support from their vessel while dive operations were conducted at the fringes of the survey areas.

4.0 Existing Conditions and Survey Setup

4.1 Site Description

The USCG Sector Key West is located at 100 Trumbo Road within the Trumbo Point Annex of Naval Air Station Key West (NASKW) in the town of Key West, Florida. The Sector is surrounded by the Gulf of Mexico's Fleming Key Cut to the north, Key West Bight to west, and by commercial and residential properties to the south and east.

Sector Key West has operated from the Trumbo Point Annex since 1977, and currently buildings exist on and adjacent to three main concrete piers, D-1 through D-3. Pier D-1 is the southernmost pier and is 1,200 linear feet in length and contains approximately 2,540 feet of bulkhead frontage, which is primarily utilized by USCG Cutters. A 250 linear foot concrete finger pier extends to the south from the western end of Pier D-1. Pier D-2 is roughly "Z"-shaped and is 1,200 linear feet in length and contains approximately 2,300 feet of bulkhead frontage. At the southern base of Pier D-2, three finger piers, each approximately 60 linear feet with its own dolphin, extend to the south and provide mooring for the small and medium sized response boats. In the central-southern wall of Pier D-2, there is a traveling boat lift with approximately ten dolphins. The rest of Pier D-2 is utilized by USCG Cutters and other support ships. Pier D-3 is the northernmost pier and is shaped like a notched rectangle and is 750 linear feet in length and contains approximately 1,660 feet of bulkhead frontage. Pier D-3 is utilized by other support ships.

4.2 Pre-Field Survey Contacts

AECOM contacted USCG Maritime Enforcement Officer First Class (ME1) Kelley Burkett via telephone and discussed the work scope, estimated time of arrival, and arranged to meet upon arrival. Additionally, Ms. Burkett coordinated with the NASKW badging office to arrange access for AECOM and GBA personnel.

4.3 Field Survey

On Monday, December 3, 2018, the full survey team, consisting of AECOM's Scientific Dive Team (SDT) and GBA, the licensed hydrographic surveyor, reported to NASKW's Boca Chica Field and obtained passes for the Trumbo Point Annex to access USCG Sector Key West. Upon receipt of the required NASKW passes, AECOM and GBA personnel completed final pre-diving project logistics.

On the following day, December 4, 2018, AECOM's SDT and GBA arrived at USCG Sector Key West to commence in-water activities. The survey team met with USCG personnel, including ME1 Kelley Burkett and the Officer of the Day, and conducted a formal Health and Safety meeting. After the meeting, the

AECOM SDT and GBA conducted a preliminary topside visual assessment of the survey area and reviewed the DOP/DEP. GBA personnel were then cleared to begin hydrographic survey activities detailed below in Section 3.0. The AECOM SDT also began benthic survey activities as detailed below in Section 4.0.

5.0 Hydrographic Survey

GBA utilized the *Rising Tide*, their 25-foot custom survey vessel, to perform a hydrographic survey as shown in **Figure 2 – Hydrographic Survey Area**. Survey equipment was calibrated for field conditions, which included establishment of land controls, transducer draft, vessel dynamic draft adjustments, and sound velocity of the water column. The survey included numerous transects, spaced approximately twenty-five (25) feet apart, and generally oriented perpendicular and/or parallel to the seawalls.

Throughout the survey week, several vessels arrived and departed their docking locations. GBA successfully surveyed many of these locations as they became available; however, four USCG cutters, four USCG small and medium response boats, and one U.S. Customs and Border Protection interceptor vessel remained in place in the Sector basin throughout the duration of the survey. GBA maneuvered their survey boat between these vessels and as close as feasible to their perimeters to collect the maximum amount of data.

The hydrographic survey drawings are included as **Appendix B – Hydrographic Survey Maps**. The drawings C-01, C-02, and C-03 display elevations recorded laterally across the survey area requested in the SOW. Elevations are referenced to the North American Vertical Datum of 1988. The hydrographic survey drawings also include notes pertaining to date of survey, survey equipment and methods, pertinent conditions at time of survey, and data reduction. For dredging considerations, eighty (80) typical cross-section drawings are provided of the basin sea floor as C-04 through C-09.

6.0 Benthic Resource Survey

AECOM conducted a limited benthic resource assessment to identify the presence and absence of stony coral resources attached to the seawalls, pier pilings, and sea floor. The benthic survey area is shown in **Figure 3 – Benthic Survey Area**. Please note that although the categories of other biota were observed during the survey including microalgae, sponges and gorgonians, they were not required to be documented.

6.1 Benthic Physical Setting

In general, the seafloor within the survey area was typical of a low-energy environment, consisting of a topographically flat basin comprised of calcareous silt and fine sands and small shell fragments. The surface of the seafloor was mostly covered by a thin algal layer with numerous mounds created by marine worms. Within feet of the bulkheads, the seafloor rapidly transitions to assorted mixed rock and/or concrete debris. Additional debris identified included various pier hardware, pier ladders, glass bottles, bicycles, a dinghy, an all-terrain type cart vehicle, and an old motor vessel with motor.

The benthic survey area was shielded from significant wind and wave effects and had virtually no current. Thus, dives were limited for safety purposes only by depth, which averaged 30 feet. The water temperature throughout the survey averaged 77 degrees Fahrenheit (˚F). Water clarity was moderate when undisturbed, averaging 5 to 15 feet, and the weather was typical for December in Key West with wind predominantly from the northeast. The air temperature during the survey ranged from a high of 83˚F to a low of 61˚F.

6.2 Survey Materials and Methods

The benthic assessment was conducted from December 3 through December 7, 2018. The survey consisted of in-water data collection on the living stony coral resources attached to the small vessel pier pilings, adjacent bulkheads, and sea floor. AECOM's four-person SDT is comprised of a divers' attendant and three divers in rotation, which are trained in coral identification. Divers deployed from the east basin bulkhead, which is terraced to the water and is within the survey area. During the initial dives, the divers used weighted measuring tapes and stakes to lay out primary transect lines to base the survey. AECOM divers completed the data collection along the survey transects shown in **Figure 3**. Additional measuring tapes were utilized at 25-foot intervals to set and maintain the integrity of these transects during the recording of field observations. AECOM notes that once the transect lines were established, identification of submerged aquatic vegetation (SAV), including a search for the federally threatened Johnson's seagrass (*Halophila johnsonii*), was prioritized.

Divers conducted the assessments by generally traveling along each side of the transect lines to complete visual census of the following features: pier pilings, bulkheads, seafloor, and a 50-foot buffer zone to the west and south of the survey area. Each piling within the survey area, which totaled of 120 pilings, was visually assessed from the approximate mean low water (MLW) mark down to the seafloor and reference photographs were taken (**Appendix C – Photographic Log**). Corals were identified to species, measured to the nearest half centimeter along three axes to determine colony area, and their approximate vertical location on the piling, bulkhead and/or seafloor were recorded. MLW was determined from available tidal information and confirmed during the survey by biological indicators on the concrete pilings.

The survey was conducted to maximize diver safety and minimize vertical travel within the water column. A total of twelve (12) transects were established within the project footprint limits, which measured approximately 0.91 acres (39,750 square feet), as follows:

- One (1) transect (T1), measuring 265 linear feet, was established along the northern bulkhead (oriented generally east-west) within the basin;
- One (1) transect (T2), measuring 150 linear feet, was established along the eastern bulkhead (oriented generally north-south) within the basin;
- Ten (10) additional transects (T3 through T12), each spaced 25 linear feet apart, were established perpendicular to T1 and extended 150 linear feet to the south within the basin; and
- An additional one hundred and twenty pier and dolphin pilings (numbered 1A through 116) were inspected within the basin.

Following the guidelines established by the NOAA, NMFS Protocol for Benthic Surveys of Coral Resources, coral surface area for all coral colonies for this survey were simply determined as length x width only. Please note that during construction design, calculations for corals ≥10 cm diameter must take into account a third dimension (e.g. height). Because the surface area of a dome (or ½ of the surface area of an oblate, prolate, or scalene ellipsoid) cannot be easily expressed by a simple elementary function, the following approximate formula for an ellipsoid (Knud Thomsen, 2004) should be utilized, and divided in half for a dome:

$$S \approx 4\pi \left[a^p b^p + a^p c^p + b^p c^p) / 3\right]^{1/p}, \text{ where } p=1.6075 \text{ (relative error of at most 1.178\%).}$$

6.3 Benthic Survey Results and Observations

6.3.1 Seagrass Results and Summary

A thorough search for SAV was performed along the twelve transects and beyond the survey area shown on **Figure 3** found no species of seagrass within the survey area.

6.3.2 Coral Results and Summary

A total of one thousand six hundred nineteen (1,619) scleractinian corals were identified and measured by the AECOM SDT within the complete survey area. Distributed by area, there were:

- five hundred seventy-five (575) corals located on the north bulkhead (T1);
- seven hundred thirty-one (731) corals located on the east bulkhead (T2); and
- three hundred thirteen (313) corals located on the pilings.

The 1,619 coral colonies, representing twenty-one (21) different species, totaled 209,668 cm^2 in area (Table 6.3.2).

Table 6.3.2 - Summary of Corals Identified (by Species and Size)

Coral Species	Species Code	Total Number of Corals (all sizes)	Total Coral Area (cm^2)
Siderastrea radians	Sid radi	600	25,555
Stephanocoenia intersepta	Ste inte	270	56,924
Siderastrea siderea	Sid side	224	20,416
Siderastrea species	Sid spec	216	8,284
Oculina diffusa	Ocu diff	54	2,181
Montastraea cavernosa	Mon cave	36	30,901
Dichocoenia stokesi	Dic stok	28	9,219
Madracia decatis	Mad deca	23	4,654
Favia fragum	Fav frag	22	453
Solenastrea bournoni	Sol bour	19	10,203
Diploria strigosa	Dip stri	18	6,129
Phyllangia americana	Phy amer	18	1
Diploria labyrinthiformis	Dip labr	16	6,452
Porites astreoides	Por Astr	15	4,940
Manicina areolata	Man areo	12	537
Solenastrea hyades	Sol hyad	12	1,642
Oculina varicosa	Ocu vari	11	865
Colpophyllia natans	Col nata	7	974
Agaricia humilis	Aga humi	5	3,534
Diploria clivosa	Dip cliv	5	1,858
Montastrea faveolata	Mon fave	4	13,740
Mussa angulosa	Mus angu	4	206
Totals		**1,619**	**209,668 cm^2**

Coral locations are provided on **Figure 4** (Bulkheads) and **Figure 5** (Pilings). No federally-listed coral species were observed to exist within the project survey limits; however, any construction and/or dredging activities that may impact the stony corals will require regulatory coordination including the USACE, NMFS, FDEP, and FWC. Work proposed in areas where coral colonies were measured at 10 cm or greater in size may require transplantation to an appropriate recipient site. Additionally, mitigation is likely for corals colonies below the 10 cm size threshold.

Representative photographs were taken to provide a visual of the corals (**Appendix C, Photographic Log**). Photographs and videos were recorded (**Appendix D, Digital Video Discs 1 and 2**) and analyzed to provide a qualitative description of the resources. A total coral summary is summarized below and is also provided as **Appendix E - Total Seagrass and Coral Summary**. **Appendix E** also contains several tables that tabulate seagrass and corals by locations (Transect 1, Transect 2, and Pilings). A searchable Excel file containing these coral tables is also included on **Appendix D, Digital Video Disc 2**.

6.3.3 Biological Assessments

Biological assessments are required by regulatory agencies for permitting purposes. The following sections have been included to supplement the benthic survey.

Additionally, the AECOM SDT, though not required, maintained a log of biota seen throughout the benthic survey period. The overall species observed by the SDT to inhabit the survey area are indicative of reef species common in the Gulf of Mexico. The observed species list, separated by phyla, is included as **Appendix F – Observed Species List**. Please note that many additional species inhabit the area and the list only represents biota positively identified at the time of the survey.

6.3.3.1 Threatened and Endangered Species Status/Designated Habitats

Twenty-eight threatened and endangered species may inhabit or migrate through the proposed project area under the jurisdiction of NMFS and U.S. Fish and Wildlife Service (USFWS); these species are listed in the following table. The subsequent sections of this Biological Assessment provide relevant information regarding the habitat requirements and status/distribution of the species listed in the table.

Federally Listed Threatened (T) and Endangered (E) Species under the Jurisdiction of the NMFS/USFWS Potentially Occurring in Florida Waters				
Common Name	**Scientific Name**	**Status**	**Critical Habitat Present**	**Effect Determination**
FISH				
Shortnose Sturgeon	*Acipenser brevirostrum*	E	No	*Not likely to adversely affect*
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	T	No	*Not likely to adversely affect*
Nassau Grouper	*Epinephelus striatus*	T	No	*Not likely to adversely affect*
Okaloosa darter	*Etheostoma okalossae*	T	No	*Not likely to adversely affect*
Giant Manta Ray	*Manta birostris*	T	No	*Not likely to adversely affect*
Smalltooth sawfish	*Pristis pectinata*	E	No	*Not likely to adversely affect*
REPTILES				
American crocodile	*Crocodylus acutus*	T	No	*Not likely to adversely affect*
Hawksbill sea turtle	*Eretmochelys imbricata*	E	No	*Not likely to adversely affect*
Green sea turtle	*Chelonia mydas*	T	No	*Not likely to adversely affect*
Kemps Ridley sea	*Lepidochelys kempii*	E	No	*Not likely to adversely affect*

turtle				
Leatherback sea turtle	*Dermochelys* coriacea	E	No	*Not likely to adversely affect*
Loggerhead sea turtle	*Caretta caretta*	T	No	*Not likely to adversely affect*
PLANTS				
Johnson's seagrass	*Halophila johnsonii*	T	No	*Not likely to adversely affect*
CORALS				
Staghorn Coral	*Acropora cervicornis*	T	No	*Not likely to adversely affect*
Elkhorn Coral	*Acropora palmata*	T	No	*Not likely to adversely affect*
Pillar Coral	*Dendrogyra cylindrus*	T	No	*Not likely to adversely affect*
Rough Cactus Coral	*Mycetophyllia ferox*	T	No	*Not likely to adversely affect*
Lobed Star Coral	*Orbicella annularis*	T	No	*Not likely to adversely affect*
Mountainous Star Coral	*Orbicella faveolata*	T	No	*Not likely to adversely affect*
Boulder Star Coral	*Orbicella franksi*	T	No	*Not likely to adversely affect*
MARINE MAMMALS				
West Indian Manatee	*Trichechus manatus*	T	No	*Not likely to adversely affect*
Sei Whale	*Balaenoptera borealis*	E	No	*Not likely to adversely affect*
Bryde's Whale	*Balaenoptera edeni*	E	No	*Not likely to adversely affect*
Finback Whale	*Balaenoptera physalus*	E	No	*Not likely to adversely affect*
Humpback Whale	*Megaptera novaeangliae*	E	No	*Not likely to adversely affect*
North Atlantic Right Whale	*Eubalaena glacialis*	E	No	*Not likely to adversely affect*
Sperm Whale	*Physeter catodon*	E	No	*Not likely to adversely affect*

For these listed species, proposed construction activities could affect animal behavior, causing them to avoid the areas of proposed construction activities. Such impacts would be minimal and localized to the small construction areas, temporary (lasting only for the duration of construction) and are not expected to jeopardize the continued existence to these species. Foraging habitat does exist for many of these species, but no measurable long-term effects are anticipated during the operation of these facilities. During construction, Best Management Practices (BMPs) will be implemented in accordance with the latest regulatory conditions, permit requirements, and minimization of potential impacts from construction

activities. Therefore, it is the judgement of the USCG that the proposed project is not likely to adversely affect these listed species.

6.3.3.2 Fish

Atlantic, Gulf and Shortnose Sturgeon (*Acipenser brevirostrum/Acipenser oxyrinchus desotoi*) – Sturgeons are a prehistoric species that have similar physiology to sharks and rays, however they have scutes in place of denticles or scales. Gulf sturgeon have barbels located on the underside of the snout, no teeth and a suctorial mouth for scavenging food from the seafloor. These fish can grow up to 8 feet (2.4 meters) and weigh over 300 pounds (137 kilograms). Sturgeon live in both saltwater and freshwater and can be found from Florida to Louisiana. They typically migrate from salt to fresh water during mating season (February to April). During winter they habitat in the Gulf of Mexico between 6-100 feet deep. The Atlantic sturgeon was listed as Endangered by the NMFS on April 6, 2012. FWC reclassified the fish from Species of Special Concern to Federally-designated Threatened on September 19, 2012.

Nassau Grouper (*Epinephelus striatus*) - The Nassau Grouper was listed as Federally-designated Threatened on December 23, 2018 as part of the State listing changes that were proposed in 2011. These changes were part of the newly implemented imperiled species management system that became official after the approval of Florida's Imperiled Species Management Plan by FWC Commissioners.

Okaloosa darter (*Etheostoma okalossae*) - The Okalossa darter was reclassified by the USFWS effective May 2, 2011 from Endangered to Threatened. A special rule under Section 4d of the Endangered Species Act was also adopted that allows Eglin Air Force Base to continue activities with a reduced regulatory burden and will provide a net benefit to the Okalossa darter. FWC reclassified the darter from Federally-designated Endangered to Federally-designated Threatened on September 19, 2012.

Giant Manta Ray (*Manta birostris)* - The Giant Manta Ray was listed as Federally-designated Threatened on December 23, 2018 as part of the State listing changes that were proposed in 2011. These changes were part of the newly implemented imperiled species management system that became official after the approval of Florida's Imperiled Species Management Plan by FWC Commissioners.

Smalltooth Sawfish (*Pristis pectinate*) – The smalltooth sawfish is federally listed throughout its range as endangered. The smalltooth sawfish is an ancient species similar to sharks, skates and rays, which is found in the shallow coastal waters of tropical seas, estuaries and river mouths throughout the world. The NMFS designated critical habitat for smalltooth sawfish in September 2009 (74 FR45353), which includes the areas from Florida Bay north, through the Ten-thousand Islands Region and in the Charlotte Harbor on the west coast of Florida. Under the Endangered Species Act, it is illegal to catch or harm endangered sawfish. However, some fishermen catch sawfish incidentally while fishing for other species. The current range of smalltooth sawfish has been limited to peninsular Florida, and smalltooth sawfish are relatively common only in the Everglades region at the southern tip of the state. Juvenile sawfish use shallow habitats with a lot of vegetation, such as mangrove forests, as important nursery areas. Many such habitats have been modified or lost due to development of the waterfront in Florida and other southern states. The loss of juvenile habitat likely contributed to the decline of this species.

6.3.3.3 Reptiles

American crocodile (*Crocodylus acutus*) – The American crocodile is federally listed throughout its range as endangered. The crocodile is a large, gray to brown crocodilian with a long, tapered snout with adults typically reaching 7-15 feet in length. The crocodile may be mistaken due to similarity in appearance with the American alligator (*Alligator misssissippiensis*) or spectacled caiman (*Caiman crocodilus*), which is an introduced species in southern Florida. Crocodile habitat includes coastal estuarine marshes and mangrove areas, tidal swamps and creeks along edges of mainland islands in Florida Bay. Additional nesting, though without apparent success, has been recorded near Marco Island in Collier County. The species occasionally wanders into Lower Keys, as well as, northward up coasts to Miami-Dade County and occasionally Broward County.

Green Sea Turtle (*Chelonia mydas*) – The green sea turtle is federally listed as endangered throughout its range. The green sea turtle is a large marine turtle that weighs upward of 300 to 350 pounds and measures three (3) feet in length. The green sea turtle inhabits coastal marine environments such as estuaries, coastal bays, inlets, lagoons, offshore pelagic waters and reefs; nesting on coastal sand

beaches, often near the dune line, sufficiently high to avoid tidal inundation. The green sea turtles diet consists of seagrass and algae. In Florida, the green sea turtle nests mostly along the Atlantic coast, especially from Volusia to Miami-Dade County. Typical of all species of sea turtles, management and conservation efforts focus on protection of beaches and adjacent uplands from development and coastal armoring which limits hospitable nesting conditions.

Hawksbill Sea Turtle (*Eretmochelys imbricata*) – The hawksbill sea turtle is federally listed as endangered through its range. The hawksbill is a medium-sized marine turtle that weighs 100 to 150 pounds and is approximately three (3) feet in length. The diet of the hawksbill consists of sponges and other invertebrates, algae and is found foraging year-round in the waters surrounding Florida. The hawksbill typically inhabits coastal habitats and pelagic waters and coral reefs; nesting on coastal sand beaches, often in dune vegetation. This species is typically found only in the southern half of Florida, particularly in the Florida Keys and reefs along the peninsular coast. The hawksbill populations have been impacted worldwide due to harvesting of the mature adult shells to make jewelry. Typical of all species of sea turtles, management and conservation efforts focus on the protection of beaches and adjacent uplands from development and coastal armoring which limits hospitable nesting conditions.

Kemps Ridley Sea Turtle (*Lepidochelys kempii*) – The Kemp's ridley sea turtle is federally listed as endangered throughout its range. The Kemp's ridley is a small to medium-sized marine turtle with a nearly circular shell, weighing approximately 100 pounds and measuring approximately two (2) feet in length. The Kemps ridley is found in coastal waters statewide, but is typically associated with the Gulf of Mexico with nesting nearly restricted to beaches of northern Mexico and southern Texas, feeding on a diet of crabs, fish, jellyfish, and mollusks. Waters along the entire Gulf coast are important for growth of young. Apparently did not historically nest in Florida, but eight (8) nests have been recorded since 1989; conservation efforts focus on protection of beaches and adjacent uplands from development and coastal armoring which limits hospitable nesting conditions.

Leatherback Sea Turtle (*Dermochelys coriacea*) – The leatherback sea turtle is federally listed as endangered throughout its range. The Leatherback is a large marine turtle which has recorded weights of up to one ton (2,000 pounds) and can measure 6-7 feet in length. The Leatherback is found in pelagic waters where it feeds on soft bodied animals, such as jellyfish and salps (planktonic tunicates). Leatherbacks are rarely seen in coastal waters except as hatchlings dispersing from nesting beaches and as adult females approaching the beach to nest. Typical of all species of sea turtles, sea management and conservation efforts focus on protection of beaches and adjacent uplands from development and coastal armoring which limits hospitable nesting conditions.

Loggerhead Sea Turtle (*Caretta caretta*) – The loggerhead sea turtle is federally listed as threatened throughout its range. The loggerhead is a large sea turtle weighing approximately 250 pounds and measuring 3 feet in length. The loggerhead is found in coastal and pelagic waters where it feeds on whelks and conch, and nests on coastal sand beaches throughout most of Florida. Typical of all species of sea turtles, management and conservation efforts focus on protection of beaches and adjacent uplands from development and coastal armoring which limits hospitable nesting conditions.

6.3.3.4 Plants

Johnson's Seagrass (*Halophila johnsonii*) – Johnson's seagrass is federally listed plant species which is considered as threatened throughout its range. It is found in tidal deltas inside inlets, sandy shoals, and mouths of canals in relatively shallow waters, and is endemic to 120 miles of southeast Florida coastline from Sebastian Inlet in Brevard County to Biscayne Bay in Miami-Dade County. Johnson's Seagrass is a submerged sea grass with long, delicate stems embedded in coastal sediments; pair of leaves and a single root are borne on the stem at 0.5-2 inch intervals. Note: Johnson's Seagrass was not observed during this survey.

6.3.3.5 Corals

Staghorn Coral (*Acropora cervicornis*) – Staghorn coral is branching coral with cylindrical branches that can grow to over 6.5 feet (2m), which can gradually extend over colonies of other corals. This coral exhibits the fastest growth of all known western Atlantic corals, with branches increasing in length by 4-8 inches (10-20cm) per year. Staghorn coral occur in back reef and fore reef environments from 0-100 feet

(0-30m) deep. The upper limit is defined by wave forces, and the lower limit is controlled by suspended sediments and light availability. Staghorn coral is found throughout the Florida Keys, the Bahamas and the Caribbean Islands and has been one of the three (3) most important Caribbean corals in terms of its contribution to reef growth and fish habitat. Since 1980, populations have collapsed throughout their range from various threats, as detailed below with populations declining by up to 98% throughout their range. The greatest source of region-wide mortality for staghorn coral has been disease outbreaks, primarily of white band disease. Other, more localized losses have been caused by hurricanes, increases predation, bleaching, algae overgrowth, human impacts, and other factors. This species is also particularly susceptible to damage from sedimentation and is sensitive to temperature and salinity.

Elkhorn Coral (*Acropora palmata*) – Elkhorn coral is a large, branching coral with thick and sturdy antler-like branches that can grow to over 6.5 feet (2m). This species demonstrates competitive behaviors, gradually extended over colonies of corals. Colonies are fast growing: branches increase in length by 2-4 inches (5-10cm) per year. Elkhorn coral was formerly the dominant species in shallow waters throughout the Caribbean and on the Florida Reef Tract, forming extensive, densely aggregated thickets in areas of heavy surf.

Pillar Coral (*Dendrogyra cylindrus*) - The Pillar coral was listed as Threatened by the USFWS on November 13, 2014. FWC reclassified the coral from State-designated Threatened to Federally-designated Threatened on June 10, 2015. Pillar coral can grow to 8 feet (2.24 meters) and 5 inches (12.7 cm) in diameter. It is reproductively unisexual, similar in skeleton to brain coral and extends tan colored tentacles during the day to give it a fur-like appearance. It is typically found in tropical waters within coral reef, rock of sand substratum habitats of subtropical and tropical west Atlantic Ocean between southern Florida and northern coast of Colombia.

6.3.3.6 Marine Mammals

West Indian Manatee (*Trichechus manatus*) – The West Indian Manatee is federally listed as endangered throughout its range. The West Indian Manatee is a fully aquatic herbivorous mammal which is a slow swimming animal with no natural predators. The West Indian Manatee is typically found in coastal or estuarine waters, bays, rivers and lakes, but seasonally migrates to the brackish water of the South Florida Intracoastal Waterway and connected canals and waterways. Some of the primary reasons for the manatees' decline are collisions between the animal and boat propellers, poaching, vandalism, and loss of safe and quiet habitat.

Protected Whale Species: Finback Whale (*Balaenoptera physalus*), Humpback Whale (*Megaptera novaeangliae*), Sei Whale (*Balaenoptera borealis*), Brydes Whale (*Balaenoptera edeni*), North Atlantic Right Whale (*Eubalaena glacialis*), and Sperm Whale (*Physeter catodon*) – It has been determined that six federally protected species of whales migrate within close proximity to the site; the Finback, Humpback, Sei, Brydes, North Atlantic Right and Sperm whales. Each of these species is federally listed as endangered throughout their range and are protected under several international treaties.

The finback whale is found worldwide, but considered rare in the South Atlantic. During the spring, summer and fall, humpback whales can be found at their breeding grounds in the Gulf of Maine, Gulf of St. Lawrence, Newfoundland, Labrador and western Greenland, humpbacks migrate to the West Indies for the winter, but a significant number of whales can still be found in mid- and high latitude regions. In the South Atlantic, humpback whales have been captured in the Florida Keys and northern Cuba, and sightings have occurred off the west coast of Florida and Alabama. Sei whales breading season extends between November and February in the northern hemisphere and can be found around the outer continental shelf and slope in the Atlantic Ocean. Sperm and North Atlantic right whales are worldwide in distribution and occur in all oceans, including Arctic and Antarctic waters, but are primarily found in temperate and tropical waters if the Atlantic and Pacific Oceans. Sperm whales are most numerous of the great whales in the South Atlantic.

No significant or suitable habitat exists within the project limits for these species; therefore, no adverse impacts to these marine mammals are anticipated as a result of the proposed project.

6.3.3.7 Designated Habitats

Critical Habitats – Critical habitat is a specific, federally-designated, geographic area that is essential for the conservation of a threatened or endangered species that may require special management and protection, but they are not considered a refuge or sanctuary for the species. Critical habitat may include an area that is not currently occupied by the species, but that will be needed for its recovery. An area is designated as a critical habitat after the USFWS and NMFS publish a proposed federal regulation in the Federal Register and then receives public comments on the proposal. The final boundaries of the critical habitat areas are also published in the Federal Register. According to the USFWS's Federally Listed & Candidate Species in Monroe County, Florida (2011), critical habitats are present within close proximity to the proposed project area for the Staghorn Coral, Elkhorn Coral and American crocodile.

Critical habitats for the Staghorn Coral, Elkhorn Coral and the American Crocodile have been designated in the waters of the Atlantic Ocean in the areas adjacent to the area of the proposed construction activities. During construction, BMPs will be implemented in accordance with the latest edition of USCG's Standard Specifications for Road and Bridge Construction in order to satisfy permit requirements and minimize potential impacts to these Critical Habitats from construction activities. Critical Habitat for these protected species does not occur within the limits of this project, as such, no significant long-term impacts to Critical Habitats are anticipated. Therefore, it is the judgement of the USCG that significant impacts to Critical Habitats are not anticipated.

Essential Fish Habitat (EFH) – Per the south Atlantic Fisheries Management Council's Habitat Plan for the South Atlantic Region (1998), EFH are considered the waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (16 U.S.C. 1802(10)). The proposed project is located within an area designated as EFH by the Coral Management Plan, Snapper-Grouper Fishery Management Plan (FMP) and Spiny Lobster FMP; both of which are managed under the Manuson-Stevens Fishery Conservation and Management Act and no impacts to these species are anticipated as a result of this project. The following Highly Migratory Species have EFH in the waters of the proposed construction during all or part of their life cycles, but do not currently have species specific FMPs: smalltooth sawfish (*Pristis pectinate*), skipjack tuna (*Katsuwonus pelamis*), longbill spearfish (*Tetrapturus pfluegeri*), sailfish (*Istiophorus albicans*), Atlantic sharp-nosed shark (*Rhizoprionodon terraenovae*), black-nose shark (*Carcharhinus acronotus*), blacktip shark (*Carcharhinus limbatus*), bonnethead shark (*Sphyrna tiburo*), bull shark (*Carcharhinus leucas*), great hammerhead shark (*Sphyrna mokarran*), lemon shark (*Negaprion brevirostris*), nurse shark (*Ginglymostoma cirratum*), sandbar shark (*Carcharhinus plumbeus*), silky shark (*Carcharhinus falciformis*), spinner shark (*Carcharhinus brevipinna*), tiger shark (*Galeocerdo cuvier*), and white shark (*Carcharodon carcharias*). No impacts to these species are anticipated as a result of this project.

In addition to EFH designations, Habitat Areas of Particular Concern (HAPC) have been identified within the proposed project area. HAPCs are subsets of EFH that merit special considerations for habitat conservation which are listed in the EFH Guidelines (50 CFR 600.815(a)(8)) and summarized as: 1) the importance of the ecological function provided by the habitat; 2) the extent to which the habitat is sensitive to human-induced environmental degradation; 3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and 4) the rarity of the habitat type. HAPC areas have been described within EFH areas. The HAPC which have been identified as being potentially impacted by this project include:

- Coral, Coral Reefs and Live/Hard Bottom Habitats,
- Penaeid Shrimp,
- Snapper/Grouper, and
- Spiny Lobster

7.0 References

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Figures

LEGEND

Project Location

N

0 1,500 3,000 6,000

Feet

COORDINATE SYSTEM: NAD 1983 2011 StatePlane Florida East FIPS 0901 Ft US Projection: Transverse Mercator Datum: NAD 1983 2011 False Easting: 656,166.6667 False Northing: 0.0000 Central Meridian: -81.0000 Scale Factor: 0.9999 Latitude Of Origin: 24.3333 Units: Foot US	SCALE: 1 inch = 3,000 Feet	DRAWN BY: DCQ DATE: 4/18/2018 CHECKED BY: CM,AM,CH DATE: 4/18/2018 JOB NUMBER: 60587113 MAP SOURCE: ESRI DATA SOURCE: ESRI	**DEPARTMENT OF HOMELAND SECURITY** **UNITED STATES COAST GUARD** **USCG SECTOR KEY WEST** **KEY WEST, FLORIDA**
AECOM			**FIGURE 1 - PROJECT LOCATION MAP**

Date: 4/23/2019 Time: 2:18:19 PM

LEGEND

Hydrographic Survey

N

0 125 250 500

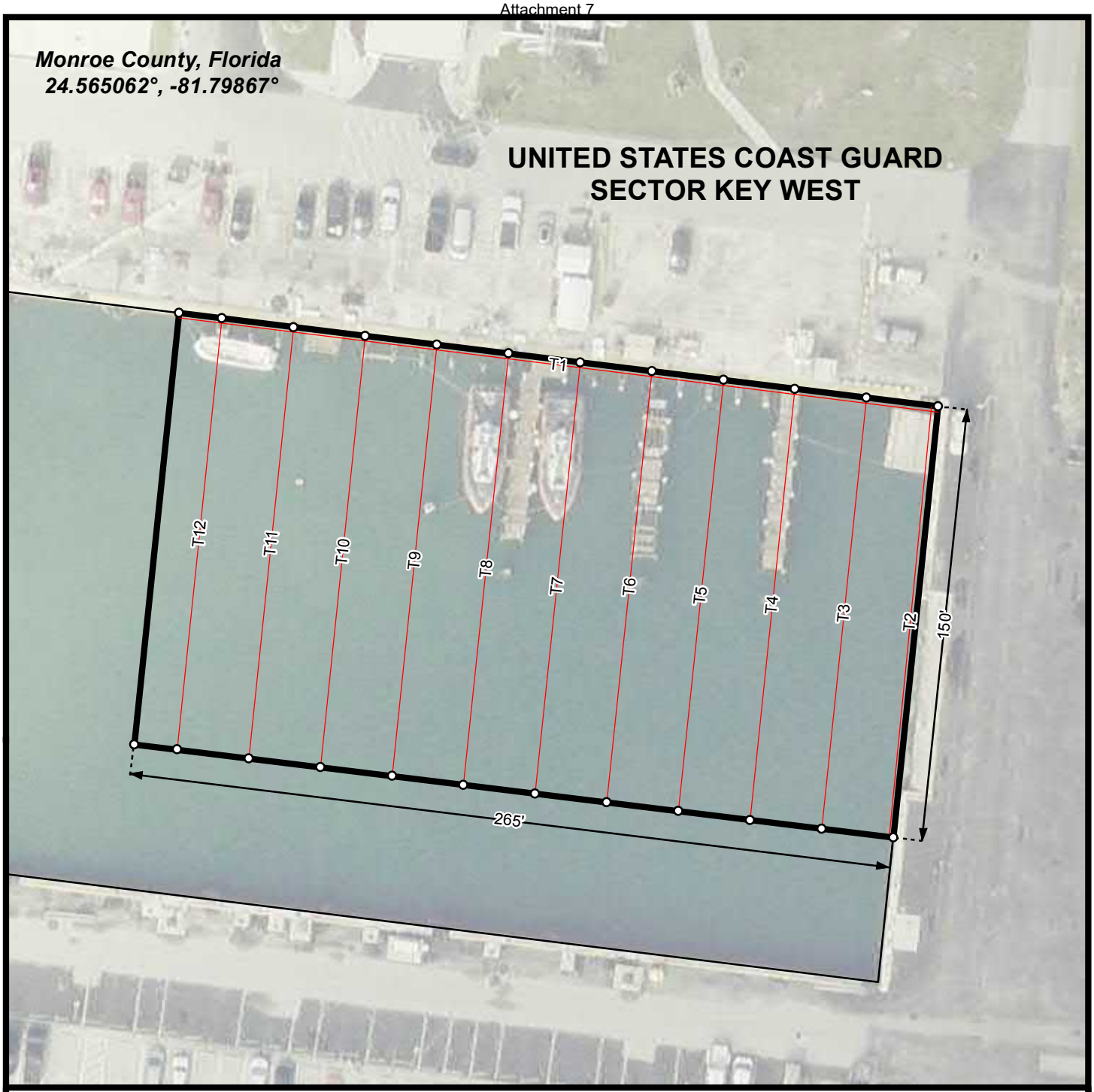
Feet

COORDINATE SYSTEM: NAD 1983 2011 StatePlane Florida East FIPS 0901 Ft US Projection: Transverse Mercator Datum: NAD 1983 2011 False Easting: 656,166.6667 False Northing: 0.0000 Central Meridian: -81.0000 Scale Factor: 0.9999 Latitude Of Origin: 24.3333 Units: Foot US	SCALE: 1 inch = 250 Feet	DRAWN BY: DCQ DATE: 11/14/2018 CHECKED BY: CM,AM,CH DATE: 11/14/2018 JOB NUMBER: 60587113 AERIAL SOURCE: ESRI DATA SOURCE: ESRI	**DEPARTMENT OF HOMELAND SECURITY** **UNITED STATES COAST GUARD** **USCG SECTOR KEY WEST** **KEY WEST, FLORIDA**

AECOM

FIGURE 2 - HYDROGRAPHIC SURVEY AREA

Date: 5/9/2019 Time: 3:29:14 PM



LEGEND

Benthic Survey Transect Line

Benthic Survey Area

N

0 25 50 100

Feet

COORDINATE SYSTEM: NAD 1983 2011 StatePlane Florida East FIPS 0901 Ft US Projection: Transverse Mercator Datum: NAD 1983 2011 False Easting: 656,166.6667 False Northing: 0.0000 Central Meridian: -81.0000 Scale Factor: 0.9999 Latitude Of Origin: 24.3333 Units: Foot US	SCALE: 1 inch = 50 Feet	DRAWN BY: DCQ DATE: 4/18/2018 CHECKED BY: CM,AM,CH DATE: 4/18/2018 JOB NUMBER: 60587113 AERIAL SOURCE: ESRI DATA SOURCE: ESRI	**DEPARTMENT OF HOMELAND SECURITY** **UNITED STATES COAST GUARD** **USCG SECTOR KEY WEST** **KEY WEST, FLORIDA**

AECOM

FIGURE 3 - TRANSECT LOCATION MAP

Date: 5/2/2019 Time: 7:12:24 PM

Monroe County, Florida
24.505062°, -81.79867°

UNITED STATES COAST GUARD
SECTOR KEY WEST

7 14 16 15 32 8 11 17 31 6 2 9 18 15 22 17 26 9 25 93 90 95

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12

54 65 53 60 50 39 52 53 85 80 55 85

150'

265'

LEGEND

Number of Coral Colonies per 12.5 ft. Section

- 0 - 24
- 25 - 49
- 50 - 74
- >75

- Benthic Survey Transect Line
- Benthic Survey Area

N

0 12.5 25 50
Feet

COORDINATE SYSTEM:
NAD 1983 2011 StatePlane Florida East FIPS 0901 Ft US
Projection: Transverse Mercator
Datum: NAD 1983 2011
False Easting: 656,166.6667
False Northing: 0.0000
Central Meridian: -81.0000
Scale Factor: 0.9999
Latitude Of Origin: 24.3333
Units: Foot US

SCALE:
1 inch = 25 Feet

AECOM

DRAWN BY:	DCQ
DATE:	4/18/2018
CHECKED BY:	CM,AM,CH
DATE:	4/18/2018
JOB NUMBER:	60587113
AERIAL SOURCE:	ESRI
DATA SOURCE:	ESRI

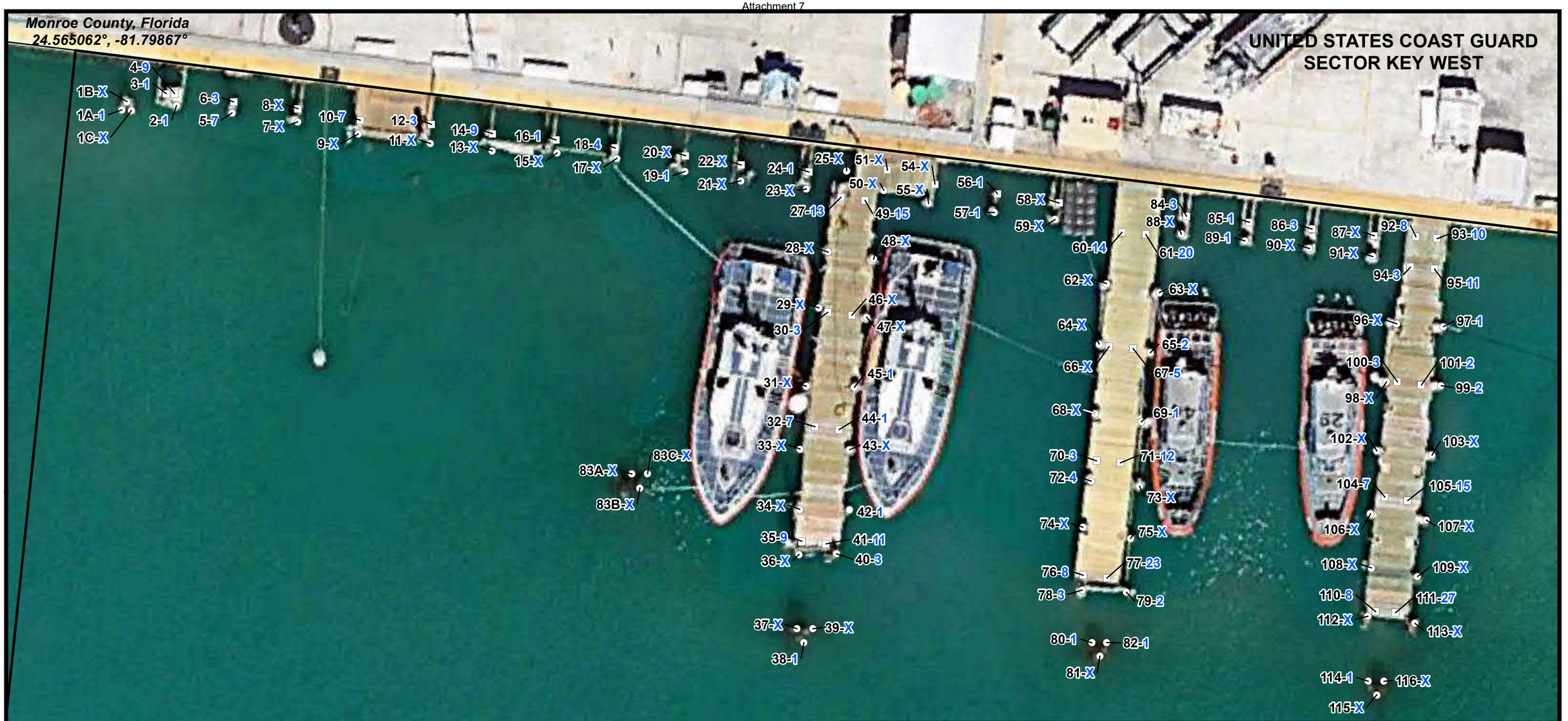
DEPARTMENT OF HOMELAND SECURITY
UNITED STATES COAST GUARD
USCG SECTOR KEY WEST
KEY WEST, FLORIDA

FIGURE 4 - CORAL LOCATION MAP - BULKHEADS

Date: 5/2/2019 Time: 9:12:54 PM

Monroe County, Florida
24.565062°, -81.79867°

UNITED STATES COAST GUARD
SECTOR KEY WEST



LEGEND

- Wood Piling
- Concrete Piling
- Dolphin
- Benthic Survey Transect Line
- Benthic Survey Area
- 72-4 Piling ID Number - Number of Coral Colonies on Piling
- Note: X Indicates Zero Coral Colonies

N

0 15 30
Feet

COORDINATE SYSTEM: NAD 1983 2011 StatePlane Florida East FIPS 0901 Ft US; Projection: Transverse Mercator; Datum: NAD 1983 2011; False Easting: 656,166.6667; False Northing: 0.0000; Central Meridian: -81.0000; Scale Factor: 0.9999; Latitude Of Origin: 24.3333; Units: Foot US	SCALE: 1 inch = 15 Feet	DRAWN BY: MEB DATE: 4/26/2018 CHECKED BY: CM,AM,CH DATE: 4/18/2018 JOB NUMBER: 60587113 AERIAL SOURCE: GOOGLE EARTH, LANDSAT DATA SOURCE: ESRI	**DEPARTMENT OF HOMELAND SECURITY** **UNITED STATES COAST GUARD** USCG SECTOR KEY WEST KEY WEST, FLORIDA

AECOM

FIGURE 5 - CORAL LOCATION MAP - PILINGS

Date: 5/2/2019 Time: 8:27:29 PM

Appendix A Reference Reports and Drawings

1.4.1 Sampling and Analysis Report:

After completion of all required sampling and testing, the Contractor shall prepare a written report for each individual location. The report shall include at a minimum the descriptive and analysis information. The descriptive portion shall provide: a description of the sampling equipment and methods used, sampling handling and preservation, and a sketch of the sample locations and depth of water at the sample location. The analysis portion shall include: analytical data reporting showing sampler initials, sample indicator/number, sample type, sample collection date and time, date sample was received in laboratory, date sample was analyzed, analytical methodology, results, data qualifiers, Method Detection Limit (MDL), Practical Quantitation Limit (PQL), Sediment Contamination Threshold Levels (SCTLs) for each contaminate and clearly indicate whether the test results exceed the SCTL for the contaminants analyzed and laboratory information such as name, address, phone and fax numbers and state certification or ID number.

1.5 Hydrographic Survey

Conduct hydrographic surveys at; SFO Galveston, Station Ponce De Leon, Station Pensacola, Station Gulfport, Station Brunswick, Station Port Aransas, Station Grand Isle, Station New Orleans, Station Mobile, Base Miami Beach, Station Sabine and Sector Key West, within the boundaries shown on the contract drawings. Use a single-beam echo-sounder along track lines spaced a maximum of 25 feet apart. A maximum of one foot contours shall be used to generate the depth contour map. The scale of the depth contour map shall be no smaller than 1” = 50’. Merge the depth contour map with the waterfront structures and shoreline. Identify the main channel if it crosses within the boundary of the depth contour map. Use Mean Lower Low Water as the sounding reference datum. Soundings shall be taken by a registered surveyor measured from the NAD 1983/WGS 1985 datum for each U.S. Coast Guard unit located under section 1.2, Base Work Site Locations. These soundings shall be to the nearest tenth of a foot. The soundings will be used to calculate quantities for dredging. Provide separate CAD drawings showing reduced sounding data. Drawings shall include base lines, general site arrangements, ramps, piers and docks, boat basin configuration, at time of surveys and all soundings reduced to lower low water datum shall be shown. Each drawing shall bear the stamp or seal of the registered surveyor.

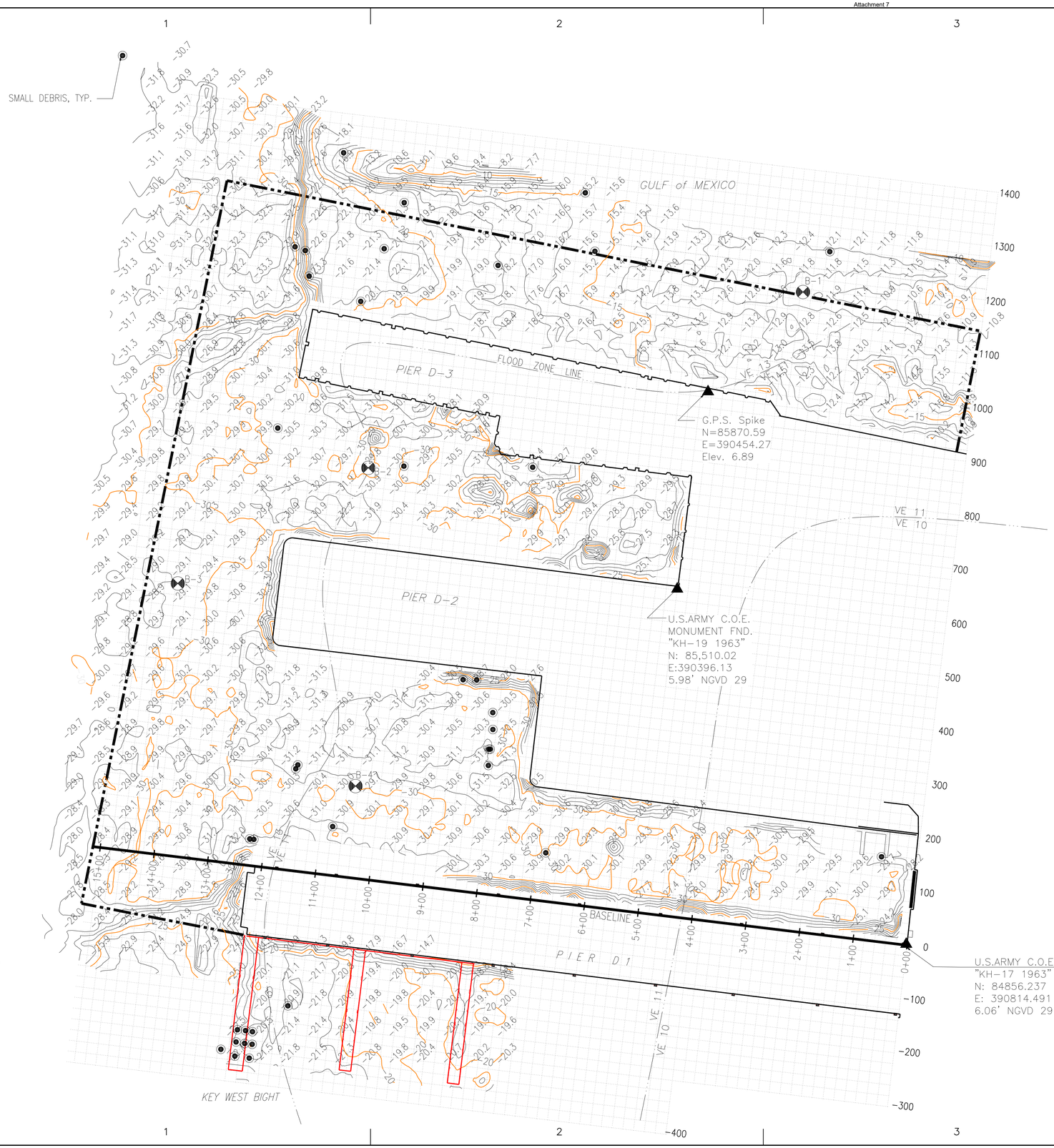
1.5.1 Hydrographic Survey Requirements:

The A-E shall provide a fully completed hydrographic survey that satisfies all functional and operational requirements of the intended project use. Design drawings shall be technically correct, fully detailed, and complying with all applicable codes.

Professional Stamp: CAD Drawings and reports shall be prepared under the direction of, signed and sealed by a licensed professional engineer.

1.5.2 Site Investigation:

The A-E shall perform a thorough site investigation for the project. Investigation shall identify and document existing construction, conditions, deficiencies, usage and follow **NMFS Manatee**



NOTES:

1. THIS HYDROGRAPHIC SURVEY WAS CONDUCTED AUG. 29, 2008.

2. DATUM EQUALITY:

   ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO MEAN LOWER LOW WATER (MLLW). THE HYDROGRAPHIC SURVEY WAS DONE IN DEPTHS AND TIDE CORRECTED USING NOAA TIDE DATA FOR AUG. 29, 2008 WHICH WAS REFERENCED TO MEAN LOWER LOW WATER (MLLW).

PARAMETER	KEY WEST
MHHW	+1.81
NAVD88	+1.77
MHW	+1.52
MSL	+0.89
MTL	+0.88
NGVD29	+0.43
MLW	+0.24
MLLW	0.00

   THE NAVD88 AND THE NGVD29 ELEVATIONS RELATED TO MLLW WERE COMPUTED FROM BENCH MARK, 972 4580 TIDAL BASIC, AT THE STATION.

   DISPLAYED TIDAL DATUMS ARE MEAN HIGHER HIGH WATER (MHHW), MEAN HIGH WATER (MHW), MEAN TIDE LEVEL (MTL), MEAN SEA LEVEL (MSL), MEAN LOW WATER (MLW), AND MEAN LOWER LOW WATER (MLLW) REFERENCED TO 1983-2001 EPOCH.

3. SOUNDINGS ARE DISPLAYED ON A 50 FOOT GRID. ADDITIONAL SOUNDINGS ARE TURNED OFF FOR CLARITY.

4. 100-YEAR FLOOD PLAN

   THE USCG STATION AT KEY WEST IS LOCATED IN THE 1% ANNUAL CHANCE FLOOD (SPECIAL FLOOD HAZARD) ZONES VE10, VE11 AND VE13, AREAS OF 100 YEAR COASTAL FLOODING WITH VELOCITY HAZARD (WAVE ACTION); WITH BASE ELEVATION VARIATIONS OF 10, 11 AND 13 WHICH ARE THE WATER-SURFACE ELEVATIONS OF THE 1% ANNUAL CHANCE FLOOD AS INDICATED ON THE FEMA (FIRM) FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 120168 1508 K WITH AN EFFECTIVE DATE OF FEBRUARY 18, 2005.

5. ALL AZIMUTHS ARE GRID; RECKONED CLOCKWISE FROM NORTH

6. ALL ALIGNMENT STATIONING REFERS TO THE NORTH SIDE OF PIER #1.

7. SOUNDINGS WERE OBTAINED USING AN ODOM HYDROTRAC ECHO SOUNDER. VESSEL POSITIONING WAS OBTAINED USING AN RTK GPS POSITIONING SYSTEM STATIONED AT MONUMENT MO KH04 LOCATED AT TRUMAN HARBOR IN KEY WEST, FL.

8. PLANE COORDINATES ARE:

   BASED ON THE TRANSVERSE MERCATOR PROJECTION FOR THE EAST ZONE OF FLORIDA AND REFERENCED TO NORTH AMERICAN DATUM OF 1983 (NAD83).

9. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF THE SURVEY ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME. THIS CHART IS SOLELY FOR THE DISTRIBUTION OF AVAILABLE DEPTHS AT THE TIME OF THE SURVEY AND IS NOT TO BE USED FOR NAVIGATION.

SOIL BORING LOCATIONS

ID	X	Y	Z
B-1	390,626.15	86,055.94	-11.5
B-2	389,829.25	85,726.27	-29.8
B-3	389,472.42	85,518.08	-29.1
B-4	389,800.73	85,143.70	-30.3

COORDINATES ARE:
NAD83 STATE PLANE FL EAST ZONE IN US SURVEY FEET
SOUNDING ELEV. REFERENCE: MLLW

N

100' 50' 0 100'

SCALE: 1"=100'-0"

THE JOHNSON-McADAMS FIRM
GREENWOOD, MISSISSIPPI
662-455-4943

CONSULTANTS

U. S. COAST GUARD
CIVIL ENGINEERING UNIT
MIAMI

USCG. CEU MIAMI
15608 SW 117TH AVE
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ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	XXXXXXC01
DESIGNED BY:	MSM
DRAWN BY:	ZLU
EDITED BY:	DWB
CHECKED BY:	LWA
SCALE: AS SHOWN	PLOT SCALE: 1:1

SHEET TITLE

HYDROGRAPHIC SURVEY
SECTOR KEY WEST
KEY WEST FLORIDA

SURVEY
HYDROGRAPHIC SURVEY

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

APPROVING OFFICER — DATE

PROJECT NUMBER	DRAWING NUMBER
08-MXXXX	MXXXX-D
DISCIPLINE/SHT NO	
C1	SHEET 2 OF 9

Appendix B Hydrographic Survey Map

.

U.S. COAST GUARD SECTOR KEY WEST
HYDROGRAPHIC SURVEY

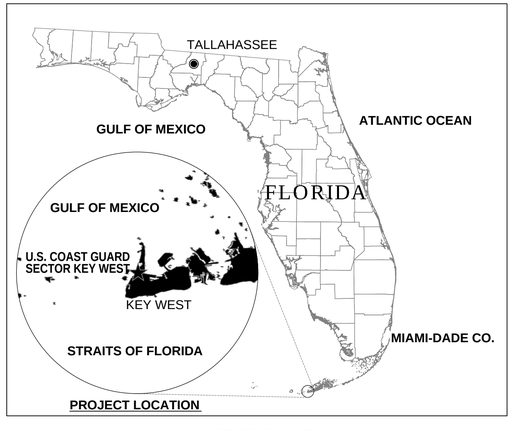
MONROE COUNTY, FLORIDA

U.S COAST GUARD
CIVIL ENGINEERING UNIT
MIAMI

USCG. CEU MIAMI
15608 SW 117TH AVE
MIAMI, FLORIDA 33177

SHEET INDEX	
DESCRIPTION	**DWG NO.**
SURVEY OVERVIEW	C-01
BATHYMETRY - BASELINE A-B	C-02
BATHYMETRY - BASELINE C-D	C-03
CROSS SECTIONS	C-04 - C-09

VICINITY MAP



NOT TO SCALE

DECEMBER 4-5, 2018

* NOT CERTIFIED WITHOUT SURVEY REPORT TITLED "USCG KEY WEST SURVEY REPORT WINTER 2018".

P. SEABOLDT
FLORIDA PSM #6879

LS 6879
STATE OF FLORIDA

GBA
ENGINEERS ★ SURVEYORS
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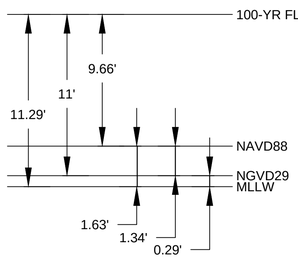
TAMPA, FL 33629-6826
TEL: 813.831.4408 FAX: 813.831.4216
WWW.GBA-INC.COM

FL SURVEYOR & MAPPER BUSINESS LICENSE #LB7959

NOTES:

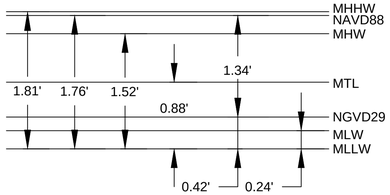
1. HYDROGRAPHIC SURVEY DATA WAS COLLECTED BY GAHAGAN & BRYANT ASSOCIATES, INC. ON DECEMBER 4-5, 2018, AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.
2. LANDSIDE FEATURES ARE APPROXIMATE AND ARE DIGITIZED FROM AERIAL IMAGERY DATED 2015.
3. HORIZONTAL COORDINATES ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO U.S. STATE PLANE FLORIDA EAST, NAD 83.
4. HORIZONTAL POSITIONING WAS OBTAINED USING RTK GPS REFERENCED TO SURVEY MONUMENT "KH-19 1963."
5. SINGLE BEAM DATA WAS COLLECTED WITH THE SURVEY VESSEL "RISING TIDE" USING AN ODOM ECHOTRAC CV200 OPERATING AT 200 KHz (HIGH).
6. SOUNDINGS SHOWN ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO THE VERTICAL DATUM MEAN LOWER LOW WATER (MLLW) USING THE USACE KTD FILE Broward-MiamiDade-Monroe-Collier_2018 05 02.ktd.
7. BASED ON THE KTD FILE, Broward-MiamiDade-Monroe-Collier_2018 05 02.ktd, MLLW IS ON AVERAGE 1.63' BELOW THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) WITHIN THE SURVEY AREA.
8. THE 100-YR FLOOD PLAIN ELEVATION FOR THE USCG SECTOR KEY WEST WAS OBTAINED FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR MIAMI-DADE COUNTY PANEL 1508 OF 1585. THE 100-YR FLOOD PLANE ELEVATION IS 11' ABOVE NGVD29.
9. RELATIONSHIPS SHOWN BELOW FOR MLLW, MEAN LOW WATER (MLW), MEAN TIDE LEVEL (MTL), MEAN HIGH WATER (MHW), MEAN HIGHER HIGH WATER (MHHW), AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) WERE OBTAINED FROM NOAA KEY WEST, FL TIDE GAUGE (#8724580).
10. CORPSCON VS. 6.0.1 WAS USED TO DETERMINE THE RELATIONSHIP BETWEEN NAVD88 AND NGVD29 AT THE PROJECT SITE AND NOAA TIDE GAUGE, FL TIDE GAUGE (#8724580).
11. SOUNDINGS SHOWN ARE BELOW THE REFERENCE PLANE UNLESS PRECEDED BY A PLUS (+) SIGN.
12. SOUNDINGS SHOWN ARE PART OF A LARGER DATASET, WHICH HAS BEEN REDUCED FOR CLARITY ON THIS MAP, AND ARE ROUNDED TO THE NEAREST TENTH.
13. CONTOURS WERE DEVELOPED FROM THE NON-REDUCED DATASET.
14. AERIAL IMAGERY, DATED 2015, OBTAINED FROM THE FLORIDA DEPARTMENT OF TRANSPORTATION.

RELATIONSHIP BETWEEN VERTICAL DATUMS AT USCG SECTOR KEY WEST BASED ON USACE KTD FILE.



(NOT TO SCALE)

RELATIONSHIP BETWEEN VERTICAL DATUMS AT NOAA, KEY WEST, FL TIDE GAUGE (#8724580) BASED ON THE 1983-2001 EPOCH.



(NOT TO SCALE)

SURVEY CONTROL - TABLE OF COORDINATES

NAME	EASTING	NORTHING	ELEV. (FT NAVD88)
KH-19 1963	390,396.13	85,510.02	+4.64
KH-17 1963	390,814.49	84,856.24	+4.72
BC BATTERY 231	389,055.00	78,064.89	+7.04
872 4580 TIDAL 25	388,266.94	83,178.97	+3.77

NORTHWEST ALIGNMENT TABLE OF COORDINATES

NAME	EASTING	NORTHING	STATION	RANGE
A	390,818.37	84,850.18	0.00	0.00
B	389,329.26	85,030.58	1,500.00	0.00

NORTHEAST ALIGNMENT TABLE OF COORDINATES

NAME	EASTING	NORTHING	STATION	RANGE
C	390,782.29	84,552.36	-300.00	0.00
D	390,986.74	86,240.02	1,400.00	0.00

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FL SURVEYOR & MAPPER BUSINESS LICENSE #LB7959

P. SEABOLDT
FLORIDA PSM #6879

* NOT CERTIFIED WITHOUT SURVEY REPORT TITLED "USCG KEY WEST SURVEY REPORT WINTER 2018".

LEGEND

- SURVEY BASELINE
- SURVEY AREA
- SURVEY CONTROL

U.S COAST GUARD
CIVIL ENGINEERING UNIT
MIAMI

USCG. CEU MIAMI
15608 SW 117TH AVE
MIAMI, FLORIDA 33177

ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	USCG2018-KEYWEST-SURVEY
DESIGNED BY:	KMK
DRAWN BY:	JDM
EDITED BY:	KMK
CHECKED BY:	PAS
SCALE: 1"=500' PLOT SCALE:	1:1

SHEET TITLE

HYDROGRAPHIC SURVEY
USCG SECTOR KEY WEST
KEY WEST FL

CIVIL
SURVEY OVERVIEW

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

APPROVING OFFICER | DATE

PROJECT NUMBER	DRAWING NUMBER
3652081	M1911-D
DISCIPLINE/SHT NO	
C-01	SHEET 2 OF 10

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LEGEND

- SURVEY BASELINE
- CHANNEL LINES
- 1 — 1-FT MLLW CONTOURS

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CIVIL ENGINEERING UNIT
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ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	USCG2018-KEYWEST-SURVEY
DESIGNED BY:	KMK
DRAWN BY:	JDM
EDITED BY:	KMK
CHECKED BY:	PAS
SCALE: 1"=100'	PLOT SCALE: 1:1

SHEET TITLE

HYDROGRAPHIC SURVEY
USCG SECTOR KEY WEST
KEY WEST FL

CIVIL
BATHYMETRY - BASELINE A-B

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

APPROVING OFFICER — DATE

PROJECT NUMBER	DRAWING NUMBER
3652081	M1911-D
DISCIPLINE/SHT NO	
C-02	SHEET 3 OF 10

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LEGEND

- SURVEY BASELINE
- CHANNEL LINES
- 1-FT MLLW CONTOURS

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ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	USCG2018-KEYWEST-SURVEY
DESIGNED BY:	KMK
DRAWN BY:	JDM
EDITED BY:	KMK
CHECKED BY:	PAS
SCALE: 1"=100'	PLOT SCALE: 1:1

SHEET TITLE

HYDROGRAPHIC SURVEY
USCG SECTOR KEY WEST
KEY WEST FL

CIVIL

BATHYMETRY - BASELINE C-D

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

APPROVING OFFICER — DATE

PROJECT NUMBER	DRAWING NUMBER
3652081	M1911-D
DISCIPLINE/SHT NO	
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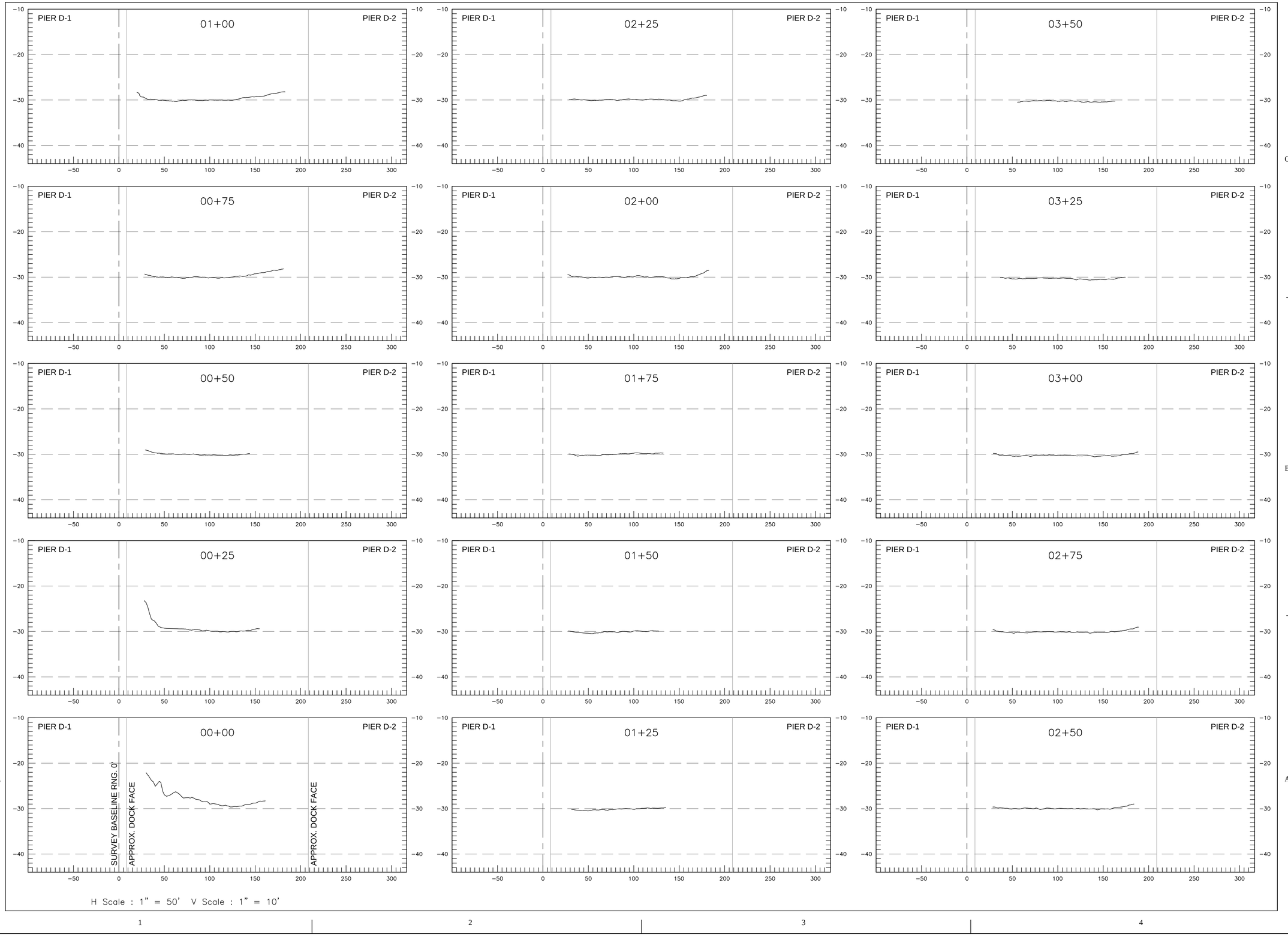

H Scale : 1" = 50' V Scale : 1" = 10'

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LEGEND

- SURVEY BASELINE A-B
- APPROXIMATE DOCK FACE
- EXISTING GRADE

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MIAMI, FLORIDA 33177

ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	USCG2018-KEYWEST-SURVEY
DESIGNED BY:	KMK
DRAWN BY:	JDM
EDITED BY:	KMK
CHECKED BY:	PAS
SCALE: AS SHOWN	PLOT SCALE: 1:1

SHEET TITLE

HYDROGRAPHIC SURVEY
USCG SECTOR KEY WEST
KEY WEST FL

CIVIL
CROSS SECTIONS

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

APPROVING OFFICER | DATE

PROJECT NUMBER	DRAWING NUMBER
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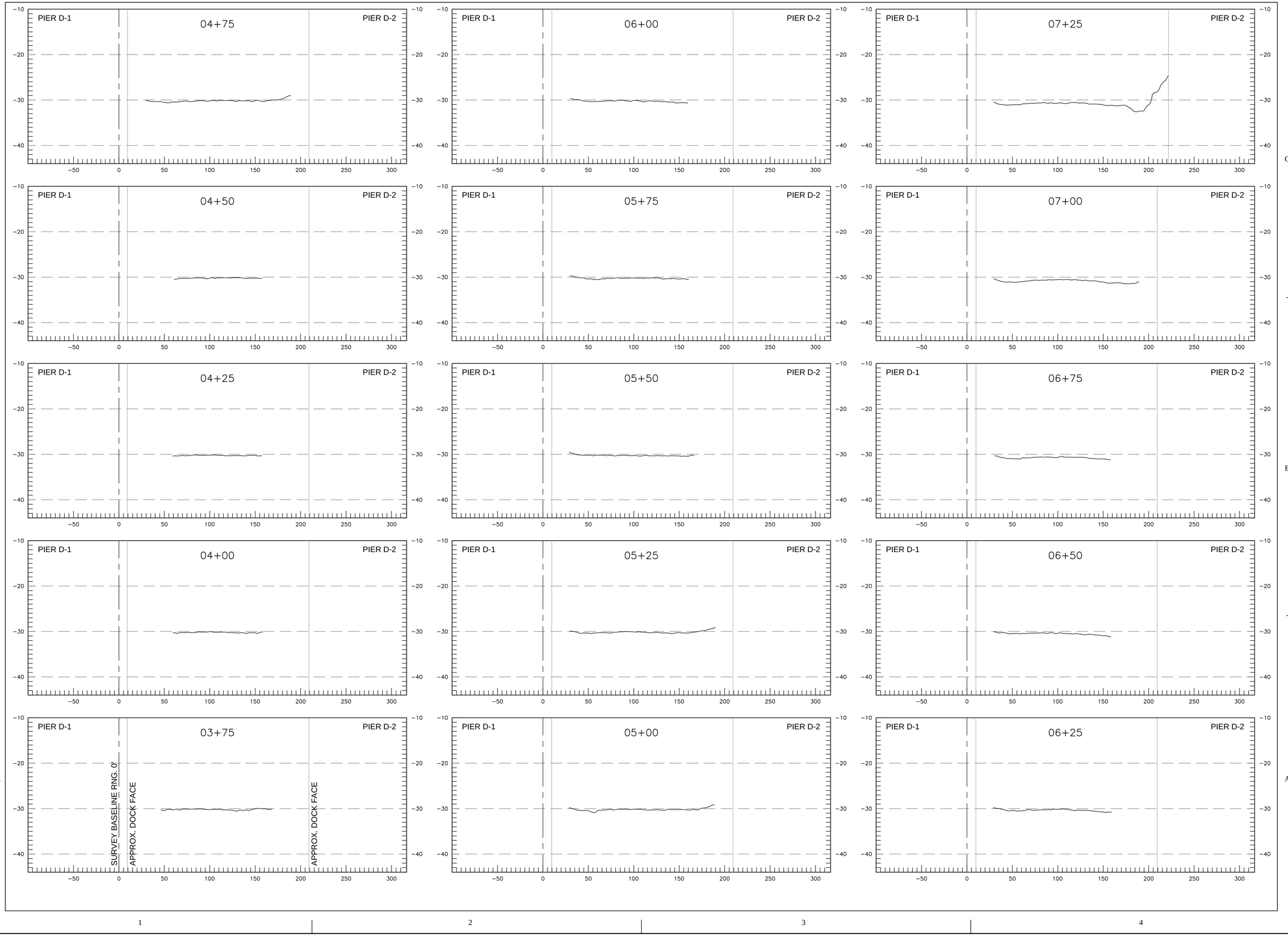
DISCIPLINE/SHT NO	
C-04	SHEET 5 OF 10



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LEGEND

- SURVEY BASELINE A-B
- APPROXIMATE DOCK FACE
- EXISTING GRADE

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MIAMI

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15608 SW 117TH AVE
MIAMI, FLORIDA 33177

ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	USCG2018-KEYWEST-SURVEY
DESIGNED BY:	KMK
DRAWN BY:	JDM
EDITED BY:	KMK
CHECKED BY:	PAS
SCALE: AS SHOWN	PLOT SCALE: 1:1

SHEET TITLE

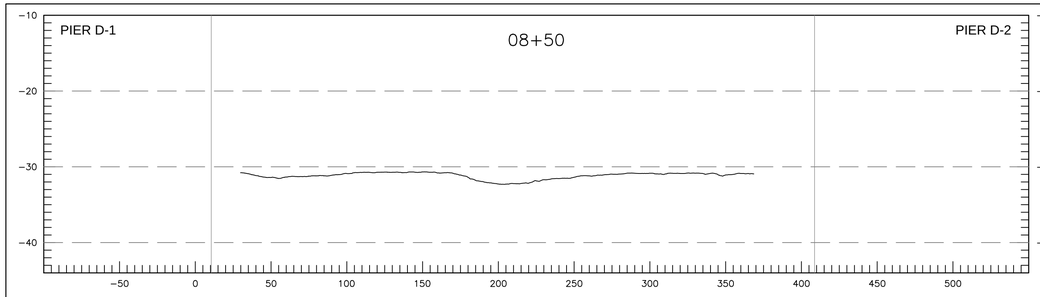
HYDROGRAPHIC SURVEY
USCG SECTOR KEY WEST
KEY WEST FL

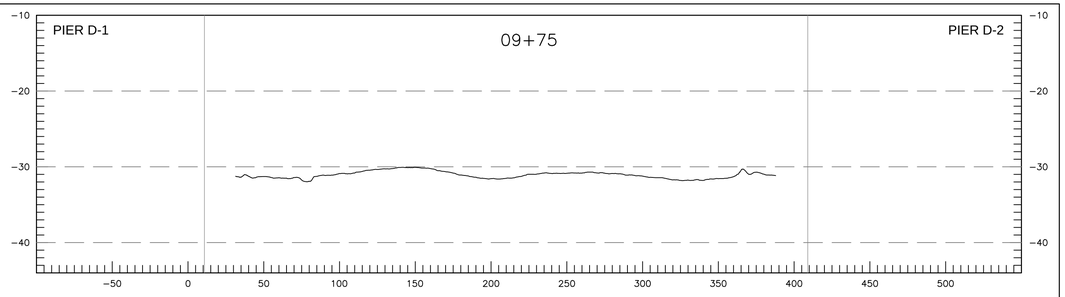
CIVIL
CROSS SECTIONS

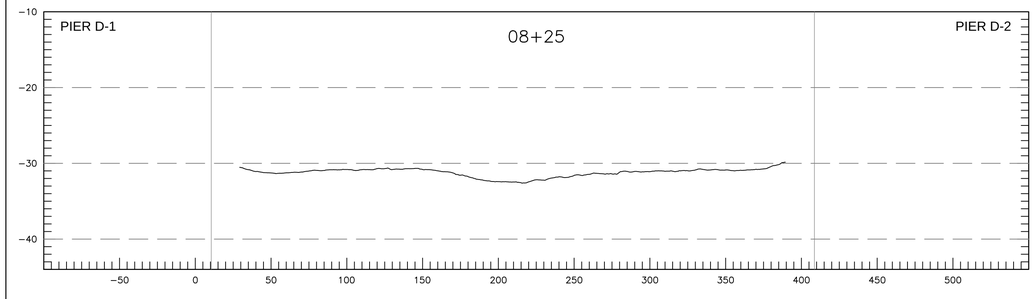
REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

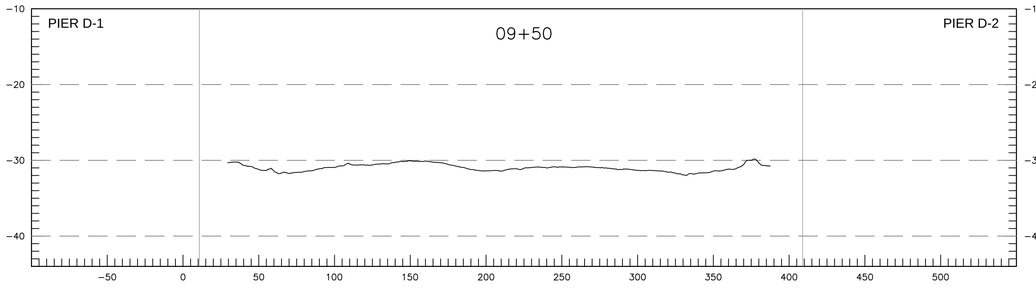
APPROVING OFFICER | DATE

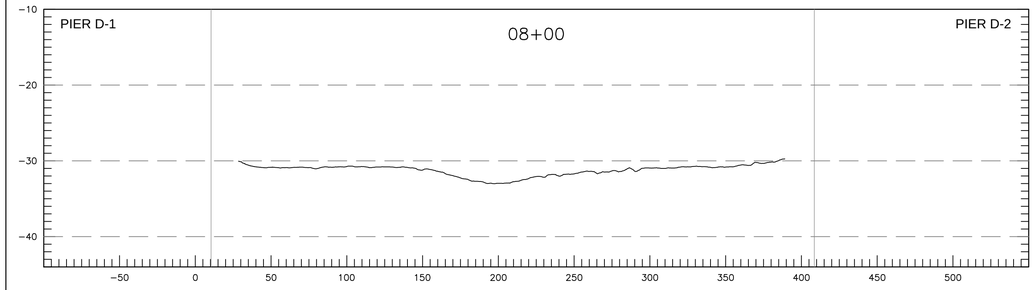
PROJECT NUMBER	DRAWING NUMBER
3652081	M1911-D
DISCIPLINE/SHT NO	
C-05	SHEET 6 OF 10

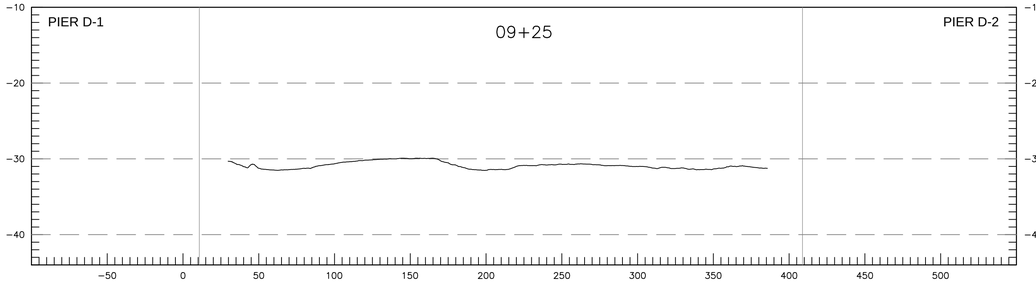


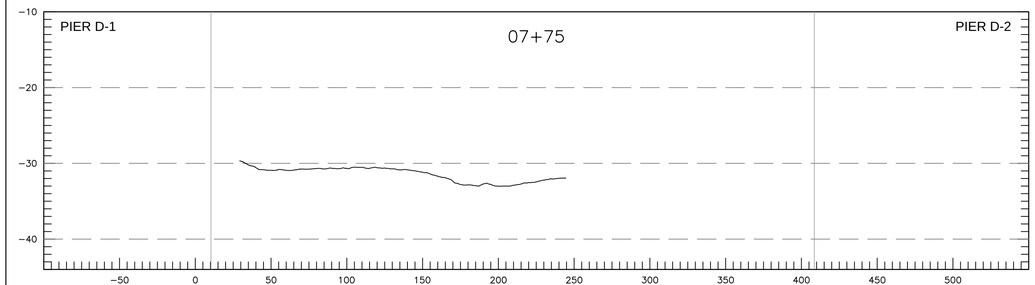


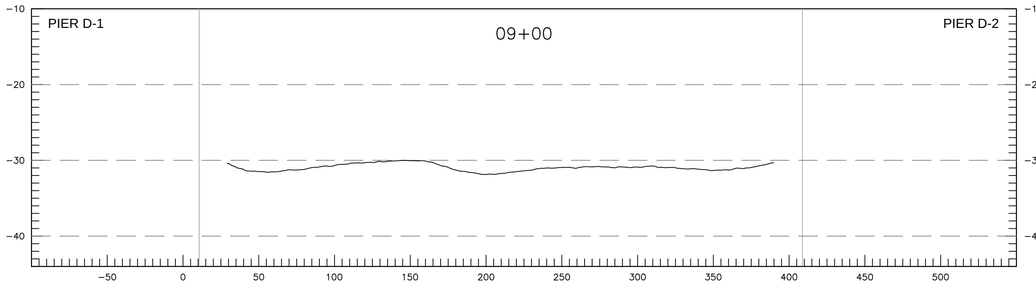


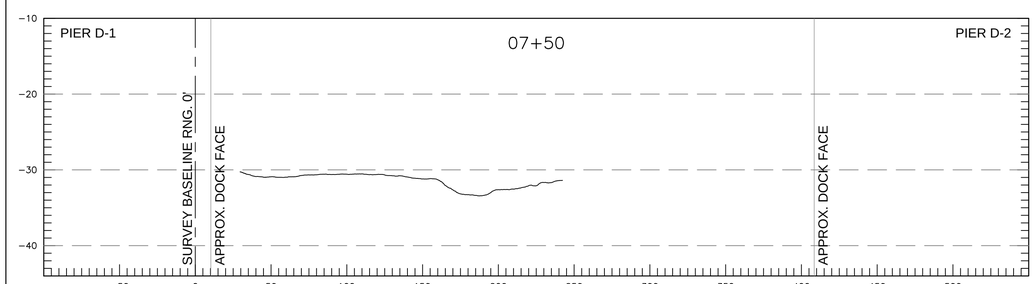


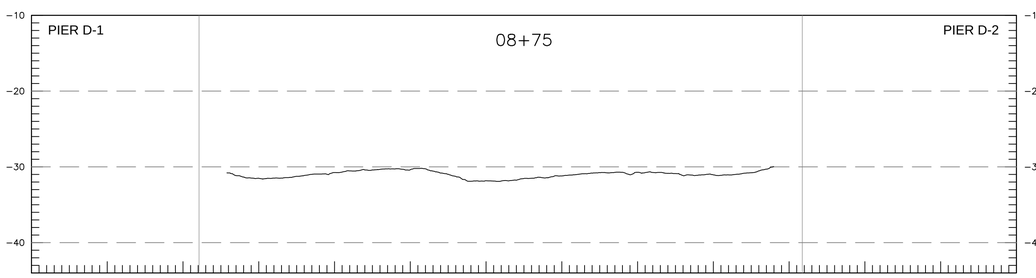












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FL SURVEYOR & MAPPER BUSINESS LICENSE #LB7959

P. SEABOLDT
FLORIDA PSM #6879

* NOT CERTIFIED WITHOUT SURVEY REPORT TITLED "USCG KEY WEST SURVEY REPORT WINTER 2018".

LEGEND

- SURVEY BASELINE A-B
- APPROXIMATE DOCK FACE
- EXISTING GRADE

U.S COAST GUARD
CIVIL ENGINEERING UNIT
MIAMI

USCG. CEU MIAMI
15608 SW 117TH AVE
MIAMI, FLORIDA 33177

ISSUE		
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	
CAD FILE NAME:	USCG2018-KEYWEST-SURVEY
DESIGNED BY:	KMK
DRAWN BY:	JDM
EDITED BY:	KMK
CHECKED BY:	PAS
SCALE: AS SHOWN	PLOT SCALE: 1:1

SHEET TITLE

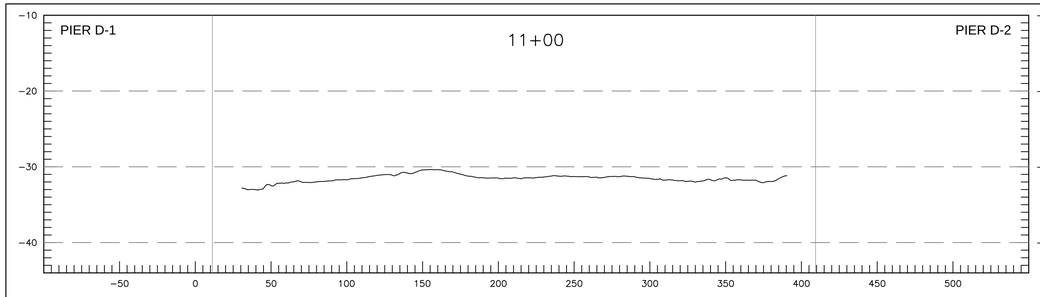
HYDROGRAPHIC SURVEY
USCG SECTOR KEY WEST
KEY WEST FL

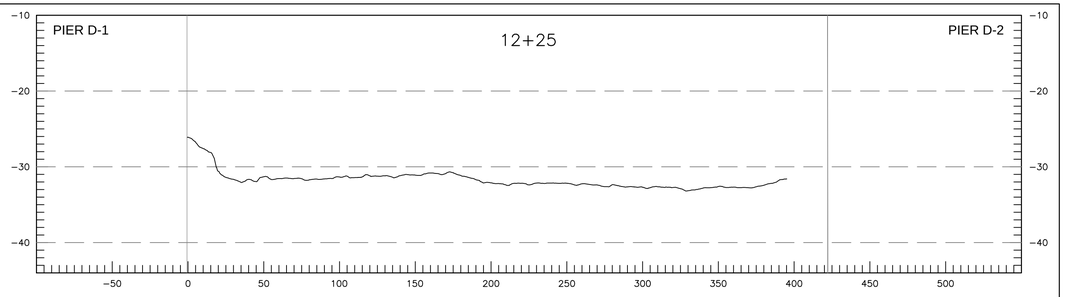
CIVIL
CROSS SECTIONS

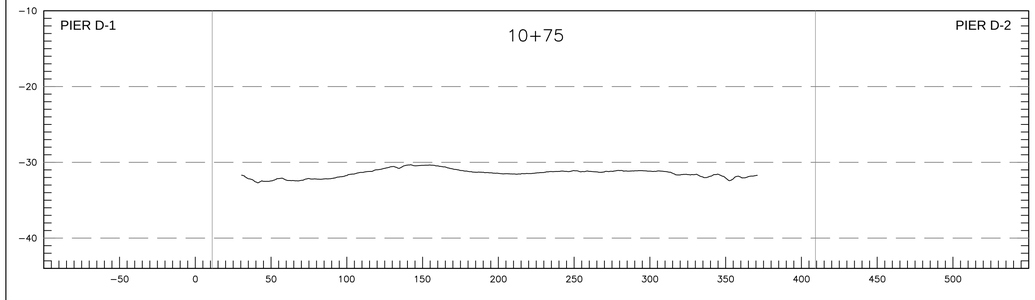
REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

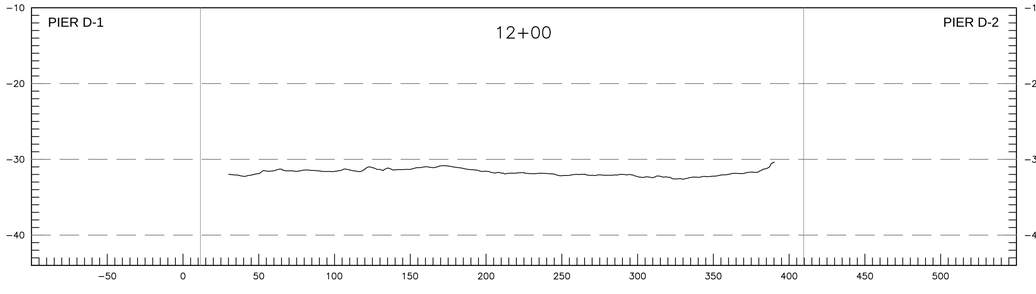
APPROVING OFFICER _____ DATE _____

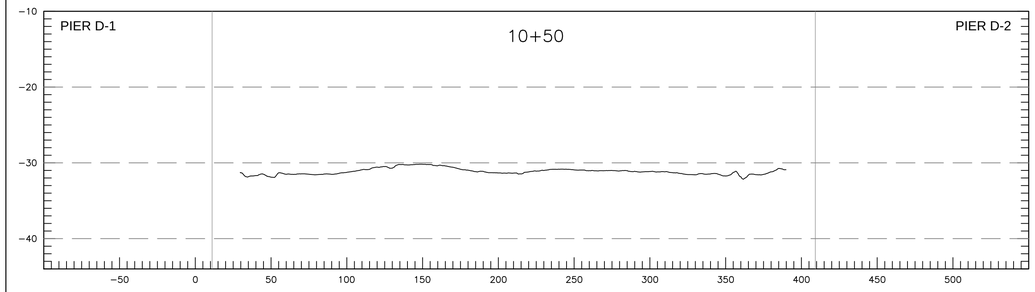
PROJECT NUMBER	DRAWING NUMBER
3652081	M1911-D
DISCIPLINE/SHT NO	
C-06	SHEET 7 OF 10

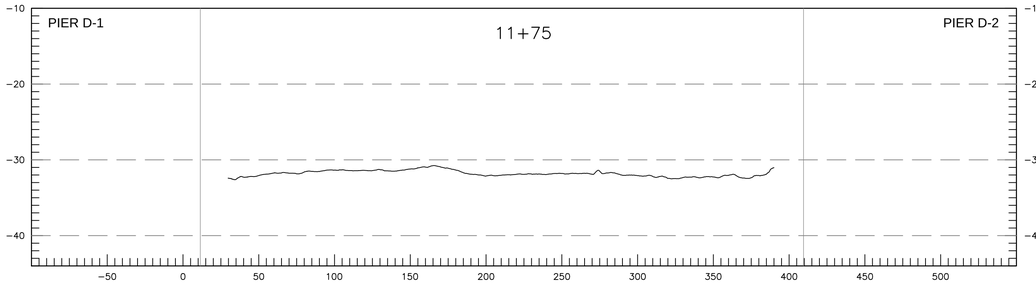


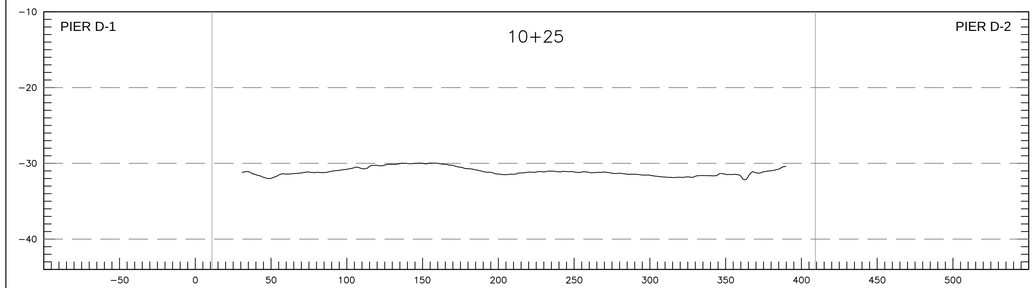


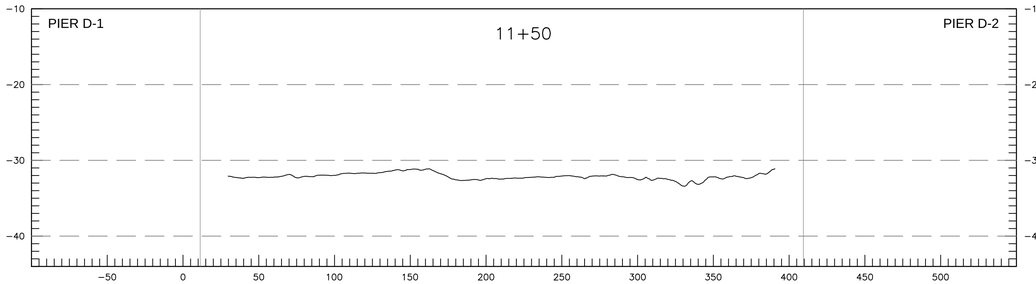


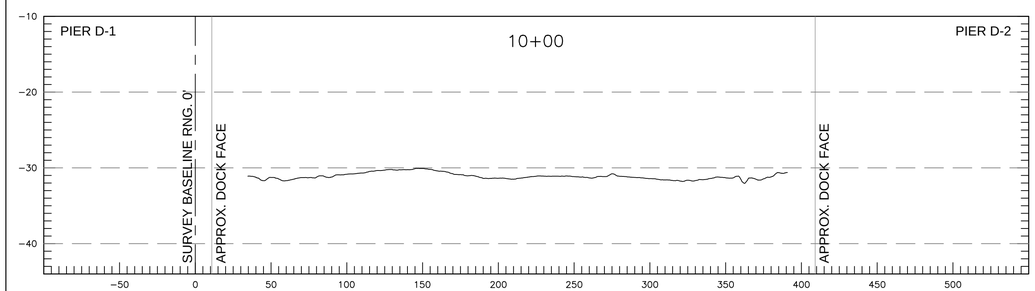


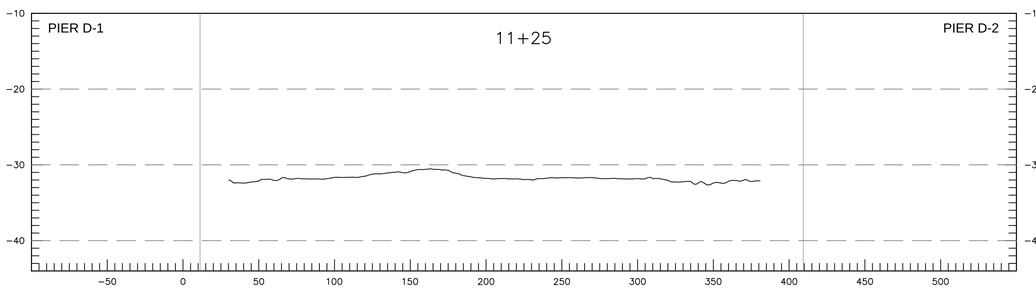












GBA
ENGINEERS ★ SURVEYORS
GAHAGAN & BRYANT ASSOCIATES, INC.
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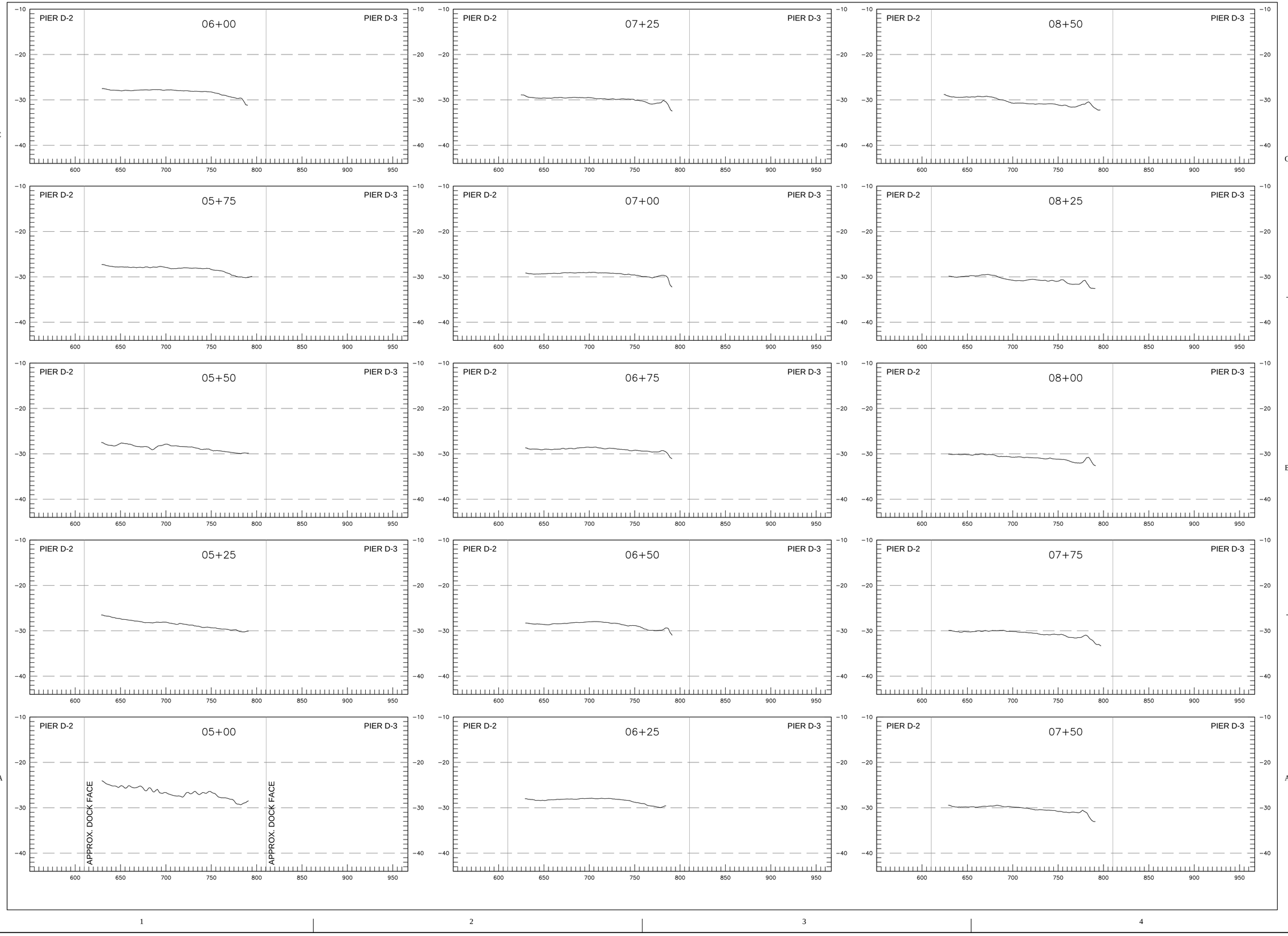
3652081	M1911-D
DISCIPLINE/SHT NO	
C-07	SHEET 8 OF 10



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USCG SECTOR KEY WEST
KEY WEST FL

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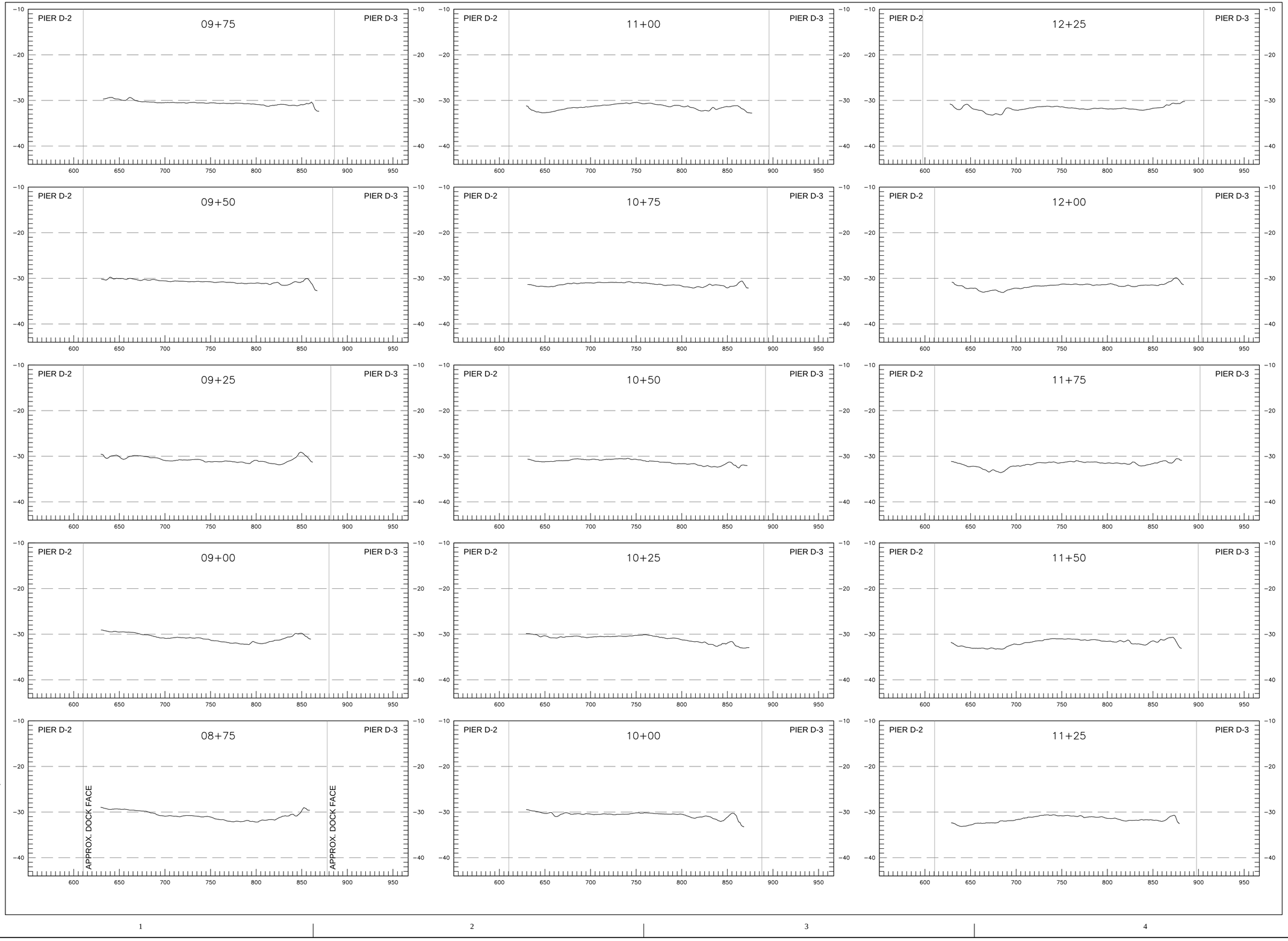
PROJECT ENG.	BRANCH CHIEF	TECH. DIRECTOR

APPROVING OFFICER | DATE

PROJECT NUMBER	DRAWING NUMBER
3652081	M1911-D
DISCIPLINE/SHT NO	
C-08	SHEET 9 OF 10



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APPROVING OFFICER — DATE

PROJECT NUMBER	DRAWING NUMBER
3652081	M1911-D
DISCIPLINE/SHT NO	
C-09	SHEET 10 OF 10

Appendix C Photographic Log

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
1	12/4/2018

Direction Photo Taken:

North

Description:

Benthic survey area, which includes the north bulkhead (background), east bulkhead (right picture edge), and pier pilings.

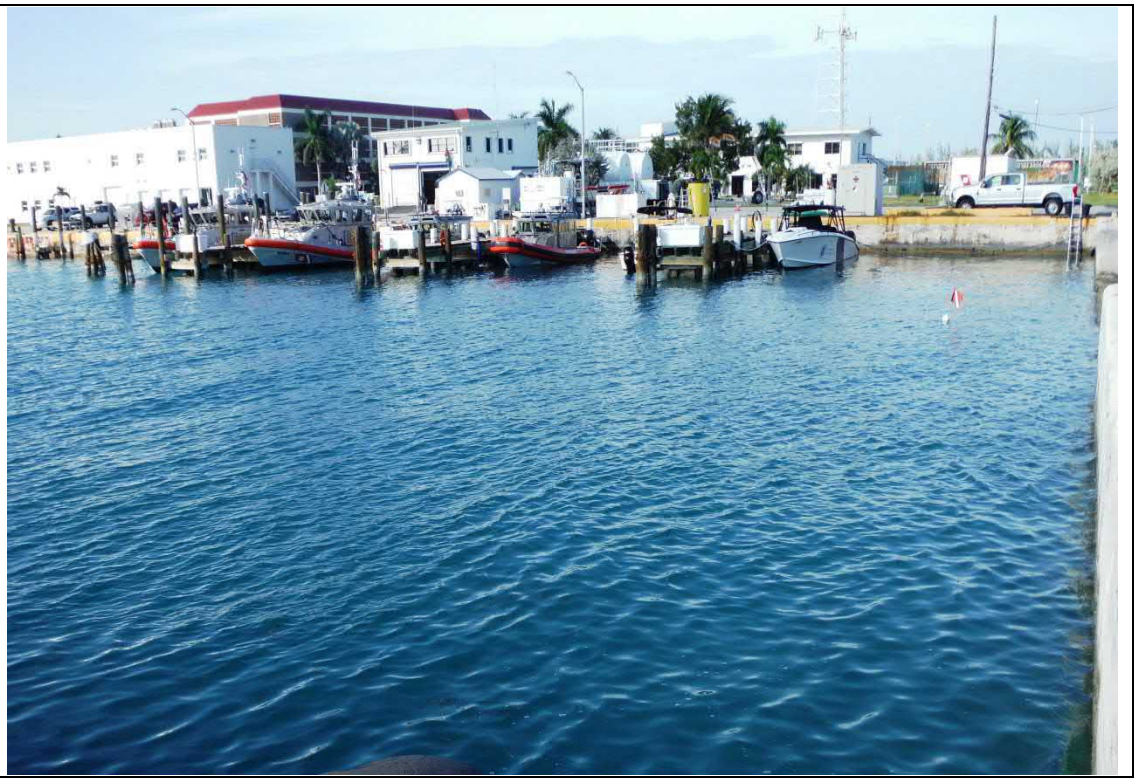


Photo No.	Date:
2	12/4/2018

Direction Photo Taken:

West-northwest

Description:

View seaward with USCG Cutters at Pier D-1 on left and Pier D-2 on right. Three wooden piers in foreground service several USCG small and medium response boats and a U.S. Customs and Border Patrol interceptor.

AECOM

PHOTOGRAPH LOG

Project Name:	**Site Location:**	**Project No.**
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No. 3	**Date:** 12/4/2018

Direction Photo Taken:

South

Description:

View of eastern bulkhead (Transect 2) of the benthic survey area, where 731 coral colonies were documented.

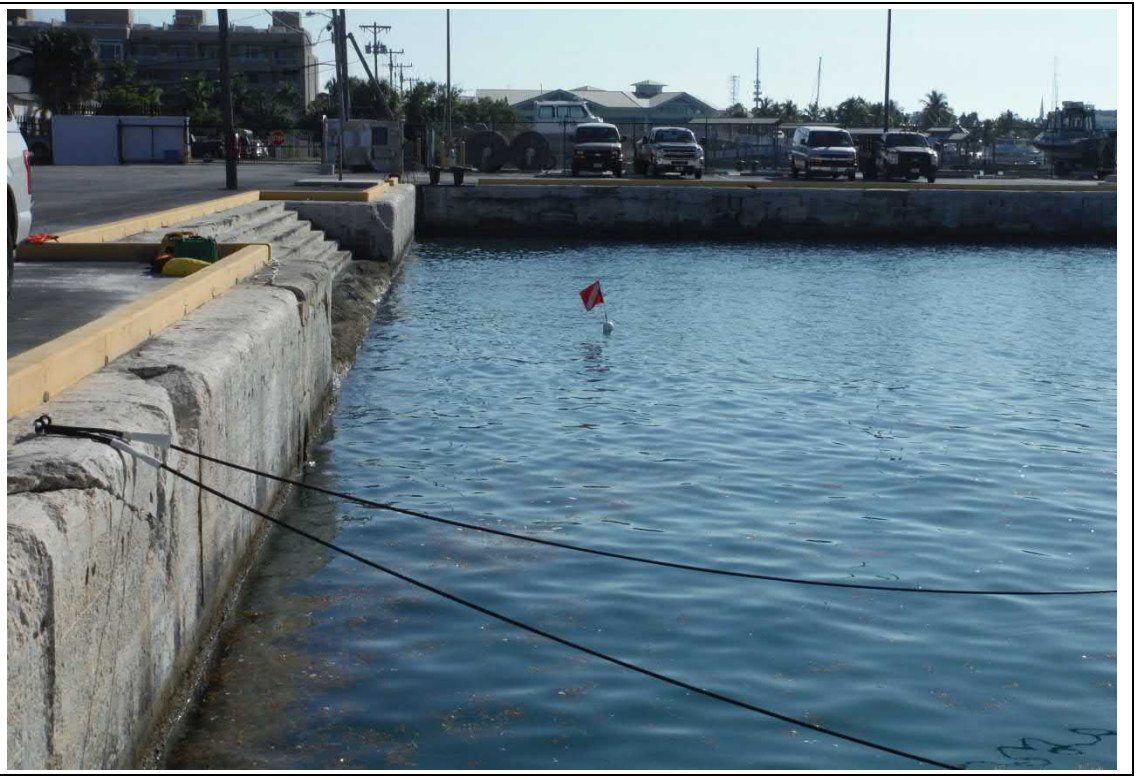


Photo No. 4	Date: 12/4/2018

Direction Photo Taken:

West

Description:

View of northern bulkhead (Transect 1) of the benthic survey area, where 575 coral colonies were documented. Both wood and concrete pilings, associated with the small vessel piers, were also surveyed during this scope of work.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
5	12/4/2018

Direction Photo Taken:

South

Description:

View of eastern small vessel pier, which is constructed of wood planking, supported by concrete pilings, and surrounded by wood pilings.

Photo No.	Date:
6	12/6/2018

Direction Photo Taken:

Northeast

Description:

View of north bulkhead (transect 1) and pilings between eastern and central small vessel piers.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
7	12/6/2018

Direction Photo Taken:

Southeast

Description:

View of central small vessel pier, which is constructed of wood planking, supported by concrete pilings, and surrounded by wood pilings.

Photo No.	Date:
8	12/5/2018

Direction Photo Taken:

Southeast

Description:

Close-up view of central small vessel pier pilings and condition of pier at the time of the survey. Based on recent aerial photos, repairs were made to this pier following its destruction during Hurricane Irma in 2017.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
9	12/6/2018

Direction Photo Taken:

South-southwest

Description:

View of western small vessel pier, which is constructed of wood planking, supported by concrete pilings, and surrounded by wood pilings.

Photo No.	Date:
10	12/6/2018

Direction Photo Taken:

West-northwest

Description:

View along north bulkhead from western small vessel pier to the western edge of benthic survey area (to last piling before USCG Cutter.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
11	12/5/2018

Direction Photo Taken:

South

Description:

View of AECOM SDT member inspecting westernmost dolphin, located at western end of northern bulkhead (Transect 1).

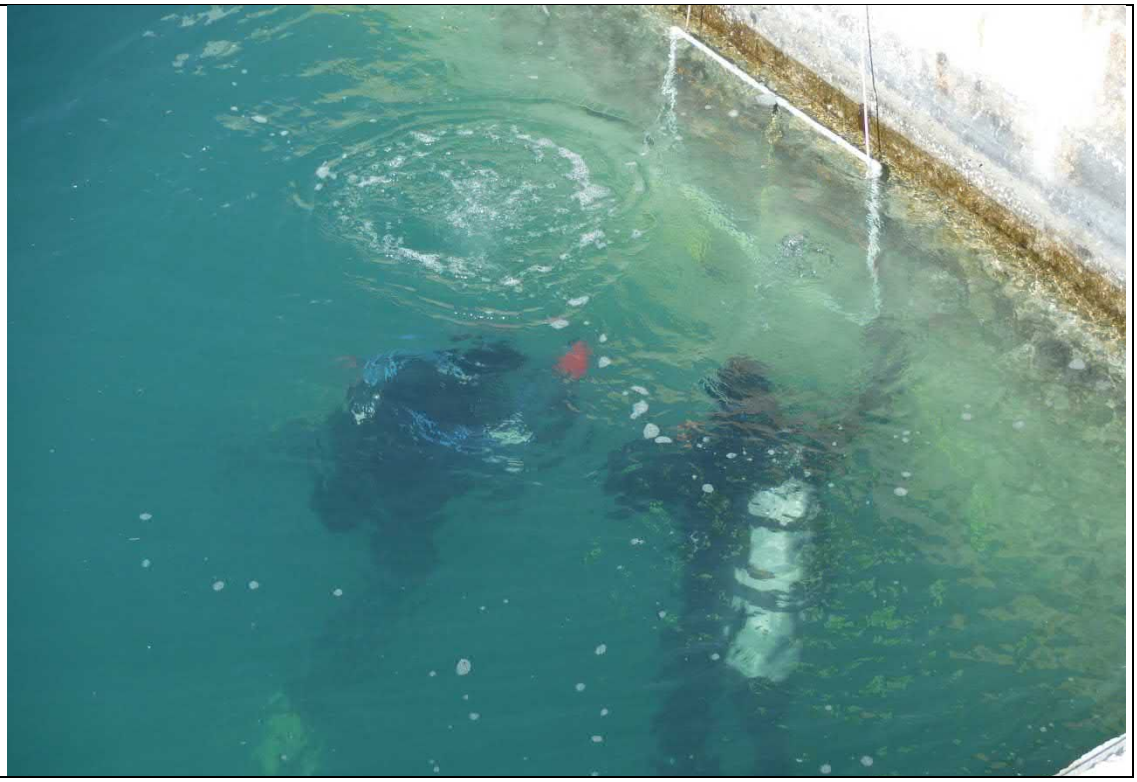
Photo No.	Date:
12	12/7/2018

Direction Photo Taken:

North-northwest

Description:

View of AECOM SDT members documenting corals near the east side of the northern bulkhead (Transect 1) utilizing a pair of quadrats for measurements and GoPro cameras for documentation.



AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
13	12/4/2018

Direction Photo Taken:

South

Description:

GBA, a Florida-licensed hydrographic surveyor, utilized their 25-foot custom survey vessel *Rising Tide* to perform the survey.

Photo No.	Date:
14	12/7/2018

Direction Photo Taken:

Northeast

Description:

Representative photograph of topographically flat basin comprised of calcareous silt with fine sands and small shell fragments. The surface of the seafloor was mostly covered by a thin algal layer with numerous mounds created by marine worms.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
15	12/5/2018

Direction Photo Taken:

N/A

Description:

Typical Golfball Coral (*Favia fragum)* observed during the survey, located on a concrete piling.

Photo No.	Date:
16	12/5/2018

Direction Photo Taken:

N/A

Description:

Typical Rose Coral (*Manicina areolata)* observed during the survey, located on a concrete piling.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
17	12/4/2018

Direction Photo Taken:

N/A

Description:

Typical Grooved Brain Coral (*Diploria labyrinthiformis*) observed during the survey, located on a concrete piling.

Photo No.	Date:
18	12/5/2018

Direction Photo Taken:

N/A

Description:

Typical Symmetrical Brain Coral (*Diploria strigosa)* observed during the survey, located on a concrete piling.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
19	12/7/2018

Direction Photo Taken:

East

Description:

Typical Knobby Brain Coral (*Diploria clivosa)* observed during the survey, located on the eastern bulkhead (Transect 2).

Photo No.	Date:
20	12/7/2018

Direction Photo Taken:

North

Description:

Typical Boulder Brain Coral (*Colpophyllia natans)* observed during the survey, located on the northern bulkhead (Transect 1).

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
21	12/6/2018

Direction Photo Taken:

N/A

Description:

Typical Elliptical Star Coral (*Dichocoenia stokesi)* observed during the survey, located on a concrete piling.

Photo No.	Date:
22	12/6/2018

Direction Photo Taken:

N/A

Description:

Typical Great Star Coral (*Montastraea cavernosa)* observed during the survey, located on a concrete piling.

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
23	12/7/2018

Direction Photo Taken:

East

Description:

Typical Lobed Star Coral (*Agaricia humilis)* observed during the survey, located on the east bulkhead (Transect 2).

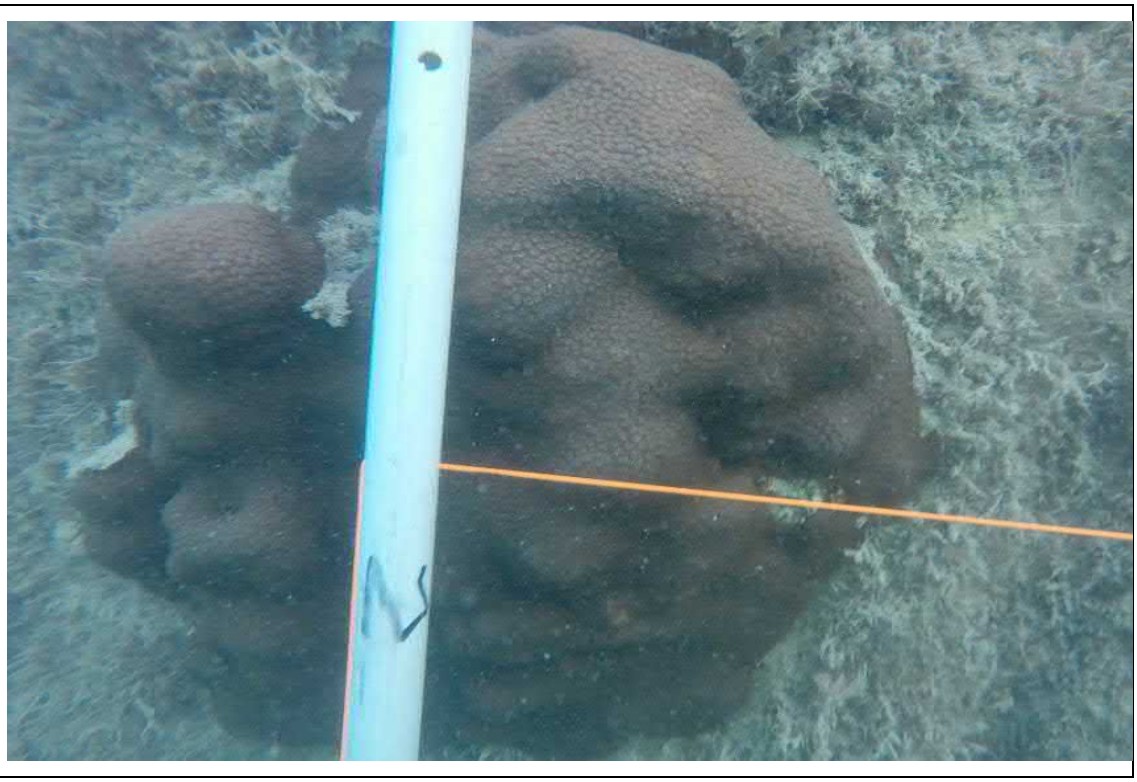


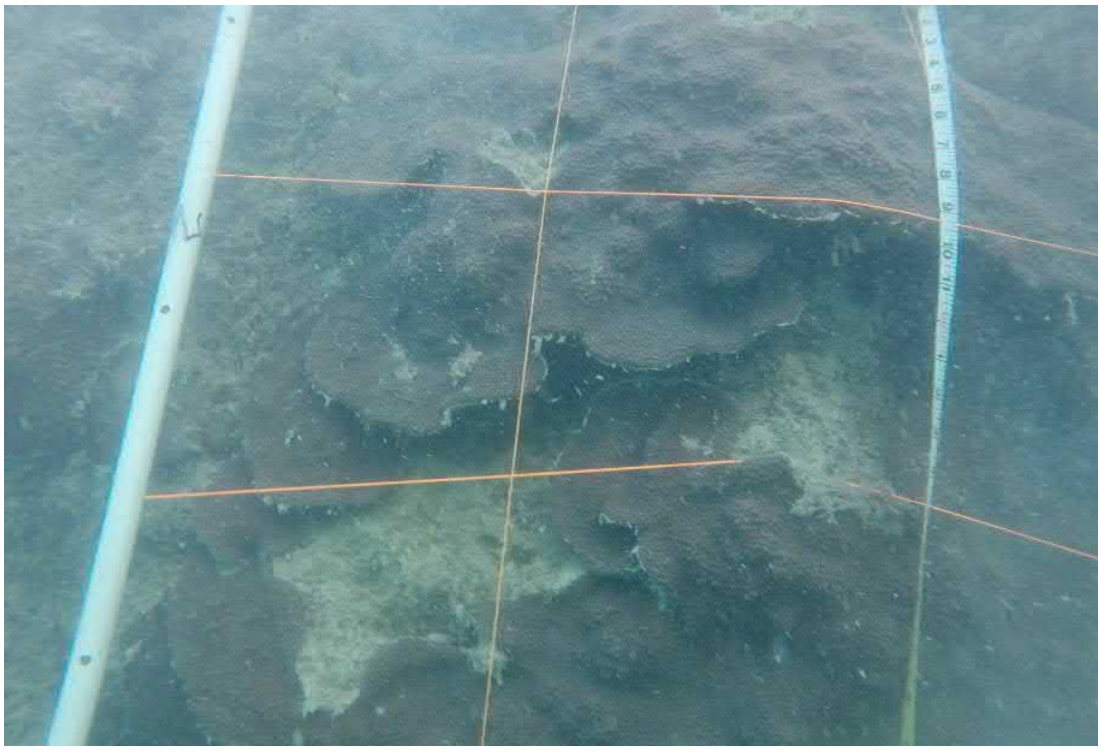
Photo No.	Date:
24	12/7/2018

Direction Photo Taken:

East

Description:

Typical Mountainous Star Coral (*Montastrea faveolata)* observed during the survey, located on the east bulkhead (Transect 2).



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PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
25	12/7/2018

Direction Photo Taken:

East

Description:

Typical Massive Starlet Coral (*Siderastrea siderea)* observed during the survey, located on the east bulkhead (Transect 2).

Photo No.	Date:
26	12/7/2018

Direction Photo Taken:

East

Description:

Typical Lesser Starlet Coral (*Siderastrea radians)* observed during the survey, located on the east bulkhead (Transect 2).

AECOM

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Hydrographic, Benthic Surveys & Dredge Spoils Sampling at Various D7/D8 Units	USCG Sector Key West, Key West, Florida	60587113

Photo No.	Date:
27	12/6/2018

Direction Photo Taken:

N/A

Description:

Typical Smooth Star Coral (*Solenastrea bournoni)* observed during the survey, located on a concrete piling.

Photo No.	Date:
28	12/7/2018

Direction Photo Taken:

North

Description:

Typical Ten-Ray Star Coral (*Madracia decatis)* observed during the survey, located on the northern bulkhead (Transect 1).

AECOM

PHOTOGRAPH LOG

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Photo No.	Date:
29	12/7/2018

Direction Photo Taken:

N/A

Description:

Typical Blushing Star Coral (*Stephanocoenia intersepta)* observed during the survey, located on the northern bulkhead (Transect 1).

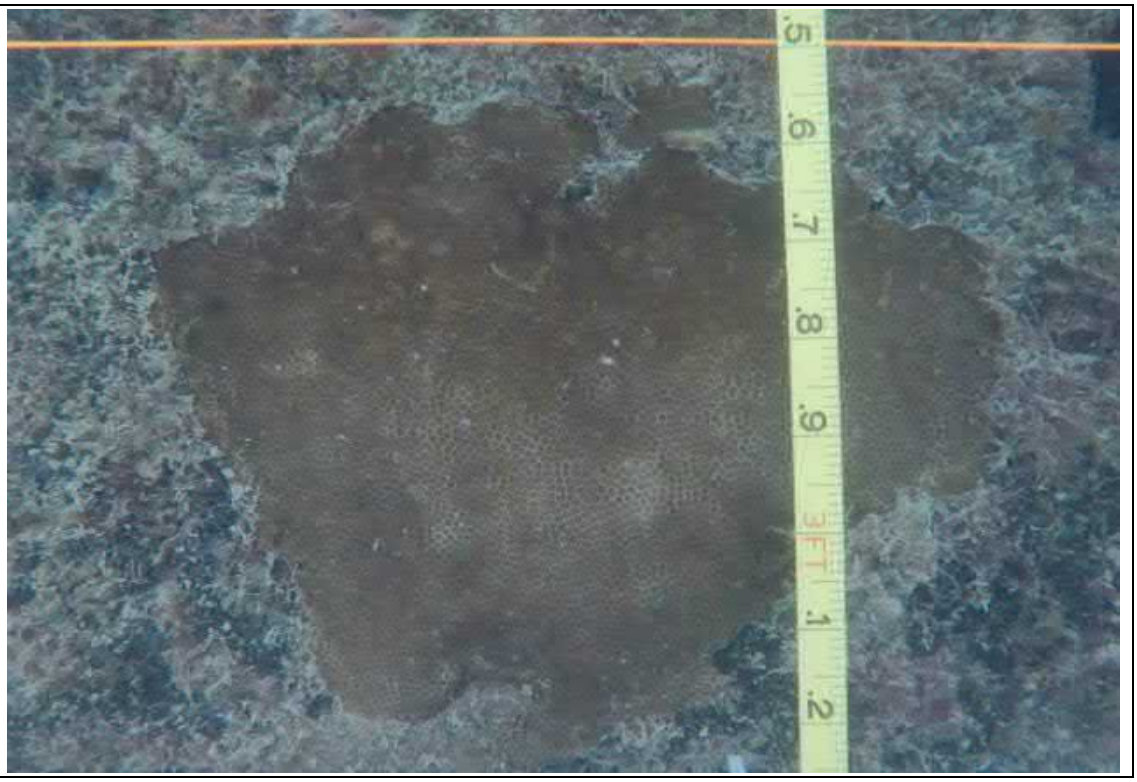

Photo No.	Date:
30	12/7/2018

Direction Photo Taken:

East

Description:

Typical Knobby Star Coral (*Solenastrea hyades)* observed during the survey, located on the east bulkhead (Transect 2).

AECOM

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Photo No.	Date:
31	12/6/2018

Direction Photo Taken:

N/A

Description:

Typical Mustard Hill Coral (*Porites astreoides)* observed during the survey, located on a concrete piling.

Photo No.	Date:
32	12/7/2018

Direction Photo Taken:

East

Description:

Typical Spiny Flower Coral (Mussa angulosa*)* observed during the survey, located on the east bulkhead (Transect 2).

AECOM

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Photo No.	Date:
33	12/6/2018

Direction Photo Taken:

N/A

Description:

Typical Large Ivory Coral (*Oculina varicosa)* observed during the survey, located on a concrete piling.

Photo No.	Date:
34	12/7/2018

Direction Photo Taken:

North

Description:

Typical Diffuse Ivory Bush Coral (*Oculina diffusa)* observed during the survey, located on the north bulkhead (Transect 1).

AECOM

PHOTOGRAPH LOG

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Photo No.	Date:
35	12/6/2018

Direction Photo Taken:

N/A

Description:

Several mat zoanthids colonies (zoanthus pulchellus), were observed during the survey, including this one located on a concrete piling. Note most of these zoanthids' oral discs are partially open and feeding, while a few at the top of the colony remain closed.

Photo No.	Date:
36	12/7/2018

Direction Photo Taken:

Northeast

Description:

All-terrain vehicle on bottom under base of eastern small vessel pier adjacent to the north bulkhead (Transect 1).

Appendix D Additional Photographs and Videos (2 DVDs)

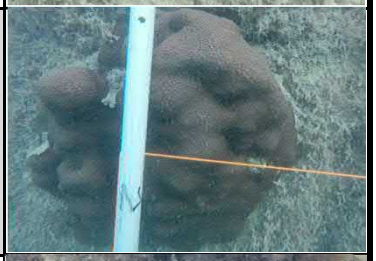
Appendix E Total Seagrass and Coral Summary

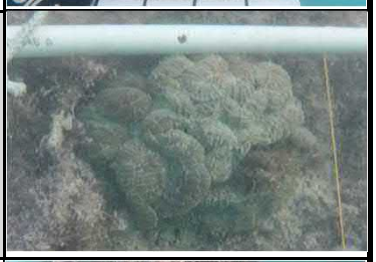
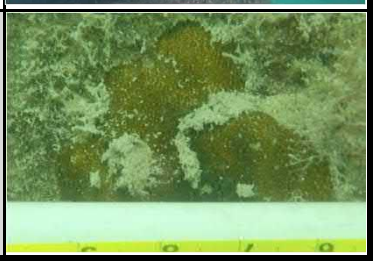
- Seagrass Survey
- Observed Corals (Guide)
- Coral Colonies Observed Along NORTH WALL (Transect 1)
- Coral Colonies Observed Along Transect 1 – Subtotals by 12.5’ Section
- Coral Colonies Observed Along EAST WALL (Transect 2)
- Coral Colonies Observed Along Transect 2 – Subtotals by 12.5’ Section
- Coral Colonies Observed on Pilings
- Total Coral Summary by Species

Fan West 10'	TL Center	Fan East 10'	Sediments/Algae	Comments	% Total Cover	% Tt	% Sf	% Hw	% Hd	% Other:
X	0	X	Predominantly a calcareous silt and fine sand mix with small shell fragments thinly covered in brownish algae.	No resources observed	0					
X	25	X		No resources observed	0					
X	50	X		No resources observed	0					
X	75	X		No resources observed	0					
X	100	X		No resources observed	0					
X	125	X		No resources observed	0					
X	150	X		No resources observed	0					
X	175	X		No resources observed	0					
X	200	X		No resources observed	0					
X	225	X		No resources observed	0					
X	250	X		No resources observed	0					

Species Codes: Tt= Thalassia testudinum, Sf= Syringodium filiforme, Hd= Halophila decipiens, Hw= Halodule wrightii, He= Halophila engelmanni, Hj= Halophila johnsonii, RM=Ruppia maritima

Common Name	Name ID	Full Scientific Name	Ref. Photo ID	Reference Photo
Blushing Star Coral	Ste Inte	Stephanocoenia intersepta	1169	
Boulder Brain Coral	Col nata	Colpophyllia natans	1062	
Diffuse Ivory Bush Coral	Ocu diff	Oculina diffusa	1865	
Elliptical Star Coral	Dic stok	Dichocoenia stokesi	406	
Golfball Coral	Fav frag	Favia fragum	130432	
Great Star Coral	Mon cave	Montastraea cavernosa	413	
Grooved Brain Coral	Dip labr	Diploria labyrinthiformis	1636	

Common Name	Name ID	Full Scientific Name	Ref. Photo ID	Reference Photo
Hidden Cup Coral	Phy amer	Phyllangia americana	T1 Video	
Knobby Brain Coral	Dip cliv	Diploria clivosa	1741	
Knobby Star Coral	Sol hyad	Solenastrea hyades	419	
Large Ivory Coral	Ocu vari	Oculina varicosa	425	
Lesser Starlet Coral	Sid radi	Siderastrea radians	1097, 1153	
Lobed Star Coral	Mon annu	Montastraea annularis	1763	
Massive Star Coral	Sid side	Siderastrea siderea	1525	

Common Name	Name ID	Full Scientific Name	Ref. Photo ID	Reference Photo
Mountainous Star Coral	Mon fave	Montastrea faveolat	1785	
Mustard Hill Coral	Por astr	Porites astreoides	870	
Rose Coral	Man areo	Manicina areolata	1280	
Smooth Star Coral	Sol bour	Solenastrea bournoni	877	
Spiny Flower Coral	Mus angu	Mussa angulosa	1851	
Symmetrical Brain Coral	Dip strig	Diploria strigosa	1147	
Ten-Ray Star Coral	Mad deca	Madracia decatis	1233	

Coral Colonies Observed Along NORTH WALL (Transect 1)
Attachment 7

Location	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area (cm2)	Photo #
			Depth	Length	Width	Height			
0-2.5	Grooved Brain coral	Dip labr	7.0	5	5	2	1	25	1468
0-2.5	Symmetrical Brain coral	Dip strig	7	3	6	1	1	18	1467
0-2.5	Lesser Starlet coral	Sid radi	7	3	6	1	1	18	1467
0-2.5	Diffuse Ivory Bush coral	Ocu diff	12.5	5	2	4	2	20	1485
0-2.5	Lesser Starlet coral	Sid radi	12.5	10	7	2	1	70	1485
0-2.5	Lesser Starlet coral	Sid radi	7	5	8	1	1	40	1472
0-2.5	Lesser Starlet coral	Sid radi	8.5	20	16	1	1	320	1473
0-2.5	Massive Starlet coral	Sid side	9	5	8	1	1	40	1473
0-2.5	Lesser Starlet coral	Sid radi	14.5	3	3	1	1	9	1487
0-2.5	Lesser Starlet coral	Sid radi	15	16	8	1	1	128	1487
0-2.5	Lesser Starlet coral	Sid radi	14	1	1	1	4	4	1486
0-2.5	Smooth Star coral	Sol bour	13.5	3	5	1	1	15	1486
0-2.5	Lesser Starlet coral	Sid radi	7.5	1	1	1	1	1	1483
0-2.5	Lesser Starlet coral	Sid radi	7.5	10	5	1	1	50	1483
0-2.5	Massive Starlet coral	Sid side	8.5	10	5	1	1	50	1482
0-2.5	Massive Starlet coral	Sid side	9	12	7	2	1	84	1482
0-2.5	Massive Starlet coral	Sid side	9.5	10	6	2	1	60	1482
0-2.5	Lesser Starlet coral	Sid radi	9.5	2	2	1	2	8	1482
0-2.5	Lesser Starlet coral	Sid radi	10	8	7	1	3	168	1480/1481
0-2.5	Lesser Starlet coral	Sid radi	10.5	1	1	1	9	9	1480/1481
0-2.5	Massive Starlet coral	Sid side	12	12	8	2	2	192	1480
0-2.5	Lesser Starlet coral	Sid radi	11	1	1	1	1	1	1479
0-2.5	Lesser Starlet coral	Sid radi	12	9	7	2	4	252	1479
0-2.5	Diffuse Ivory Bush coral	Ocu diff	11	1	5	3	1	5	1479
0-2.5	Grooved Brain coral	Dip labr	8.5	7	6	2	1	42	1482/1483
0.9	Lesser Starlet coral	Sid radi	3.1	3	2	1	1	6	1034
1	Lesser Starlet coral	Sid radi	4.8	6	3	1	2	36	1032/1033
1.1	Lesser Starlet coral	Sid radi	4.5	3	3	1	1	9	1032/1033
1.2	Lesser Starlet coral	Sid radi	3.3	6	6	1	1	36	1032/1033
1.5	Lesser Starlet coral	Sid radi	5.3	3	3	1	1	9	1032/1033
3	Lesser Starlet coral	Sid radi	8.5	7	4	1	1	28	1483
3	Lesser Starlet coral	Sid radi	8	1	3	1	2	6	1483
4.5	Lesser Starlet coral	Sid radi	9.5	9	10	1	1	90	1475
4.5	Lesser Starlet coral	Sid radi	8.5	3	3	1	1	9	1475
4.5	Lesser Starlet coral	Sid radi	10.5	3	4	1	1	12	1475
4.5	Lesser Starlet coral	Sid radi	8.0	3	5	1	2	30	1476
5	Lesser Starlet coral	Sid radi	8.0	2	2	1	1	4	1476
5.5	Lesser Starlet coral	Sid radi	7.5	5	4	1	1	20	1476
4.5	Symmetrical Brain coral	Dip strig	3.9	5	3	1	1	15	1038
7	Lesser Starlet coral	Sid radi	6.6	3	7	1	1	21	1037
7.2	Lesser Starlet coral	Sid radi	4.6	10	8	1	1	80	1037
7.2	Lesser Starlet coral	Sid radi	6.4	10	23	1	1	230	1037
7.8	Lesser Starlet coral	Sid radi	6.6	10	15	1	1	150	1037
8	Lesser Starlet coral	Sid radi	6.0	2	2	1	1	4	1043
8.1	Lesser Starlet coral	Sid radi	6.0	4	3	1	1	12	1043
8.3	Lesser Starlet coral	Sid radi	5.6	8	6	1	1	48	1043
8.5	Lesser Starlet coral	Sid radi	5.7	1	1	1	2	2	1043
9.8	Knobby Brain coral	Pse cliv	4.5	18	15	2	1	270	1044
10	Lesser Starlet coral	Sid radi	8.2	7	7	1	1	49	1462
11	Starlet coral	Sid sp	13.0	12	8	1	1	96	1456
11.5	Lesser Starlet coral	Sid radi	10.0	5	3	1	1	15	1466
11.5	Blushing Star coral	Ste Inte	10.0	12	5	1	1	60	1461
11.5	Starlet coral	Sid sp	11.0	3	3	1	3	27	1459
11.5	Lesser Starlet coral	Sid radi	2.3	5	4	1	1	20	1045/1048
12	Elliptical Star coral	Dic stok	11.0	8	10	1	1	80	1458/1459
12.7	Lesser Starlet coral	Sid radi	2.0	10	10	1	1	100	1045/1047
13.5	Blushing Star coral	Ste Inte	5.7	33	36	4	1	1188	1049/1050
14.5	Starlet coral	Sid sp	15.0	20	18	1	1	360	1453/1454
14.5	Starlet coral	Sid sp	15.0	5	5	1	1	25	1453/1454
14.6	Lesser Starlet coral	Sid radi	5.7	4	4	1	1	16	1054
15.8	Diffuse Ivory Bush coral	Ocu diff	2.0	9	8	3	1	72	1057/1052
19	Lesser Starlet coral	Sid radi	11.8	10	10	1	1	100	1429
19	Lesser Starlet coral	Sid radi	12.4	3	10	1	1	30	1429
20	Massive Starlet coral	Sid side	14.0	5	5	1	3	75	1428
20	Blushing Star coral	Ste Inte	14.5	5	7	1	1	35	1428
20	Smooth Star coral	Sol bour	12.1	10	6	1	1	60	1429
20	Great Star coral	Mon cave	11.0	35	35	2	1	1225	1423

Location	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area (cm2)	Photo #
			Depth	Length	Width	Height			
21	Elliptical Star coral	Dic stok	12.2	9	9	3	1	81	1424/1425/1426
21	Lesser Starlet coral	Sid radi	11.9	2	2	1	1	4	1424/1425/1426
21	Massive Starlet coral	Sid side	11.9	10	10	2	1	100	1424/1425/1426
21	Massive Starlet coral	Sid side	12.5	6	6	2	1	36	1424/1425/1426
21	Lesser Starlet coral	Sid radi	12.5	6	11	1	1	66	1424/1425/1426
22	Great Star coral	Mon cave	11.0	50	50	2	1	2500	1423/1451
22	Massive Starlet coral	Sid side	10.5	7	7	2	3	147	1431
22.5	Blushing Star coral	Ste Inte	13.7	10	8	1	1	80	1427
22.5	Boulder Brain coral	Col nata	5.2	19	19	5	1	361	1060/1062
23	Great Star coral	Mon cave	11.0	40	30	2	1	1200	1423/1451
23	Elliptical Star coral	Dic stok	7.5	11	11	1	1	121	1421
23	Lesser Starlet coral	Sid radi	8.2	10	10	1	1	100	1421
23	Lesser Starlet coral	Sid radi	3.2	6	4	1	1	24	1064
24	Massive Starlet coral	Sid side	7.5	5	7	1	2	70	1409
24	Starlet coral	Sid sp	7.5	2	1	1	1	2	1409
24	Lesser Starlet coral	Sid radi	8.5	10	20	2	1	200	1420
24.7	Lesser Starlet coral	Sid radi	7.5	3	3	1	1	9	1408
24.8	Lesser Starlet coral	Sid radi	10.0	6	8	2	2	96	1419
25	Lesser Starlet coral	Sid radi	13.7	9	9	3	2	162	1374
25	Blushing Star coral	Ste Inte	8.5	6	8	1	1	48	1420
25.25	Lesser Starlet coral	Sid radi	13.0	9	8	1	1	72	1375
25.5	Massive Starlet coral	Sid side	12.7	8	8	1	1	64	1375
25.5	Starlet coral	Sid sp	14.0	7	7	1	3	147	1414
25.5	Starlet coral	Sid sp	14.0	2	2	1	3	12	1414
25.5	Starlet coral	Sid sp	14.0	8	10	1	1	80	1414
25.5	Starlet coral	Sid sp	14.0	15	20	2	1	300	1414
25.5	Starlet coral	Sid sp	13.9	7	7	1	1	49	1415
25.5	Starlet coral	Sid sp	14	10	12	1	1	120	1415
25.5	Massive Starlet coral	Sid side	12.5	6	6	1	1	36	1416
25.5	Massive Starlet coral	Sid side	12	5	8	1	2	80	1417
25.5	Lesser Starlet coral	Sid radi	12.0	2	2	1	2	8	1417
25.5	Starlet coral	Sid sp	12.3	7	7	1	2	98	1417
25.5	Massive Starlet coral	Sid side	11.0	6	5	1	1	30	1418
25.8	Starlet coral	Sid sp	12.7	1	1	1	1	1	1375
26	Starlet coral	Sid sp	13.1	5	6	1	1	30	1375
26	Starlet coral	Sid sp	13.6	5	5	1	1	25	1412
26	Blushing Star coral	Ste Inte	13.5	13	10	2	2	260	1412
26.2	Lesser Starlet coral	Sid radi	10	6	13	1	1	78	1405
26.8	Ten-Ray Star coral	Mad deca	9.5	8	8	1	1	64	1405/1406
27	Starlet coral	Sid sp	12.7	5	5	1	1	25	1373
27	Lesser Starlet coral	Sid radi	5.6	18	15	3	1	270	1067
27.2	Lesser Starlet coral	Sid radi	9	5	3	1	1	15	1407
27.3	Lesser Starlet coral	Sid radi	4.2	1	1	1	1	1	1074
27.5	Blushing Star coral	Ste Inte	11.6	12	18	2	1	216	1373
27.5	Lesser Starlet coral	Sid radi	4.1	5	5	1	1	25	1074
27.5	Lesser Starlet coral	Sid radi	6.6	4	3	1	1	12	1073
28.5	Symmetrical Brain coral	Dip strig	1.8	14	12	3	1	168	1068/1069
28.6	Lesser Starlet coral	Sid radi	6.0	2	2	1	1	4	1072
29	Elliptical Star coral	Dic stok	14.0	5	5	1	1	25	1368
29.5	Lesser Starlet coral	Sid radi	14.0	2	2	1	3	12	1367
29.5	Starlet coral	Sid sp	14.0	7	5	1	1	35	1367
29.8	Lesser Starlet coral	Sid radi	5.5	8	5	1	1	40	1071
30	Blushing Star coral	Ste Inte	14.0	15	9	2	1	135	1367
31	Blushing Star coral	Ste Inte	14.0	13	20	3	1	260	1365
31	Lesser Starlet coral	Sid radi	14.0	2	6	1	1	12	1365
33	Mustard Hill coral	Por astr	4.7	8	6	2	1	48	1079
33.6	Lesser Starlet coral	Sid radi	5.4	6	5	1	1	30	1079
34	Massive Starlet coral	Sid side	8.7	13	7	2	1	91	1370
34	Massive Starlet coral	Sid side	9.7	7	12	2	1	84	1370
34	Lesser Starlet coral	Sid radi	9.2	5	4	1	1	20	1370
34	Elliptical Star coral	Dic stok	9.7	5	5	3	1	25	1370
34	Blushing Star coral	Ste Inte	7.5	23	30	4	1	690	1371
34	Mustard Hill coral	Por astr	3.3	16	13	1	1	208	1076/1077
34.9	Mustard Hill coral	Por astr	3.5	13	10	1	1	130	1082
35	Massive Starlet coral	Sid side	10.8	12	18	2	1	216	1369
35	Lesser Starlet coral	Sid radi	11.5	8	12	2	1	96	1369
35	Blushing Star coral	Ste Inte	11.7	5	3	1	1	15	1369

Location	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area (cm2)	Photo #
			Depth	Length	Width	Height			
35	Great Star coral	Mon cave	11.5	3	5	1	1	15	1369
35	Blushing Star coral	Ste Inte	11.6	15	8	2	1	120	1369
35	Massive Starlet coral	Sid side	8.7	5	5	2	1	25	1370
35.7	Lesser Starlet coral	Sid radi	9.3	2	5	1	1	10	1370
36	Blushing Star coral colony	Ste Inte	12.0	33	33	5	1	1089	1361/1362
36	Starlet coral	Sid sp	11.9	3	7	1	1	21	1361/1362
36	Starlet coral	Sid sp	13.5	7	7	1	1	49	1361/1362
36	Starlet coral	Sid sp	12.7	2	2	1	1	4	1361/1362
36	Starlet coral	Sid sp	13.9	2	1	1	1	2	1363
36	Starlet coral	Sid sp	13.7	4	5	1	2	40	1363
36	Blushing Star coral	Ste Inte	8	6	10	1	1	60	1372
36	Starlet coral	Sid sp	9.2	3	2	1	1	6	1372
36.5	Massive Starlet coral	Sid side	15.0	5	8	1	1	40	1357
36.5	Lesser Starlet coral	Sid radi	15.0	3	3	1	1	9	1357
36.5	Blushing Star coral	Ste Inte	6.3	44	51	2	1	2244	1082/1083
37.2	Diffuse Ivory Bush coral	Ocu diff	15.0	15	7	6	1	105	1357
39	Starlet coral	Sid sp	15	3	3	1	6	54	1353
39	Starlet coral	Sid sp	15	5	6	1	3	90	1353
39.5	Starlet coral	Sid sp	11.5	5	5	1	1	25	1351
39.5	Blushing Star coral	Ste Inte	10.5	37	20	3	1	740	1351/1352
39.75	Blushing Star coral	Ste Inte	10.2	7	3	1	1	21	1351/1352
39.8	Blushing Star coral	Ste Inte	11.0	25	19	4	1	475	1354
40	Blushing Star coral	Ste Inte	5.7	6	6	2	1	36	1086
40.5	Starlet coral	Sid sp	7.3	20	15	3	1	300	1355
41.8	Lesser Starlet coral	Sid radi	7.3	1	1	1	2	2	1356
42.3	Massive Starlet coral	Sid side	6.8	12	16	3	1	192	1092
43.8	Blushing Star coral	Ste Inte	10.0	5	8	1	1	40	1350
43.8	Blushing Star coral	Ste Inte	10	8	10	1	1	80	1350
47.7	Massive Starlet coral	Sid side	3.0	8	10	2	1	80	1094/1095
51.8	Lesser Starlet coral	Sid radi	8.8	20	28	3	1	560	1347/1348/1349
52.5	Blushing Star coral	Ste Inte	10	18	15	2	1	270	1347/1346
55	Lesser Starlet coral	Sid radi	15.0	10	15	2	1	150	1344
56	Blushing Star coral	Ste Inte	7.8	25	13	15?	1	325	1338, 1339, 1342, 1343
56.8	Blushing Star coral	Ste Inte	8	5	5	1	1	25	1339
58.8	Massive Starlet coral	Sid side	10.7	2	2	1	2	8	1337/1338
59	Blushing Star coral	Ste Inte	16.0	25	20	4	1	500	1336
63	Lesser Starlet coral	Sid radi	2.4	31	33	1	1	1023	1097
64.6	Lesser Starlet coral	Sid radi	5.6	4	8	1	1	32	1105/1106
64.8	Lesser Starlet coral	Sid radi	4.2	11	8	1	1	88	1101
64.9	Lesser Starlet coral	Sid radi	2.9	12	15	1	1	180	1100
65.2	Lesser Starlet coral	Sid radi	4.0	12	10	1	1	120	1101
66.5	Lesser Starlet coral	Sid sp	7.5	1	1	1	1	1	1335
67	Blushing Star coral	Ste Inte	7.5	5	10	2	1	50	1334
69	Lesser Starlet coral	Sid radi	7.5	4	4	1	2	32	1333
70	Lesser Starlet coral	Sid radi	8.5	3	3	1	1	9	1329
71	Starlet coral	Sid sp	7.0	3	5	1	1	15	1328
72	Starlet coral	Sid sp	7.5	4	8	1	1	32	1327
73.3	Blushing Star coral	Ste Inte	15.0	3	3	1	1	9	1325
73.5	Starlet coral	Sid sp	15.0	2	2	1	1	4	1325
74.4	Starlet coral	Sid sp	15.0	2	5	1	1	10	1325
74.4	Starlet coral	Sid sp	15.0	3	5	1	1	15	1325
75.8	Lesser Starlet coral	Sid radi	5.9	6	4	1	1	24	1109
76	Lesser Starlet coral	Sid radi	5.8	2	2	1	1	4	1109
76.7	Massive Starlet coral	Sid side	6.0	4	8	1	1	32	1116
76-79	Blushing Star coral	Ste Inte	15.0	12	7	2	1	84	1324
80	Starlet coral	Sid sp	11.8	1	1	1	1	1	1322
80	Diffuse Ivory Bush coral	Ocu diff	2.9	6	13	2	1	78	1127
80.1	Diffuse Ivory Bush coral	Ocu diff	3.5	9	10	3	1	90	1127
80.1	Diffuse Ivory Bush coral	Ocu diff	3.8	13	12	3	1	156	1127
80.2	Diffuse Ivory Bush coral	Ocu diff	3.0	4	8	2	1	32	1127
80.5	Diffuse Ivory Bush coral	Ocu diff	3.3	12	13	3	1	156	1127
82.5	Lesser Starlet coral	Sid radi	6.5	13	18	1	1	234	1128/1129
83	Lesser Starlet coral	Sid radi	7.5	15	18	2	1	270	1321
85	Lesser Starlet coral	Sid radi	6.2	10	8	1	1	80	1128/1130
88.5	Starlet coral	Sid sp	12.5	2	2	1	1	4	1316
89.3	Lesser Starlet coral	Sid radi	7.5	5	4	1	1	20	1313
89.5	Lesser Starlet coral	Sid radi	8.5	3	5	1	1	15	1313

Location	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area (cm2)	Photo #
			Depth	Length	Width	Height			
89.5	Lesser Starlet coral	Sid radi	8.5	8	6	1	1	48	1313
89.5	Blushing Star coral	Ste Inte	11.3	16	20	4	1	320	1316
90	Lesser Starlet coral	Sid radi	7.5	10	10	1	1	100	1313
90.3	Lesser Starlet coral	Sid radi	7.5	8	8	1	1	64	1313
91	Lesser Starlet coral	Sid radi	7.0	5	4	1	2	40	1313
91	Blushing Star coral	Ste Inte	10.5	20	23	4	1	460	1317
92	Diffuse Ivory Bush coral	Ocu diff	3.5	6	10	2	1	60	1131-1133
92-96	Lesser Starlet coral	Sid radi	7	8	10	1	1	80	1311
92-96	Lesser Starlet coral	Sid radi	7	4	5	1	1	20	1312
94	Lesser Starlet coral	Sid radi	5.0	12	9	1	1	108	1136/1137
94	Lesser Starlet coral	Sid radi	6.1	9	7	1	1	63	1135/1136
94.5	Lesser Starlet coral	Sid radi	4.2	5	4	1	1	20	1136/1137
97.8	Lesser Starlet coral	Sid radi	6.0	5	4	1	1	20	1141
97.8	Lesser Starlet coral	Sid radi	6.2	9	8	1	1	72	1141
98.7	Lesser Starlet coral	Sid radi	6.2	5	5	1	1	25	1142
98.7	Lesser Starlet coral	Sid radi	6.3	9	10	1	1	90	1142
99	Lesser Starlet coral	Sid radi	6.3	2	2	1	1	4	1142
99.2	Lesser Starlet coral	Sid radi	6.5	7	6	1	1	42	1142
100.2	Diffuse Ivory Bush coral	Ocu diff	2.0	9	9	2	1	81	1144/1145
100.8	Diffuse Ivory Bush coral	Ocu diff	2.0	9	9	2	2	162	1144/1145
101-106	Lesser Starlet coral	Sid radi	8.0	2	2	1	1	4	1309
107	Blushing Star coral	Ste Inte	9.0	3	8	2	1	24	1308
109.8	Blushing Star coral	Ste Inte	8.0	5	6	2	1	30	1307
113.5	Blushing Star coral	Ste Inte	7	8	8	3	1	64	1305/1306
116	Blushing Star coral	Ste Inte	8	10	13	3	1	130	1303
116.2	Lesser Starlet coral	Sid radi	10.4	1	1	1	1	1	1302
127.8	Symmetrical Brain coral	Dip strig	3.0	4	5	1	1	20	1146/1147
131.5	Lesser Starlet coral	Sid radi	8.8	15	23	2	1	345	1299
132	Diffuse Ivory Bush coral	Ocu diff	3.5	9	8	2	1	72	1148
136	Blushing Star coral	Ste Inte	11.3	5	8	1	1	40	1297
145	Blushing Star coral	Ste Inte	10.0	5	7	1	1	35	1295
148.5	Blushing Star coral	Ste Inte	8	13	25	3	1	325	1293
151.5	Diffuse Ivory Bush coral	Ocu diff	2.0	6	6	2	1	36	1149/1150
160.5	Diffuse Ivory Bush coral	Ocu diff	7.0	5	7	5	1	35	1290
161.2	Lesser Starlet coral	Sid radi	7.7	1	1	1	1	1	1289
162.2	Lesser Starlet coral	Sid radi	7.5	3	3	1	1	9	1288
162.2	Lesser Starlet coral	Sid radi	9.5	2	2	1	1	4	1291
163	Diffuse Ivory Bush coral	Ocu diff	8.0	10	10	5	1	100	1287
163.8	Blushing Star coral	Ste Inte	11.5	20	22	3	1	440	1284/1285
165	Massive Starlet coral	Sid side	10.8	5	6	2	1	30	1277/1284/1285
165.25	Lesser Starlet coral	Sid radi	10.8	3	3	1	1	9	1277/1283
166	Massive Starlet coral	Sid side	8.3	8	11	1	1	88	1275/1282
166.3	Lesser Starlet coral	Sid radi	8.1	5	5	1	1	25	1275/1282
166.3	Starlet coral	Sid sp	6.8	8	7	1	1	56	1152
166.5	Starlet coral	Sid sp	13.5	3	3	1	1	9	1278
167	Rose coral	Man areo	7.5	4	4	2	1	16	1280
167.5	Massive Starlet coral	Sid side	14.0	4	4	1	2	32	1274
167.5	Massive Starlet coral	Sid side	11.0	5	5	1	1	25	1275/1279
168	Lesser Starlet coral	Sid radi	3.9	25	25	1	1	625	1153
168.5	Massive Starlet coral	Sid side	11.0	3	4	1	1	12	1275
170	Massive Starlet coral	Sid side	10.5	3	4	1	1	12	1273
170.2	Massive Starlet coral	Sid side	5.5	9	10	1	1	90	1155/1156
172	Blushing Star coral	Ste Inte	8.0	28	18	4	1	504	1271
172.75	Massive Starlet coral	Sid side	10.3	4	3	1	3	36	1272
175	Blushing Star coral	Ste Inte	9.0	31	35	5	1	1085	1269
175.5	Blushing Star coral	Ste Inte	10.25	31	33	5	1	1023	1268
177	Massive Starlet coral	Sid side	13	8	8	2	1	64	1267
182.25	Blushing Star coral	Ste Inte	7.5	23	21	5	1	483	1261/1262
183.25	Starlet coral	Sid sp	12.2	2	2	1	2	8	1264
183.25	Lesser Starlet coral	Sid radi	8.8	2	2	1	1	4	1263
183.4	Blushing Star coral	Ste Inte	6.6	4	4	1	1	16	1165
187.5	Diffuse Ivory Bush coral	Ocu diff	3.4	6	10	2	1	60	1160
190	Blushing Star coral	Ste Inte	11.75	20	23	2	1	460	1258/1259
190	Diffuse Ivory Bush coral	Ocu diff	2.2	10	13	3	1	130	1158/1159
193	Lesser Starlet coral	Sid radi	4.5	15	18	1	1	270	1164
194	Blushing Star coral	Ste Inte	12.5	17	25	3	1	425	1256/1257
195	Lesser Starlet coral	Sid radi	3.8	25	15	1	1	375	1163

Location	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area (cm2)	Photo #
			Depth	Length	Width	Height			
195.2	Lesser Starlet coral	Sid radi	5.7	9	7	1	1	63	1166
195.2	Lesser Starlet coral	Sid radi	6.3	12	10	1	1	120	1166
203	Lesser Starlet coral	Sid radi	3.8	5	7	1	1	35	1167
204	Blushing Star coral	Ste Inte	5.0	6	10	1	1	60	1168
207.5	Lesser Starlet coral	Sid radi	11.0	12	13	1	1	156	1249
207.5	Starlet coral	Sid sp	9.0	6	6	1	1	36	1251
208	Starlet coral	Sid sp	7.5	18	15	4	1	270	1252
210.5	Blushing Star coral	Ste Inte	2.6	20	25	1	1	500	1169
214	Starlet coral	Sid sp	11.0	1	1	1	2	2	1246
214.5	Starlet coral	Sid sp	14.0	7	7	1	1	49	1247
214.5	Lesser Starlet coral	Sid radi	4.0	11	13	1	1	143	1170
215.7	Lesser Starlet coral	Sid radi	4.5	6	8	1	1	48	1171/1172
215.7	Lesser Starlet coral	Sid radi	6.0	6	6	1	1	36	1173
216	Blushing Star coral	Ste Inte	10.2	8	8	1	1	64	1245
217-219.5	Blushing Star coral	Ste Inte	12.8	12	10	2	1	120	1240
217-219.5	Blushing Star coral	Ste Inte	12.8	7	5	1	1	35	1240
217-219.5	Blushing Star coral	Ste Inte	11.5	10	8	1	1	80	1241
220	Starlet coral	Sid sp	7.0	10	12	1	1	120	1237/1239
220	Lesser Starlet coral	Sid radi	6.2	5	5	1	1	25	1180
220.5	Lesser Starlet coral	Sid radi	2.1	9	9	1	3	243	1176
221	Starlet coral	Sid sp	7.0	5	7	1	2	70	1237/1239
221.5	Starlet coral	Sid sp	6.4	1	1	1	1	1	1177
222	Lesser Starlet coral	Sid radi	7.0	12	6	1	1	72	1237/1238
222	Lesser Starlet coral	Sid radi	4.0	10	13	1	1	130	1178
222.5	Lesser Starlet coral	Sid radi	7.5	25	25	2	1	625	1237/1238
222.5	Lesser Starlet coral	Sid radi	6.5	7	8	1	1	56	1179
222.5	Lesser Starlet coral	Sid radi	6.5	4	5	1	1	20	1179
222.6	Lesser Starlet coral	Sid radi	6.9	5	7	1	1	35	1183
222.8	Lesser Starlet coral	Sid radi	7.0	10	5	1	1	50	1237/1238
223	Lesser Starlet coral	Sid radi	6.8	28	20	1	1	560	1182
223.5	Lesser Starlet coral	Sid radi	5.6	8	13	1	1	104	1182
223.5	Lesser Starlet coral	Sid radi	6.8	6	10	1	1	60	1182
224.3	Lesser Starlet coral	Sid radi	2.6	5	5	1	1	25	1186
224.7	Diffuse Ivory Bush coral	Ocu diff	2.2	9	7	3	1	63	1186
225.3	Lesser Starlet coral	Sid radi	4.7	10	7	1	1	70	1184
228.9	Lesser Starlet coral	Sid radi	2.2	3	4	1	1	12	1188
229	Diffuse Ivory Bush coral	Ocu diff	2.1	8	9	3	1	72	1188
229.2	Lesser Starlet coral	Sid radi	6.0	9	8	1	1	72	1190
230.8	Lesser Starlet coral	Sid radi	3.6	8	8	1	1	64	1189
232.5	Blushing Star coral	Ste Inte	14	15	9	1	1	135	1230/1231
233	Lesser Starlet coral	Sid radi	5.9	7	10	1	1	70	1195
233.1	Massive Starlet coral	Sid side	5.7	7	7	1	1	49	1194
233.3	Massive Starlet coral	Sid side	6.2	5	5	1	1	25	1195
233.7	Ten-Ray Star coral	Mad deca	10.0	9	8	1	1	72	1232/1233
234	Lesser Starlet coral	Sid radi	4.9	5	7	1	1	35	1191
234.7	Lesser Starlet coral	Sid radi	6.9	5	5	1	1	25	1196/1197
235.3	Lesser Starlet coral	Sid radi	7.0	13	5	1	1	65	1197
238.5	Blushing Star coral	Ste Inte	9.3	5	8	1	1	40	1227
240	Smooth Star coral	Sol bour	7.5	22	33	3	1	726	1226/1228
243.5	Blushing Star coral	Ste Inte	13.3	5	7	1	1	35	1221/1222
244.5	Blushing Star coral	Ste Inte	11.3	12	11	1	1	132	1221/1223
246.2	Lesser Starlet coral	Sid radi	2.9	5	5	1	1	25	1199/1202
246.6	Blushing Star coral	Ste Inte	6.6	5	5	1	1	25	1200/1201
252	Lesser Starlet coral	Sid radi	5.0	13	12	1	1	156	1204/1205
255	Massive Starlet coral	Sid side	9.0	23	21	5	1	483	1215/1220
256.5	Elliptical Star coral	Dic stok	8.5	6	6	3	1	36	1215/1216
256.6	Starlet coral	Sid sp	8.5	1	1	1	1	1	1215/1216
256.6	Starlet coral	Sid sp	11.5	1	1	1	1	1	1218/1219
256.6	Starlet coral	Sid sp	12.0	1	1	1	1	1	1218/1219
257	Diffuse Ivory Bush coral	Ocu diff	9.5	8	8	3	1	64	1215
257.5	Blushing Star coral	Ste Inte	7.5	5	5	1	1	25	1215/1217
257.5	Blushing Star coral	Ste Inte	8.0	8	12	2	1	96	1215/1217
258.5	Lesser Starlet coral	Sid radi	6.5	4	7	1	1	28	1209
259	Massive Starlet coral	Sid side	5.2	7	12	1	1	84	1208
259.3	Massive Starlet coral	Sid side	3.6	9	13	2	1	117	1206/1207
262.5	Blushing Star coral	Ste Inte	7.7	18	18	3	1	324	1234/1236
263.5	Blushing Star coral	Ste Inte	7.3	13	10	3	1	130	1234/1235

Location	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area (cm2)	Photo #
			Depth	Length	Width	Height			
264	Massive Starlet coral	Sid side	11.5	7	9	1	1	63	1210/1214
264	Massive Starlet coral	Sid side	11.5	2	3	1	1	6	1214
264.5	Massive Starlet coral	Sid side	9.0	30	25	8	1	750	1210/1213
265.5	Blushing Star coral	Ste Inte	9	25	21	3	1	525	1210/1211
265.5	Lesser Starlet coral	Sid radi	9.5	10	12	2	1	120	1210/1212
266	Lesser Starlet coral	Sid radi	8.0	10	15	2	1	150	1210/1212
TOTALS (above 16 foot depth)							404	45521	
246	Massive Starlet coral	Sid side	Sub 16	2	2	1	1	4	
241	Starlet coral	Sid sp	Sub 16	1	1	1	4	4	
236	Large Ivory coral	Ocu vari	Sub 16	3	2	2	1	6	
213	Massive Starlet coral	Sid side	Sub 16	3	2	1	1	6	
194	Massive Starlet coral	Sid side	Sub 16	1	1	1	1	1	
193	Blushing Star coral	Ste Inte	Sub 16	1	2	1	1	2	
193	Starlet coral	Sid sp	Sub 16	1	1	1	1	1	
174	Blushing Star coral	Ste Inte	Sub 16	5	5	1	1	25	
174	Starlet coral	Sid sp	Sub 16	2	1	1	3	6	
173.5	Blushing Star coral	Ste Inte	Sub 16	2	5	1	1	10	
171	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	1	4	
164	Blushing Star coral	Ste Inte	Sub 16	1	1	1	1	1	
123	Lesser Starlet coral	Sid radi	Sub 16	3	1	1	2	6	
123	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	4	4	
117.5	Starlet coral	Sid sp	Sub 16	1	1	1	2	2	
114	Starlet coral	Sid sp	Sub 16	1	2	1	1	2	
113.5	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	1	4	
113	Lesser Starlet coral	Sid radi	Sub 16	0.5	0.5	0.5	1	0.25	
112.5	Starlet coral	Sid sp	Sub 16	2	2	1	1	4	
60	Starlet coral	Sid sp	Sub 16	3	1	1	1	3	
37	Massive Starlet coral	Sid side	Sub 16	3	3	2	1	9	
26	Blushing Star coral	Ste Inte	Sub 16	5	3	1	1	15	
26	Lesser Starlet coral	Sid radi	Sub 16	2	1	1	2	4	
25.5	Blushing Star coral	Ste Inte	Sub 16	8	4	1	1	32	
25.5	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	1	1	
25	Lesser Starlet coral	Sid radi	Sub 16	2	1	1	2	4	
24	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	3	3	
22	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	3	12	
22	Blushing Star coral	Ste Inte	Sub 16	2	2	1	1	4	
22	Blushing Star coral	Ste Inte	Sub 16	4	6	1	1	24	
22	Smooth star coral	Sol bour	Sub 16	2	2	1	1	4	
21	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	3	3	
21	Blushing Star coral	Ste Inte	Sub 16	8	5	1	1	40	
21	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	1	4	
21	Lesser Starlet coral	Sid radi	Sub 16	2	1	1	1	2	
21	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	3	3	
20	Smooth Star coral	Sol bour	Sub 16	1	1	1	3	3	
19	Starlet coral	Sid sp	Sub 16	4	4	1	1	16	
18-14	Starlet coral	Sid sp	Sub 16	1	1	1	10	10	
13	Starlet coral	Sid sp	Sub 16	1	1	1	8	8	
13	Starlet coral	Sid sp	Sub 16	3	2	1	1	6	
12	Blushing Star coral	Ste Inte	Sub 16	5	3	1	1	15	
12	Blushing Star coral	Ste Inte	Sub 16	4	2	1	1	8	
12	Blushing Star coral	Ste Inte	Sub 16	1	2	1	3	6	
12	Blushing Star coral	Ste Inte	Sub 16	2	2	1	1	4	
8	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	1	4	
7	Starlet coral	Sid sp	Sub 16	2	1	1	3	6	
6	Blushing Star coral	Ste Inte	Sub 16	4	4	1	1	16	
4	Blushing Star coral	Ste Inte	Sub 16	20	15	2	1	300	
6	Blushing Star coral	Ste Inte	Sub 16	6	5	1	1	30	
11.5	Blushing Star coral	Ste Inte	Sub 16	6	7	1	1	42	
12.5	Blushing Star coral	Ste Inte	Sub 16	7	8	1	1	56	
20	Massive Starlet coral	Sid side	Sub 16	4	4	1	1	16	
21	Lesser Starlet coral	Sid radi	Sub 16	3	3	1	4	36	
22	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	2	8	
22	Blushing Star coral	Ste Inte	Sub 16	8	6	1	1	48	
25.5	Blushing Star coral	Ste Inte	Sub 16	5	3	1	1	15	
29	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	3	3	
29	Lesser Starlet coral	Sid radi	Sub 16	3	2	1	1	6	
29	Lesser Starlet coral	Sid radi	Sub 16	3	3	1	1	9	

Location	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area (cm2)	Photo #
			Depth	Length	Width	Height			
29	Blushing Star coral	Ste Inte	Sub 16	2	2	1	1	4	
32	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	1	4	
32	Blushing Star coral	Ste Inte	Sub 16	3	3	1	1	9	
32	Blushing Star coral	Ste Inte	Sub 16	6	5	1	1	30	
37	Massive Starlet coral	Sid side	Sub 16	2	2	1	1	4	
37.5	Smooth Star coral	Sol bour	Sub 16	0.5	0.5	0.5	2	0.5	
44	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	2	8	
44	Blushing Star coral	Ste Inte	Sub 16	2	2	1	1	4	
44	Blushing Star coral	Ste Inte	Sub 16	2	5	1	1	10	
70	Hidden Cup coral	Phy amer	Sub 16	0.5	0.5	1	10	2.5	
77	Starlet coral	Sid sp	Sub 16	2	2	1	1	4	
80	Starlet coral	Sid sp	Sub 16	0.5	0.5	0.5	3	0.75	
101	Hidden Cup coral	Phy amer	Sub 16	0.5	0.5	0.5	2	0.5	
101	Hidden Cup coral	Phy amer	Sub 16	0.5	0.5	0.5	2	0.5	
102	Starlet coral	Sid sp	Sub 16	1	1	1	1	1	
103.5	Starlet coral	Sid sp	Sub 16	1	1	1	1	1	
104.5	Lesser Starlet coral	Sid radi	Sub 16	3	3	1	1	9	
111.5	Starlet coral	Sid sp	Sub 16	2	2	1	1	4	
119	Starlet coral	Sid sp	Sub 16	2	2	1	1	4	
126	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	1	1	
135	Hidden Cup coral	Phy amer	Sub 16	0.5	0.5	0.5	4	1	
158	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	1	4	
163	Lesser Starlet coral	Sid radi	Sub 16	3	3	1	1	9	
171.2	Lesser Starlet coral	Sid radi	Sub 16	1	1	1	1	1	
173	Blushing Star coral	Ste Inte	Sub 16	3	3	1	1	9	
175.5	Lesser Starlet coral	Sid radi	Sub 16	2	2	1	1	4	
176	Blushing Star coral	Ste Inte	Sub 16	1	1	1	2	2	
176	Blushing Star coral	Ste Inte	Sub 16	2	2	1	2	8	
177	Starlet coral	Sid sp	Sub 16	1	1	1	2	2	
179	Starlet coral	Sid sp	Sub 16	1	1	1	1	1	
183	Blushing Star coral	Ste Inte	Sub 16	9	12	1	1	108	
197.5	Large Ivory coral	Ocu vari	Sub 16	1	3	2	1	3	
206	Blushing Star coral	Ste Inte	Sub 16	10	12	1	1	120	
208	Massive Starlet coral	Sid side	Sub 16	2	3	1	1	6	
218	Blushing Star coral	Ste Inte	Sub 16	10	9	1	1	90	
235	Blushing Star coral	Ste Inte	Sub 16	10	20	2	1	200	
237	Starlet coral	Sid sp	Sub 16	2	1	1	1	2	
242	Starlet coral	Sid sp	Sub 16	2	3	1	1	6	
242	Starlet coral	Sid sp	Sub 16	1	1	1	1	1	
243	Blushing Star coral	Ste Inte	Sub 16	8	9	1	1	72	
244	Blushing Star coral	Ste Inte	Sub 16	11	15	4	1	165	
254	Blushing Star coral	Ste Inte	Sub 16	3	3	1	1	9	
TOTALS (below 16 foot depth)							837	79949	

Coral Colonies Observed Along Transect 1 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area
			Depth	Length	Width	Height		
0-2.5	Symmetrical Brain coral	Dip strig	7	3	6	1	1	18
0-2.5	Lesser Starlet coral	Sid radi	7	3	6	1	1	18
0-2.5	Diffuse Ivory Bush coral	Ocu diff	12.5	5	2	4	2	10
0-2.5	Lesser Starlet coral	Sid radi	12.5	10	7	2	1	70
0-2.5	Lesser Starlet coral	Sid radi	7	5	8	1	1	40
0-2.5	Lesser Starlet coral	Sid radi	8.5	20	16	1	1	320
0-2.5	Massive Starlet coral	Sid side	9	5	8	1	1	40
0-2.5	Lesser Starlet coral	Sid radi	14.5	3	3	1	1	9
0-2.5	Lesser Starlet coral	Sid radi	15	16	8	1	1	128
0-2.5	Lesser Starlet coral	Sid radi	14	1	1	1	4	1
0-2.5	Smooth Star coral	Sol bour	13.5	3	5	1	1	15
0-2.5	Lesser Starlet coral	Sid radi	7.5	1	1	1	1	1
0-2.5	Lesser Starlet coral	Sid radi	7.5	10	5	1	1	50
0-2.5	Massive Starlet coral	Sid side	8.5	10	5	1	1	50
0-2.5	Massive Starlet coral	Sid side	9	12	7	2	1	84
0-2.5	Massive Starlet coral	Sid side	9.5	10	6	2	1	60
0-2.5	Lesser Starlet coral	Sid radi	9.5	2	2	1	2	4
0-2.5	Lesser Starlet coral	Sid radi	10	8	7	1	3	56
0-2.5	Lesser Starlet coral	Sid radi	10.5	1	1	1	9	1
0-2.5	Massive Starlet coral	Sid side	12	12	8	2	2	96
0-2.5	Lesser Starlet coral	Sid radi	11	1	1	1	1	1
0-2.5	Lesser Starlet coral	Sid radi	12	9	7	2	4	63
0-2.5	Diffuse Ivory Bush coral	Ocu diff	11	1	5	3	1	5
0-2.5	Grooved Brain coral	Dip labr	8.5	7	6	2	1	42
0-2.5	Grooved Brain coral	Dip labr	7.0	5	5	2	1	25
0.9	Lesser Starlet coral	Sid radi	3.1	3	2	1	1	6
1	Lesser Starlet coral	Sid radi	4.8	6	3	1	2	18
1.1	Lesser Starlet coral	Sid radi	4.5	3	3	1	1	9
1.2	Lesser Starlet coral	Sid radi	3.3	6	6	1	1	36
1.5	Lesser Starlet coral	Sid radi	5.3	3	3	1	1	9
3	Lesser Starlet coral	Sid radi	8.5	7	4	1	1	28
3	Lesser Starlet coral	Sid radi	8	1	3	1	2	3
4	Blushing Star coral	Ste Inte	Sub 16 ft	20	15	2	1	300
4.5	Lesser Starlet coral	Sid radi	9.5	9	10	1	1	90
4.5	Lesser Starlet coral	Sid radi	8.5	3	3	1	1	9
4.5	Lesser Starlet coral	Sid radi	10.5	3	4	1	1	12
4.5	Lesser Starlet coral	Sid radi	8.0	3	5	1	2	15
4.5	Symmetrical Brain coral	Dip strig	3.9	5	3	1	1	15
5	Lesser Starlet coral	Sid radi	8.0	2	2	1	1	4
5.5	Lesser Starlet coral	Sid radi	7.5	5	4	1	1	20
6	Blushing Star coral	Ste Inte	Sub 16 ft	4	4	1	1	16
6	Blushing Star coral	Ste Inte	Sub 16 ft	6	5	1	1	30
7	Lesser Starlet coral	Sid radi	6.6	3	7	1	1	21
7	Starlet coral	Sid sp	Sub 16 ft	2	1	1	3	2
7.2	Lesser Starlet coral	Sid radi	4.6	10	8	1	1	80
7.2	Lesser Starlet coral	Sid radi	6.4	10	23	1	1	230
7.8	Lesser Starlet coral	Sid radi	6.6	10	15	1	1	150
8	Lesser Starlet coral	Sid radi	6.0	2	2	1	1	4
8	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	1	4
8.1	Lesser Starlet coral	Sid radi	6.0	4	3	1	1	12
8.3	Lesser Starlet coral	Sid radi	5.6	8	6	1	1	48
8.5	Lesser Starlet coral	Sid radi	5.7	1	1	1	2	1
9.8	Konbby Brain coral	Pse cliv	4.5	18	15	2	1	270
10	Lesser Starlet coral	Sid radi	8.2	7	7	1	1	49
11	Starlet coral	Sid sp	13.0	12	8	1	1	96
11.5	Lesser Starlet coral	Sid radi	10.0	5	3	1	1	15
11.5	Blushing Star coral	Ste Inte	10.0	12	5	1	1	60
11.5	Starlet coral	Sid sp	11.0	3	3	1	3	9

Coral Colonies Observed Along Transect 1 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area
			Depth	Length	Width	Height		
11.5	Lesser Starlet coral	Sid radi	2.3	5	4	1	1	20
11.5	Blushing Star coral	Ste Inte	Sub 16 ft	6	7	1	1	42
12	Elliptical Star coral	Dic stok	11.0	8	10	1	1	80
12	Blushing Star coral	Ste Inte	Sub 16 ft	5	3	1	1	15
12	Blushing Star coral	Ste Inte	Sub 16 ft	4	2	1	1	8
12	Blushing Star coral	Ste Inte	Sub 16 ft	1	2	1	3	2
12	Blushing Star coral	Ste Inte	Sub 16 ft	2	2	1	1	4
12.5	Blushing Star coral	Ste Inte	Sub 16 ft	7	8	1	1	56
SUBTOTAL 0 -12.5'							95	3105
12.7	Lesser Starlet coral	Sid radi	2.0	10	10	1	1	100
13	Starlet coral	Sid sp	Sub 16 ft	1	1	1	8	1
13	Starlet coral	Sid sp	Sub 16 ft	3	2	1	1	6
13.5	Blushing Star coral	Ste Inte	5.7	33	36	4	1	1188
14.5	Starlet coral	Sid sp	15.0	20	18	1	1	360
14.5	Starlet coral	Sid sp	15.0	5	5	1	1	25
14.6	Lesser Starlet coral	Sid radi	5.7	4	4	1	1	16
14-18	Starlet coral	Sid sp	Sub 16 ft	1	1	1	10	1
15.8	Diffuse Ivory Bush coral	Ocu diff	2.0	9	8	3	1	72
19	Lesser Starlet coral	Sid radi	11.8	10	10	1	1	100
19	Lesser Starlet coral	Sid radi	12.4	3	10	1	1	30
19	Starlet coral	Sid sp	Sub 16 ft	4	4	1	1	16
20	Massive Starlet coral	Sid side	14.0	5	5	1	3	25
20	Blushing Star coral	Ste Inte	14.5	5	7	1	1	35
20	Smooth Star coral	Sol bour	12.1	10	6	1	1	60
20	Great Star coral	Mon cave	11.0	35	35	2	1	1225
20	Smooth Star coral	Sol bour	Sub 16 ft	1	1	1	3	1
20	Massive Starlet coral	Sid side	Sub 16 ft	4	4	1	1	16
21	Elliptical Star coral	Dic stok	12.2	9	9	3	1	81
21	Lesser Starlet coral	Sid radi	11.9	2	2	1	1	4
21	Massive Starlet coral	Sid side	11.9	10	10	2	1	100
21	Massive Starlet coral	Sid side	12.5	6	6	2	1	36
21	Lesser Starlet coral	Sid radi	12.5	6	11	1	1	66
21	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	3	1
21	Blushing Star coral	Ste Inte	Sub 16 ft	8	5	1	1	40
21	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	1	4
21	Lesser Starlet coral	Sid radi	Sub 16 ft	2	1	1	1	2
21	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	3	1
21	Lesser Starlet coral	Sid radi	Sub 16 ft	3	3	1	4	9
22	Great Star coral	Mon cave	11.0	50	50	2	1	2500
22	Massive Starlet coral	Sid side	10.5	7	7	2	3	49
22	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	3	4
22	Blushing Star coral	Ste Inte	Sub 16 ft	2	2	1	1	4
22	Blushing Star coral	Ste Inte	Sub 16 ft	4	6	1	1	24
22	Smooth star coral	Sol bour	Sub 16 ft	2	2	1	1	4
22	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	2	4
22	Blushing Star coral	Ste Inte	Sub 16 ft	8	6	1	1	48
22.5	Blushing Star coral	Ste Inte	13.7	10	8	1	1	80
22.5	Boulder Brain coral	Col nata	5.2	19	19	5	1	361
23	Great Star coral	Mon cave	11.0	40	30	2	1	1200
23	Elliptical Star coral	Dic stok	7.5	11	11	1	1	121
23	Lesser Starlet coral	Sid radi	8.2	10	10	1	1	100
23	Lesser Starlet coral	Sid radi	3.2	6	4	1	1	24
24	Massive Starlet coral	Sid side	7.5	5	7	1	2	35
24	Starlet coral	Sid sp	7.5	2	1	1	1	2
24	Lesser Starlet coral	Sid radi	8.5	10	20	2	1	200
24	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	3	1
24.7	Lesser Starlet coral	Sid radi	7.5	3	3	1	1	9
24.8	Lesser Starlet coral	Sid radi	10.0	6	8	2	2	48

Coral Colonies Observed Along Transect 1 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area
			Depth	Length	Width	Height		
25	Lesser Starlet coral	Sid radi	13.7	9	9	3	2	81
25	Blushing Star coral	Ste Inte	8.5	6	8	1	1	48
25	Lesser Starlet coral	Sid radi	Sub 16 ft	2	1	1	2	2
SUBTOTAL 12.6 - 25							90	8570
25.25	Lesser Starlet coral	Sid radi	13.0	9	8	1	1	72
25.5	Massive Starlet coral	Sid side	12.7	8	8	1	1	64
25.5	Starlet coral	Sid sp	14.0	7	7	1	3	49
25.5	Starlet coral	Sid sp	14.0	2	2	1	3	4
25.5	Starlet coral	Sid sp	14.0	8	10	1	1	80
25.5	Starlet coral	Sid sp	14.0	15	20	2	1	300
25.5	Starlet coral	Sid sp	13.9	7	7	1	1	49
25.5	Starlet coral	Sid sp	14	10	12	1	1	120
25.5	Massive Starlet coral	Sid side	12.5	6	6	1	1	36
25.5	Massive Starlet coral	Sid side	12	5	8	1	2	40
25.5	Lesser Starlet coral	Sid radi	12.0	2	2	1	2	4
25.5	Starlet coral	Sid sp	12.3	7	7	1	2	49
25.5	Massive Starlet coral	Sid side	11.0	6	5	1	1	30
25.5	Blushing Star coral	Ste Inte	Sub 16 ft	8	4	1	1	32
25.5	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	1	1
25.5	Blushing Star coral	Ste Inte	Sub 16 ft	5	3	1	1	15
25.8	Starlet coral	Sid sp	12.7	1	1	1	1	1
26	Starlet coral	Sid sp	13.1	5	6	1	1	30
26	Starlet coral	Sid sp	13.6	5	5	1	1	25
26	Blushing Star coral	Ste Inte	13.5	13	10	2	2	130
26	Blushing Star coral	Ste Inte	Sub 16 ft	5	3	1	1	15
26	Lesser Starlet coral	Sid radi	Sub 16 ft	2	1	1	2	2
26.2	Lesser Starlet coral	Sid radi	10	6	13	1	1	78
26.8	Ten-Ray Star coral	Mad deca	9.5	8	8	1	1	64
27	Starlet coral	Sid sp	12.7	5	5	1	1	25
27	Lesser Starlet coral	Sid radi	5.6	18	15	3	1	270
27.2	Lesser Starlet coral	Sid radi	9	5	3	1	1	15
27.3	Lesser Starlet coral	Sid radi	4.2	1	1	1	1	1
27.5	Blushing Star coral	Ste Inte	11.6	12	18	2	1	216
27.5	Lesser Starlet coral	Sid radi	4.1	5	5	1	1	25
27.5	Lesser Starlet coral	Sid radi	6.6	4	3	1	1	12
28.5	Symmetrical Brain coral	Dip strig	1.8	14	12	3	1	168
28.6	Lesser Starlet coral	Sid radi	6.0	2	2	1	1	4
29	Elliptical Star coral	Dic stok	14.0	5	5	1	1	25
29	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	3	1
29	Lesser Starlet coral	Sid radi	Sub 16 ft	3	2	1	1	6
29	Lesser Starlet coral	Sid radi	Sub 16 ft	3	3	1	1	9
29	Blushing Star coral	Ste Inte	Sub 16 ft	2	2	1	1	4
29.5	Lesser Starlet coral	Sid radi	14.0	2	2	1	3	4
29.5	Starlet coral	Sid sp	14.0	7	5	1	1	35
29.8	Lesser Starlet coral	Sid radi	5.5	8	5	1	1	40
30	Blushing Star coral	Ste Inte	14.0	15	9	2	1	135
31	Blushing Star coral	Ste Inte	14.0	13	20	3	1	260
31	Lesser Starlet coral	Sid radi	14.0	2	6	1	1	12
32	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	1	4
32	Blushing Star coral	Ste Inte	Sub 16 ft	3	3	1	1	9
32	Blushing Star coral	Ste Inte	Sub 16 ft	6	5	1	1	30
33	Mustard Hill coral	Por astr	4.7	8	6	2	1	48
33.6	Lesser Starlet coral	Sid radi	5.4	6	5	1	1	30
34	Massive Starlet coral	Sid side	8.7	13	7	2	1	91
34	Massive Starlet coral	Sid side	9.7	7	12	2	1	84
34	Lesser Starlet coral	Sid radi	9.2	5	4	1	1	20
34	Elliptical Star coral	Dic stok	9.7	5	5	3	1	25
34	Blushing Star coral	Ste Inte	7.5	23	30	4	1	690

Location Linear Feet	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area
			Depth	Length	Width	Height		
34	Mustard Hill coral	Por astr	3.3	16	13	1	1	208
34.9	Mustard Hill coral	Por astr	3.5	13	10	1	1	130
35	Massive Starlet coral	Sid side	10.8	12	18	2	1	216
35	Lesser Starlet coral	Sid radi	11.5	8	12	2	1	96
35	Blushing Star coral	Ste Inte	11.7	5	3	1	1	15
35	Great Star coral	Mon cave	11.5	3	5	1	1	15
35	Blushing Star coral	Ste Inte	11.6	15	8	2	1	120
35	Massive Starlet coral	Sid side	8.7	5	5	2	1	25
35.7	Lesser Starlet coral	Sid radi	9.3	2	5	1	1	10
36	Blushing Star coral colony	Ste Inte	12.0	33	33	5	1	1089
36	Starlet coral	Sid sp	11.9	3	7	1	1	21
36	Starlet coral	Sid sp	13.5	7	7	1	1	49
36	Starlet coral	Sid sp	12.7	2	2	1	1	4
36	Starlet coral	Sid sp	13.9	2	1	1	1	2
36	Starlet coral	Sid sp	13.7	4	5	1	2	20
36	Blushing Star coral	Ste Inte	8	6	10	1	1	60
36	Starlet coral	Sid sp	9.2	3	2	1	1	6
36.5	Massive Starlet coral	Sid side	15.0	5	8	1	1	40
36.5	Lesser Starlet coral	Sid radi	15.0	3	3	1	1	9
36.5	Blushing Star coral	Ste Inte	6.3	44	51	2	1	2244
37	Massive Starlet coral	Sid side	Sub 16 ft	3	3	2	1	9
37	Massive Starlet coral	Sid side	Sub 16 ft	2	2	1	1	4
37.2	Diffuse Ivory Bush coral	Ocu diff	15.0	15	7	6	1	105
37.5	Smooth Star coral	Sol bour	Sub 16 ft	0.5	0.5	0.5	2	0.25
SUBTOTAL 25.1 - 37.5							93	8085.25
39	Starlet coral	Sid sp	15	3	3	1	6	9
39	Starlet coral	Sid sp	15	5	6	1	3	30
39.5	Starlet coral	Sid sp	11.5	5	5	1	1	25
39.5	Blushing Star coral	Ste Inte	10.5	37	20	3	1	740
39.75	Blushing Star coral	Ste Inte	10.2	7	3	1	1	21
39.8	Blushing Star coral	Ste Inte	11.0	25	19	4	1	475
40	Blushing Star coral	Ste Inte	5.7	6	6	2	1	36
40.5	Starlet coral	Sid sp	7.3	20	15	3	1	300
41.8	Lesser Starlet coral	Sid radi	7.3	1	1	1	2	1
42.3	Massive Starlet coral	Sid side	6.8	12	16	3	1	192
43.8	Blushing Star coral	Ste Inte	10.0	5	8	1	1	40
43.8	Blushing Star coral	Ste Inte	10	8	10	1	1	80
44	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	2	4
44	Blushing Star coral	Ste Inte	Sub 16 ft	2	2	1	1	4
44	Blushing Star coral	Ste Inte	Sub 16 ft	2	5	1	1	10
47.7	Massive Starlet coral	Sid side	3.0	8	10	2	1	80
SUBTOTAL 37.6 - 50							25	2047
51.8	Lesser Starlet coral	Sid radi	8.8	20	28	3	1	560
52.5	Blushing Star coral	Ste Inte	10	18	15	2	1	270
55	Lesser Starlet coral	Sid radi	15.0	10	15	2	1	150
56	Blushing Star coral	Ste Inte	7.8	25	13	15?	1	325
56.8	Blushing Star coral	Ste Inte	8	5	5	1	1	25
58.8	Massive Starlet coral	Sid side	10.7	2	2	1	2	4
59	Blushing Star coral	Ste Inte	16.0	25	20	4	1	500
60	Starlet coral	Sid sp	Sub 16 ft	3	1	1	1	3
SUBTOTAL 50.1 - 62.5							9	1837
63	Lesser Starlet coral	Sid radi	2.4	31	33	1	1	1023
64.6	Lesser Starlet coral	Sid radi	5.6	4	8	1	1	32
64.8	Lesser Starlet coral	Sid radi	4.2	11	8	1	1	88
64.9	Lesser Starlet coral	Sid radi	2.9	12	15	1	1	180
65.2	Lesser Starlet coral	Sid radi	4.0	12	10	1	1	120
66.5	Lesser Starlet coral	Sid sp	7.5	1	1	1	1	1
67	Blushing Star coral	Ste Inte	7.5	5	10	2	1	50

Location Linear Feet	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area
			Depth	Length	Width	Height		
69	Lesser Starlet coral	Sid radi	7.5	4	4	1	2	16
70	Lesser Starlet coral	Sid radi	8.5	3	3	1	1	9
70	Hidden Cup coral	Phy amer	Sub 16 ft	0.5	0.5	1	10	0.25
71	Starlet coral	Sid sp	7.0	3	5	1	1	15
72	Starlet coral	Sid sp	7.5	4	8	1	1	32
73.3	Blushing Star coral	Ste Inte	15.0	3	3	1	1	9
73.5	Starlet coral	Sid sp	15.0	2	2	1	1	4
74.4	Starlet coral	Sid sp	15.0	2	5	1	1	10
74.4	Starlet coral	Sid sp	15.0	3	5	1	1	15
SUBTOTAL 62.6 - 75							26	1604.25
75.8	Lesser Starlet coral	Sid radi	5.9	6	4	1	1	24
76	Lesser Starlet coral	Sid radi	5.8	2	2	1	1	4
76.7	Massive Starlet coral	Sid side	6.0	4	8	1	1	32
76-79	Blushing Star coral	Ste Inte	15.0	12	7	2	1	84
77	Starlet coral	Sid sp	Sub 16 ft	2	2	1	1	4
80	Starlet coral	Sid sp	11.8	1	1	1	1	1
80	Diffuse Ivory Bush coral	Ocu diff	2.9	6	13	2	1	78
80	Starlet coral	Sid sp	Sub 16 ft	0.5	0.5	0.5	3	0.25
80.1	Diffuse Ivory Bush coral	Ocu diff	3.5	9	10	3	1	90
80.1	Diffuse Ivory Bush coral	Ocu diff	3.8	13	12	3	1	156
80.2	Diffuse Ivory Bush coral	Ocu diff	3.0	4	8	2	1	32
80.5	Diffuse Ivory Bush coral	Ocu diff	3.3	12	13	3	1	156
82.5	Lesser Starlet coral	Sid radi	6.5	13	18	1	1	234
83	Lesser Starlet coral	Sid radi	7.5	15	18	2	1	270
85	Lesser Starlet coral	Sid radi	6.2	10	8	1	1	80
SUBTOTAL 75.1 - 87.5							17	1245.25
88.5	Starlet coral	Sid sp	12.5	2	2	1	1	4
89.3	Lesser Starlet coral	Sid radi	7.5	5	4	1	1	20
89.5	Lesser Starlet coral	Sid radi	8.5	3	5	1	1	15
89.5	Lesser Starlet coral	Sid radi	8.5	8	6	1	1	48
89.5	Blushing Star coral	Ste Inte	11.3	16	20	4	1	320
90	Lesser Starlet coral	Sid radi	7.5	10	10	1	1	100
90.3	Lesser Starlet coral	Sid radi	7.5	8	8	1	1	64
91	Lesser Starlet coral	Sid radi	7.0	5	4	1	2	20
91	Blushing Star coral	Ste Inte	10.5	20	23	4	1	460
92	Diffuse Ivory Bush coral	Ocu diff	3.5	6	10	2	1	60
92-96	Lesser Starlet coral	Sid radi	7	8	10	1	1	80
92-96	Lesser Starlet coral	Sid radi	7	4	5	1	1	20
94	Lesser Starlet coral	Sid radi	5.0	12	9	1	1	108
94	Lesser Starlet coral	Sid radi	6.1	9	7	1	1	63
94.5	Lesser Starlet coral	Sid radi	4.2	5	4	1	1	20
97.8	Lesser Starlet coral	Sid radi	6.0	5	4	1	1	20
97.8	Lesser Starlet coral	Sid radi	6.2	9	8	1	1	72
98.7	Lesser Starlet coral	Sid radi	6.2	5	5	1	1	25
98.7	Lesser Starlet coral	Sid radi	6.3	9	10	1	1	90
99	Lesser Starlet coral	Sid radi	6.3	2	2	1	1	4
99.2	Lesser Starlet coral	Sid radi	6.5	7	6	1	1	42
SUBTOTAL 87.6 - 100							22	1655
100.2	Diffuse Ivory Bush coral	Ocu diff	2.0	9	9	2	1	81
100.8	Diffuse Ivory Bush coral	Ocu diff	2.0	9	9	2	2	81
101	Hidden Cup coral	Phy amer	Sub 16 ft	0.5	0.5	0.5	2	0.25
101	Hidden Cup coral	Phy amer	Sub 16 ft	0.5	0.5	0.5	2	0.25
101-106	Lesser Starlet coral	Sid radi	8.0	2	2	1	1	4
102	Starlet coral	Sid sp	Sub 16 ft	1	1	1	1	1
103.5	Starlet coral	Sid sp	Sub 16 ft	1	1	1	1	1
104.5	Lesser Starlet coral	Sid radi	Sub 16 ft	3	3	1	1	9
107	Blushing Star coral	Ste Inte	9.0	3	8	2	1	24
109.8	Blushing Star coral	Ste Inte	8.0	5	6	2	1	30

Coral Colonies Observed Along Transect 1 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area
				Length	Width	Height		
111.5	Starlet coral	Sid sp	Sub 16 ft	2	2	1	1	4
112.5	Starlet coral	Sid sp	Sub 16 ft	2	2	1	1	4
SUBTOTAL 100.1 - 112.5							15	239.5
113	Lesser Starlet coral	Sid radi	Sub 16 ft	0.5	0.5	0.5	1	0.25
113.5	Blushing Star coral	Ste Inte	7	8	8	3	1	64
113.5	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	1	4
114	Starlet coral	Sid sp	Sub 16 ft	1	2	1	1	2
116	Blushing Star coral	Ste Inte	8	10	13	3	1	130
116.2	Lesser Starlet coral	Sid radi	10.4	1	1	1	1	1
117.5	Starlet coral	Sid sp	Sub 16 ft	1	1	1	2	1
119	Starlet coral	Sid sp	Sub 16 ft	2	2	1	1	4
123	Lesser Starlet coral	Sid radi	Sub 16 ft	3	1	1	2	3
123	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	4	1
SUBTOTAL 112.6 - 125							15	210.25
126	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	1	1
127.8	Symmetrical Brain coral	Dip strig	3.0	4	5	1	1	20
131.5	Lesser Starlet coral	Sid radi	8.8	15	23	2	1	345
132	Diffuse Ivory Bush coral	Ocu diff	3.5	9	8	2	1	72
135	Hidden Cup coral	Phy amer	Sub 16 ft	0.5	0.5	0.5	4	0.25
136	Blushing Star coral	Ste Inte	11.3	5	8	1	1	40
SUBTOTAL 125.1 - 137.5							9	478.25
145	Blushing Star coral	Ste Inte	10.0	5	7	1	1	35
148.5	Blushing Star coral	Ste Inte	8	13	25	3	1	325
SUBTOTAL 137.8 - 150							2	360
151.5	Diffuse Ivory Bush coral	Ocu diff	2.0	6	6	2	1	36
158	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	1	4
160.5	Diffuse Ivory Bush coral	Ocu diff	7.0	5	7	5	1	35
161.2	Lesser Starlet coral	Sid radi	7.7	1	1	1	1	1
162.2	Lesser Starlet coral	Sid radi	7.5	3	3	1	1	9
162.2	Lesser Starlet coral	Sid radi	9.5	2	2	1	1	4
SUBTOTAL 150.1 - 162.5							6	89
163	Diffuse Ivory Bush coral	Ocu diff	8.0	10	10	5	1	100
163	Lesser Starlet coral	Sid radi	Sub 16 ft	3	3	1	1	9
163.8	Blushing Star coral	Ste Inte	11.5	20	22	3	1	440
164	Blushing Star coral	Ste Inte	Sub 16 ft	1	1	1	1	1
165	Massive Starlet coral	Sid side	10.8	5	6	2	1	30
165.25	Lesser Starlet coral	Sid radi	10.8	3	3	1	1	9
166	Massive Starlet coral	Sid side	8.3	8	11	1	1	88
166.3	Lesser Starlet coral	Sid radi	8.1	5	5	1	1	25
166.3	Starlet coral	Sid sp	6.8	8	7	1	1	56
166.5	Starlet coral	Sid sp	13.5	3	3	1	1	9
167	Rose coral	Man areo	7.5	4	4	2	1	16
167.5	Massive Starlet coral	Sid side	14.0	4	4	1	2	16
167.5	Massive Starlet coral	Sid side	11.0	5	5	1	1	25
168	Lesser Starlet coral	Sid radi	3.9	25	25	1	1	625
168.5	Massive Starlet coral	Sid side	11.0	3	4	1	1	12
170	Massive Starlet coral	Sid side	10.5	3	4	1	1	12
170.2	Massive Starlet coral	Sid side	5.5	9	10	1	1	90
171	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	1	4
171.2	Lesser Starlet coral	Sid radi	Sub 16 ft	1	1	1	1	1
172	Blushing Star coral	Ste Inte	8.0	28	18	4	1	504
172.75	Massive Starlet coral	Sid side	10.3	4	3	1	3	12
173	Blushing Star coral	Ste Inte	Sub 16 ft	3	3	1	1	9
173.5	Blushing Star coral	Ste Inte	Sub 16 ft	2	5	1	1	10
174	Blushing Star coral	Ste Inte	Sub 16 ft	5	5	1	1	25
174	Starlet coral	Sid sp	Sub 16 ft	2	1	1	3	2
175	Blushing Star coral	Ste Inte	9.0	31	35	5	1	1085
SUBTOTAL 162.3 - 175							31	3215

Coral Colonies Observed Along Transect 1 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area
				Length	Width	Height		
175.5	Blushing Star coral	Ste Inte	10.25	31	33	5	1	1023
175.5	Lesser Starlet coral	Sid radi	Sub 16 ft	2	2	1	1	4
176	Blushing Star coral	Ste Inte	Sub 16 ft	1	1	1	2	1
176	Blushing Star coral	Ste Inte	Sub 16 ft	2	2	1	2	4
177	Massive Starlet coral	Sid side	13	8	8	2	1	64
177	Starlet coral	Sid sp	Sub 16 ft	1	1	1	2	1
179	Starlet coral	Sid sp	Sub 16 ft	1	1	1	1	1
182.25	Blushing Star coral	Ste Inte	7.5	23	21	5	1	483
183	Blushing Star coral	Ste Inte	Sub 16 ft	9	12	1	1	108
183.25	Starlet coral	Sid sp	12.2	2	2	1	2	4
183.25	Lesser Starlet coral	Sid radi	8.8	2	2	1	1	4
183.4	Blushing Star coral	Ste Inte	6.6	4	4	1	1	16
187.5	Diffuse Ivory Bush coral	Ocu diff	3.4	6	10	2	1	60
SUBTOTAL 175.1 - 187.5							17	1773
190	Blushing Star coral	Ste Inte	11.75	20	23	2	1	460
190	Diffuse Ivory Bush coral	Ocu diff	2.2	10	13	3	1	130
193	Lesser Starlet coral	Sid radi	4.5	15	18	1	1	270
193	Blushing Star coral	Ste Inte	Sub 16 ft	1	2	1	1	2
193	Starlet coral	Sid sp	Sub 16 ft	1	1	1	1	1
194	Blushing Star coral	Ste Inte	12.5	17	25	3	1	425
194	Massive Starlet coral	Sid side	Sub 16 ft	1	1	1	1	1
195	Lesser Starlet coral	Sid radi	3.8	25	15	1	1	375
195.2	Lesser Starlet coral	Sid radi	5.7	9	7	1	1	63
195.2	Lesser Starlet coral	Sid radi	6.3	12	10	1	1	120
197.5	Large Ivory coral	Ocu vari	Sub 16 ft	1	3	2	1	3
SUBTOTAL 187.6- 200							11	1850
203	Lesser Starlet coral	Sid radi	3.8	5	7	1	1	35
204	Blushing Star coral	Ste Inte	5.0	6	10	1	1	60
206	Blushing Star coral	Ste Inte	Sub 16 ft	10	12	1	1	120
207.5	Lesser Starlet coral	Sid radi	11.0	12	13	1	1	156
207.5	Starlet coral	Sid sp	9.0	6	6	1	1	36
208	Starlet coral	Sid sp	7.5	18	15	4	1	270
208	Massive Starlet coral	Sid side	Sub 16 ft	2	3	1	1	6
210.5	Blushing Star coral	Ste Inte	2.6	20	25	1	1	500
SUBTOTAL 200.1 - 212.5							8	1183
213	Massive Starlet coral	Sid side	Sub 16 ft	3	2	1	1	6
214	Starlet coral	Sid sp	11.0	1	1	1	2	1
214.5	Starlet coral	Sid sp	14.0	7	7	1	1	49
214.5	Lesser Starlet coral	Sid radi	4.0	11	13	1	1	143
215.7	Lesser Starlet coral	Sid radi	4.5	6	8	1	1	48
215.7	Lesser Starlet coral	Sid radi	6.0	6	6	1	1	36
216	Blushing Star coral	Ste Inte	10.2	8	8	1	1	64
217-219.5	Blushing Star coral	Ste Inte	12.8	12	10	2	1	120
217-219.5	Blushing Star coral	Ste Inte	12.8	7	5	1	1	35
217-219.5	Blushing Star coral	Ste Inte	11.5	10	8	1	1	80
218	Blushing Star coral	Ste Inte	Sub 16 ft	10	9	1	1	90
220	Starlet coral	Sid sp	7.0	10	12	1	1	120
220	Lesser Starlet coral	Sid radi	6.2	5	5	1	1	25
220.5	Lesser Starlet coral	Sid radi	2.1	9	9	1	3	81
221	Starlet coral	Sid sp	7.0	5	7	1	2	35
221.5	Starlet coral	Sid sp	6.4	1	1	1	1	1
222	Lesser Starlet coral	Sid radi	7.0	12	6	1	1	72
222	Lesser Starlet coral	Sid radi	4.0	10	13	1	1	130
222.5	Lesser Starlet coral	Sid radi	7.5	25	25	2	1	625
222.5	Lesser Starlet coral	Sid radi	6.5	7	8	1	1	56
222.5	Lesser Starlet coral	Sid radi	6.5	4	5	1	1	20
222.6	Lesser Starlet coral	Sid radi	6.9	5	7	1	1	35
222.8	Lesser Starlet coral	Sid radi	7.0	10	5	1	1	50

Location Linear Feet	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area
			Depth	Length	Width	Height		
223	Lesser Starlet coral	Sid radi	6.8	28	20	1	1	560
223.5	Lesser Starlet coral	Sid radi	5.6	8	13	1	1	104
223.5	Lesser Starlet coral	Sid radi	6.8	6	10	1	1	60
224.3	Lesser Starlet coral	Sid radi	2.6	5	5	1	1	25
224.7	Diffuse Ivory Bush coral	Ocu diff	2.2	9	7	3	1	63
SUBTOTAL 212.6 - 225							32	2734
225.3	Lesser Starlet coral	Sid radi	4.7	10	7	1	1	70
228.9	Lesser Starlet coral	Sid radi	2.2	3	4	1	1	12
229	Diffuse Ivory Bush coral	Ocu diff	2.1	8	9	3	1	72
229.2	Lesser Starlet coral	Sid radi	6.0	9	8	1	1	72
230.8	Lesser Starlet coral	Sid radi	3.6	8	8	1	1	64
232.5	Blushing Star coral	Ste Inte	14	15	9	1	1	135
233	Lesser Starlet coral	Sid radi	5.9	7	10	1	1	70
233.1	Massive Starlet coral	Sid side	5.7	7	7	1	1	49
233.3	Massive Starlet coral	Sid side	6.2	5	5	1	1	25
233.7	Ten-Ray Star coral	Mad deca	10.0	9	8	1	1	72
234	Lesser Starlet coral	Sid radi	4.9	5	7	1	1	35
234.7	Lesser Starlet coral	Sid radi	6.9	5	5	1	1	25
235	Blushing Star coral	Ste Inte	Sub 16 ft	10	20	2	1	200
235.3	Lesser Starlet coral	Sid radi	7.0	13	5	1	1	65
236	Large Ivory coral	Ocu vari	Sub 16 ft	3	2	2	1	6
SUBTOTAL 225.1 - 237							15	972
237	Starlet coral	Sid sp	Sub 16 ft	2	1	1	1	2
238.5	Blushing Star coral	Ste Inte	9.3	5	8	1	1	40
240	Smooth Star coral	Sol bour	7.5	22	33	3	1	726
241	Starlet coral	Sid sp	Sub 16 ft	1	1	1	4	1
242	Starlet coral	Sid sp	Sub 16 ft	2	3	1	1	6
242	Starlet coral	Sid sp	Sub 16 ft	1	1	1	1	1
243	Blushing Star coral	Ste Inte	Sub 16 ft	8	9	1	1	72
243.5	Blushing Star coral	Ste Inte	13.3	5	7	1	1	35
244	Blushing Star coral	Ste Inte	Sub 16 ft	11	15	4	1	165
244.5	Blushing Star coral	Ste Inte	11.3	12	11	1	1	132
246	Massive Starlet coral	Sid side	Sub 16 ft	2	2	1	1	4
246.2	Lesser Starlet coral	Sid radi	2.9	5	5	1	1	25
246.6	Blushing Star coral	Ste Inte	6.6	5	5	1	1	25
SUBTOTAL 237.1 - 250							16	1234
252	Lesser Starlet coral	Sid radi	5.0	13	12	1	1	156
254	Blushing Star coral	Ste Inte	Sub 16 ft	3	3	1	1	9
255	Massive Starlet coral	Sid side	9.0	23	21	5	1	483
256.5	Elliptical Star coral	Dic stok	8.5	6	6	3	1	36
256.6	Starlet coral	Sid sp	8.5	1	1	1	1	1
256.6	Starlet coral	Sid sp	11.5	1	1	1	1	1
256.6	Starlet coral	Sid sp	12.0	1	1	1	1	1
257	Diffuse Ivory Bush coral	Ocu diff	9.5	8	8	3	1	64
257.5	Blushing Star coral	Ste Inte	7.5	5	5	1	1	25
257.5	Blushing Star coral	Ste Inte	8.0	8	12	2	1	96
258.5	Lesser Starlet coral	Sid radi	6.5	4	7	1	1	28
259	Massive Starlet coral	Sid side	5.2	7	12	1	1	84
259.3	Massive Starlet coral	Sid side	3.6	9	13	2	1	117
262.5	Blushing Star coral	Ste Inte	7.7	18	18	3	1	324
SUBTOTAL 250.1 - 262.5							14	1425
263.5	Blushing Star coral	Ste Inte	7.3	13	10	3	1	130
264	Massive Starlet coral	Sid side	11.5	7	9	1	1	63
264	Massive Starlet coral	Sid side	11.5	2	3	1	1	6
264.5	Massive Starlet coral	Sid side	9.0	30	25	8	1	750
265.5	Blushing Star coral	Ste Inte	9	25	21	3	1	525
265.5	Lesser Starlet coral	Sid radi	9.5	10	12	2	1	120
266	Lesser Starlet coral	Sid radi	8.0	10	15	2	1	150

Coral Colonies Observed Along Transect 1 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code		Area (cm)			Qty.	Total Area
			Depth	Length	Width	Height		
SUBTOTAL 262.6 - 266							7	1744
TOTAL CORALS FOR T1							575	45,655.75

Coral Colonies Observed Along EAST WALL (Transect 2)

Attachment 7

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
3.3	Lesser Starlet coral	Sid radi	3	2	2	0.5	1	4	1502
3.5	Mustard Hill coral	Por astr	3.2	3	6	1	1	18	1502
4	Boulder Brain coral	Col nata	3.4	13	13	5	1	169	1498/1491
4	Great Star Coral	Mont Cav	4	18	20	4		360	1491/1496
3.5	Lesser Starlet coral	Sid radi	4	6	5	0.5	1	30	1496
3.3	Lesser Starlet coral	Sid radi	5.9	2	4	0.5	1	8	1494/1492
4	Lesser Starlet coral	Sid radi	6	8	10	0.5	1	80	1494/1492
5.1	Lesser Starlet coral	Sid radi	3.5	2	3	0.5	1	6	1501
5	Lesser Starlet coral	Sid radi	4.2	3	5	0.5	1	15	1500
5.3	Lesser Starlet coral	Sid radi	4.2	1	1	0.5	1	1	1500
5.5	Lesser Starlet coral	Sid radi	4.2	6	8	0.5	1	48	1500
5.5	Lesser Starlet coral	Sid radi	6	3	6	0.5	1	18	1499
6.7	Lesser Starlet coral	Sid radi	4	3	2	0.5	1	6	1503
7.1	Lesser Starlet coral	Sid radi	4	3	4	0.5	1	12	1503
7.4	Massive Starlet coral	Sid side	2.8	2	2	1	1	4	1503
6	Lesser Starlet coral	Sid radi	4	2	2	0.5	1	4	1515
6.5	Lesser Starlet coral	Sid radi	4	3	2	0.5	1	6	1515
7	Lesser Starlet coral	Sid radi	4	4	4	0.5	1	16	1514
6.8	Lesser Starlet coral	Sid radi	6	6	10	0.5	1	60	1507
7.3	Lesser Starlet coral	Sid radi	6.5	2	2	0.5	1	4	1508
7.5	Massive Starlet coral	Sid side	6.5	2	2	0.5	1	4	1508
7.8	Rose Coral	Man areo	5.5	4	3	1	1	12	1510
7.8	Lesser Starlet coral	Sid radi	5.8	9	12	1	1	108	1510
8.3	Golfball coral	Fav frag	5.7	2	2	1	1	4	1510/1509/1511
7.7	Lesser Starlet coral	Sid radi	4.8	6	9	0.5	1	54	1512
8	Lesser Starlet coral	Sid radi	4.8	10	8	0.5	1	80	1512
8.2	Lesser Starlet coral	Sid radi	3.3	4	5	0.5	1	20	1516
8.5	Lesser Starlet coral	Sid radi	6.5	8	8	0.5	1	64	1509
8.8	Lesser Starlet coral	Sid radi	6	13	10	1	1	130	1511
9.4	Blushing Star coral	Ste Inte	2.6	36	31	3	1	1116	1527
10	Lesser Starlet coral	Sid radi	5.2	1	1	0.5	1	1	1524
9.9	Lesser Starlet coral	Sid radi	4.1	3	3	0.5	1	9	1526
10.5	Lesser Starlet coral	Sid radi	4	8	10	0.5	2	80	1526
11	Lesser Starlet coral	Sid radi	6	1	1	0.5	3	1	1522
11	Lesser Starlet coral	Sid radi	6	2	2	0.5	1	4	1522
12.9	Lesser Starlet coral	Sid radi	2.5	6	3	0.5	1	18	1534
13.1	Lesser Starlet coral	Sid radi	2.5	6	6	0.5	1	36	1534
13.8	Lesser Starlet coral	Sid radi	2.5	5	4	0.5	2	20	1535
13.8	Lesser Starlet coral	Sid radi	2.7	7	5	0.5	1	35	1535
14.3	Lesser Starlet coral	Sid radi	3.4	7	7	0.5	1	49	1535
13.8	Lesser Starlet coral	Sid radi	5.8	6	6	0.5	1	36	1531
13.6	Lesser Starlet coral	Sid radi	4	3	4	0.5	1	12	1533
13.8	Lesser Starlet coral	Sid radi	4.5	2	2	0.5	2	4	1533
13.8	Massive Starlet coral	Sid side	5.2	8	11	1	1	88	1532
13.7	Lesser Starlet coral	Sid radi	5.3	2	2	0.5	1	4	1532
13.8	Lesser Starlet coral	Sid radi	6.3	6	7	0.5	1	42	1532
15.3	Lesser Starlet coral	Sid radi	3.3	11	9	0.5	1	99	1539
15.6	Lesser Starlet coral	Sid radi	3	9	7	0.5	1	63	1536
15.9	Lesser Starlet coral	Sid radi	3	6	5	0.5	1	30	1536
16.5	Lesser Starlet coral	Sid radi	3.6	5	5	0.5	1	25	1536
16.4	Lesser Starlet coral	Sid radi	2.5	1	2	0.5	1	2	1541
17	Lesser Starlet coral	Sid radi	2.7	5	6	0.5	1	30	1541
16.5	Lesser Starlet coral	Sid radi	2.5	1	1	0.5	2	1	1541
17.2	Lesser Starlet coral	Sid radi	3	5	6	0.5	1	30	1540
18.5	Lesser Starlet coral	Sid radi	3	3	4	0.5	1	12	1546
18.6	Lesser Starlet coral	Sid radi	3.1	6	8	0.5	1	48	1546
18.7	Lesser Starlet coral	Sid radi	3.1	8	10	0.5	1	80	1546
18.7	Lesser Starlet coral	Sid radi	3.3	0.5	0.5	0.5	2	0.25	1546
19.5	Lesser Starlet coral	Sid radi	5.9	2	1	0.5	1	2	1544
19.5	Lesser Starlet coral	Sid radi	6.1	1	1	0.5	2	1	1544
19.5	Lesser Starlet coral	Sid radi	6.1	4	5	0.5	1	20	1544
21.4	Lesser Starlet coral	Sid radi	3.3	5	8	1	1	40	1545
22.8	Lesser Starlet coral	Sid radi	2.6	5	6	0.5	1	30	1553
23.2	Lesser Starlet coral	Sid radi	2.7	2	3	0.5	1	6	1553
23.9	Lesser Starlet coral	Sid radi	3.2	3	6	0.5	1	18	1552
23.5	Lesser Starlet coral	Sid radi	3.6	3	4	0.5	1	12	1551
22.8	Lesser Starlet coral	Sid radi	4.2	2	2	0.5	1	4	1550
22.9	Lesser Starlet coral	Sid radi	5.7	5	8	0.5	1	40	1549
26	Lesser Starlet coral	Sid radi	3	3	8	0.5	1	24	1554
26.2	Lesser Starlet coral	Sid radi	3	4	6	0.5	1	24	1554
25.8	Lesser Starlet coral	Sid radi	3.4	3	6	0.5	1	18	1554
26.8	Lesser Starlet coral	Sid radi	3.8	6	5	0.5	1	30	1554

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
26.5	Lesser Starlet coral	Sid radi	3.3	5	8	0.5	1	40	1558
26.5	Lesser Starlet coral	Sid radi	2.9	5	8	0.5	1	40	1559
26.5	Lesser Starlet coral	Sid radi	2.9	3	8	0.5	1	24	1559
27	Lesser Starlet coral	Sid radi	2.9	4	5	0.5	1	20	1560
27.2	Lesser Starlet coral	Sid radi	2.6	10	9	1	1	90	1561
26.8	Lesser Starlet coral	Sid radi	3.6	3	3	0.5	1	9	1557
27.5	Lesser Starlet coral	Sid radi	5.9	8	13	1	1	104	1556
28.3	Lesser Starlet coral	Sid radi	3.3	5	5	0.5	1	25	1562
30.5	Lesser Starlet coral	Sid radi	4.3	8	9	1	1	72	1569
30.4	Lesser Starlet coral	Sid radi	4.7	0.5	0.5	0.25	1	0.25	1569
30.4	Lesser Starlet coral	Sid radi	5.8	2	2	1	1	4	1568
30.4	Elliptical Star coral	Dic stok	6.5	8	10	2	1	80	1566
31.5	Starlet coral	Sid sp	6	1	1	0.5	5	1	1567
33.8	Lesser Starlet coral	Sid radi	6.2	10	21	1	1	210	1572
34.5	Blushing Star coral	Ste Inte	5	21	33	2	1	693	1574
34.5	Lesser Starlet coral	Sid radi	2.8	2	2	0.5	1	4	1575
34.5	Lesser Starlet coral	Sid radi	3.1	3	9	0.5	1	27	1575
33.5	Starlet coral	Sid sp	2.9	3	3	0.5	1	9	1575
36.6	Lesser Starlet coral	Sid radi	2.6	8	20	1	1	160	1576
38	Lesser Starlet coral	Sid radi	5.8	13	10	0.5	1	130	1579
39.5	Lesser Starlet coral	Sid radi	5.6	13	13	1	1	169	1580
41	Lesser Starlet coral	Sid radi	4.5	8	6	0.5	2	48	1581
41.6	Lesser Starlet coral	Sid radi	4.2	2	2	0.5	1	4	1581
42	Lesser Starlet coral	Sid radi	3.8	7	8	0.5	1	56	1582
41.3	Lesser Starlet coral	Sid radi	4	5	6	0.5	1	30	1586
41.9	Lesser Starlet coral	Sid radi	3.9	5	8	0.5	1	40	1586
41.3	Lesser Starlet coral	Sid radi	5	5	5	0.5	1	25	1585
42.6	Lesser Starlet coral	Sid radi	2.5	11	8	0.5	1	88	1588
43.2	Lesser Starlet coral	Sid radi	2.5	2	3	0.5	1	6	1588
43.8	Lesser Starlet coral	Sid radi	2.5	3	8	0.5	1	24	1589
42.9	Smooth Star coral	Sol bour	5.5	8	6	0.5	1	48	1584
44.7	Lesser Starlet coral	Sid radi	3.1	4	6	0.5	1	24	1596
45.5	Elliptical Star coral	Dic stok	3.5	12	14	2	1	168	1590/1594
45.9	Lesser Starlet coral	Sid radi	4.2	1	1	0.25	1	1	1594
45.9	Lesser Starlet coral	Sid radi	6.2	8	5	0.5	1	40	1592
45.9	Lesser Starlet coral	Sid radi	5.8	1	1	0.25	1	1	1592
46.6	Lesser Starlet coral	Sid radi	5.5	1	1	0.25	1	1	1593
46.5	Lesser Starlet coral	Sid radi	3.8	5	7	0.5	1	35	1595/1590
47	Lesser Starlet coral	Sid radi	3.2	6	6	0.5	1	36	1595/1590
49.5	Lesser Starlet coral	Sid radi	4.1	7	6	0.5	1	42	1597
50	Lesser Starlet coral	Sid radi	3.7	5	6	0.5	1	30	1597
48.8	Lesser Starlet coral	Sid radi	5.4	2	3	0.5	1	6	1603
49.5	Lobed Star coral	Orb annu	1.6	20	21	5	1	420	1609/1608
49.8	Lesser Starlet coral	Sid radi	3	3	5	0.5	1	15	1604
50	Elliptical Star coral	Dic stok	2.7	8	9	2	1	72	1604
50	Lesser Starlet coral	Sid radi	3	4	8	0.52	2	32	1604
50	Lesser Starlet coral	Sid radi	5	1	1	0.25	2	1	1602
50.4	Lesser Starlet coral	Sid radi	5	6	10	0.5	1	60	1602
50.3	Symmetrical Brain coral	Dip strig	5.5	20	19	2	1	380	1599
52.9	Lesser Starlet coral	Sid radi	4.9	3	3	0.25	1	9	1612
53.4	Lesser Starlet coral	Sid radi	5.2	2	2	0.25	1	4	1612
53.3	Elliptical Star coral	Dic stok	5.4	9	9	1	1	81	1611
53.4	Lesser Starlet coral	Sid radi	5.2	2	3	0.25	1	6	1611
55.2	Symmetrical Brain coral	Dip strig	1.6	15	13	2	1	195	1614
55.2	Lesser Starlet coral	Sid radi	3.7	2	3	0.5	1	6	1613
56.3	Blushing Star coral	Ste Inte	6.2	28	27	2	1	756	1616
57.5	Lesser Starlet coral	Sid radi	5.7	3	3	0.5	1	9	1616
57.1	Lesser Starlet coral	Sid radi	4.8	3	6	0.5	1	18	1619
57.5	Elliptical Star coral	Dic stok	4.5	12	14	6	1	168	1619
57.6	Lesser Starlet coral	Sid radi	5.6	3	3	0.5	1	9	1618
57.6	Lesser Starlet coral	Sid radi	3.6	3	4	0.5	1	12	1623
58	Lesser Starlet coral	Sid radi	7	10	12	1	1	120	1617
57.2	Lesser Starlet coral	Sid radi	7.5	10	10	1	1	100	1617
57.2	Lesser Starlet coral	Sid radi	7.8	1	1	0.25	1	1	1617
58.5	Lesser Starlet coral	Sid radi	7.3	1	1	0.25	1	1	1617
58	Great Star Coral	Mont Cav	9	30	20	2	1	600	
59.4	Lesser Starlet coral	Sid radi	6	12	8	0.5	1	96	1626
60	Lesser Starlet coral	Sid radi	6.8	2	2	0.25	3	4	1630
60	Lesser Starlet coral	Sid radi	6.8	1	1	0.25	2	1	1630
61	Lesser Starlet coral	Sid radi	6.8	1	1	0.25	1	1	1630
61	Lesser Starlet coral	Sid radi	3.2	2	1	0.25	2	2	1628
62.9	Lesser Starlet coral	Sid radi	4	3	5	0.5	1	15	1631

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
64.2	Grooved Brain coral	Dip labr	3.8	10	10	5	1	100	1635 thru 1637
65.7	Elliptical Star coral	Dic stok	4.4	6	7	1	1	42	1633
69	Lesser Starlet coral	Sid radi	5.9	1	1	0.25	1	1	1639
69.2	Lesser Starlet coral	Sid radi	5.8	6	6	0.5	1	36	1639
69.8	Blushing Star coral	Ste Inte	7	30	31	2	1	930	1640
72.1	Lesser Starlet coral	Sid radi	5	6	5	0.5	1	30	1643
72.3	Lesser Starlet coral	Sid radi	5.3	3	4	0.25	1	12	1643
73.7	Lesser Starlet coral	Sid radi	3.5	8	11	1	1	88	1642
75.2	Mustard Hill coral	Por astr	4.9	9	8	1	1	72	1648, 1646
75.8	Symmetrical Brain coral	Dip stri	5.2	18	20	9	1	360	1646, 1647
76.8	Elliptical Star coral	Dic stok	2.2	36	30	2	1	1080	1651
75.8	Elliptical Star coral	Dic stok	2	16	15	1	1	240	1652
80.5	Blushing Star coral	Ste Inte	5.3	17	20	2	1	340	1655
83	Symmetrical Brain coral	Dip stri	3.5	15	15	1	1	225	1657
83	Great Star Coral	Mont Cav	2.2	6	7	1	1	42	1658
82	Grooved Brain coral	Dip labr	4.4	8	8	2	1	64	1662 / 1663
83.2	Rose Coral	Man areo	4.2	3	3	1	1	9	1660
84.8	Massive Starlet coral	Sid side	5.4	12	10	2	1	120	1667
85	Lesser Starlet coral	Sid radi	5.9	1	1	0.5	1	1	1667
85.4	Lesser Starlet coral	Sid radi	6	2	1	0.5	1	2	1667
84	Lesser Starlet coral	Sid radi	5.5	2	1	0.5	2	2	1667
85	Lesser Starlet coral	Sid radi	6	1	1	0.25	1	1	1666
86	Lesser Starlet coral	Sid radi	5.6	2	2	0.5	1	4	1668
87.1	Elliptical Star coral	Dic stok	6.4	7	7	2	1	49	1665
88.3	Lesser Starlet coral	Sid radi	6	1	1	0.25	1	1	1673
89.2	Lesser Starlet coral	Sid radi	5	5	9	0.25	1	45	1672
90	Massive Starlet coral	Sid side	6.1	12	13	3	1	156	1671
91.8	Elliptical Star coral	Dic stok	4.3	18	17	4	1	306	1680
93.4	Diffuse Ivory Bush coral	Ocu diff	4.1	7	6	3	1	42	1676
93.5	Knobby Brain coral	Dip cliv	4.1	36	35	5	1	1260	1676
93.7	Lobed Star coral	Orb annu	4.5	20	12	2	1	240	1676
94.2	Lobed Star coral	Orb annu	4.8	25	20	2	1	500	1676
93.4	Lesser Starlet coral	Sid radi	4	2	2	0.25	1	4	1679
98.5	Knobby Brain coral	Dip cliv	1.5	16	14	4	1	224	1685
98.3	Blushing Star coral	Ste Inte	6.2	33	28	7	1	924	1684
100.1	Lesser Starlet coral	Sid radi	5.5	5	7	0.5	1	35	1688
100.5	Symmetrical Brain coral	Dip stri	5.5	30	33	10	1	990	1688/1689
101.2	Massive Starlet coral	Sid side	5.1	7	17	1	1	119	1690
101	Blushing Star coral	Ste Inte	5.4	33	48	8	1	1584	1691
102.8	Lesser Starlet coral	Sid radi	5.2	4	6	0.25	1	24	1693
102.9	Lesser Starlet coral	Sid radi	4.8	7	7	0.5	1	49	1695
102.9	Lesser Starlet coral	Sid radi	3.5	5	7	0.5	1	35	1697
103.5	Lesser Starlet coral	Sid radi	5.1	6	4	0.5	1	24	1694
103.7	Lesser Starlet coral	Sid radi	5.1	6	10	0.25	1	60	1694
104.1	Lesser Starlet coral	Sid radi	4.6	3	6	0.25	1	18	1696
105.5	Lesser Starlet coral	Sid radi	5.4	5	12	0.5	1	60	1700
107.1	Lesser Starlet coral	Sid radi	6.7	1	1	0.25	1	1	1699
108	Lesser Starlet coral	Sid radi	3.3	6	15	0.5	1	90	1702
108	Lesser Starlet coral	Sid radi	3.7	7	7	0.25	41	49	1701
111.8	Golfball coral	Fav frag	2.9	4	4	1	1	16	1710/1711
112.5	Lesser Starlet coral	Sid radi	2.7	3	2	0.5	1	6	1708
111.5	Knobby Brain coral	Dip cliv	6	5	5	1	1	25	1709
112.5	Lesser Starlet coral	Sid radi	6.5	1	1	0.25	3	1	1707
113.2	Blushing Star coral	Ste Inte	6.1	26	25	3	1	650	1705
115.9	Lesser Starlet coral	Sid radi	5.1	5	9	0.25	1	45	1716
116.3	Lesser Starlet coral	Sid radi	6.7	3	10	0.25	1	30	1715
117.7	Lesser Starlet coral	Sid radi	4.8	1	1	0.25	1	1	1714
119.6	Lesser Starlet coral	Sid radi	3	3	2	0.5	1	6	1723/1717
118.7	Lesser Starlet coral	Sid radi	3.6	5	7	0.5	1	35	1722
121	Golfball coral	Fav frag	6	2	2	1	1	4	1718/1719
120.8	Massive Starlet coral	Sid side	4.9	15	10	2	1	150	1720
121.5	Ten-Ray Star Coral	Mad deca	5.9	2	2	0.25	1	4	1726
121.5	Lesser Starlet coral	Sid radi	6.8	8	7	0.5	1	56	1726
124	Massive Starlet coral	Sid side	6	15	14	3	1	210	1725
124.3	Smooth Star coral	Sol bour	4.3	30	31	7	1	930	1730/1729
124.8	Lesser Starlet coral	Sid radi	3.2	5	7	1.5	1	35	1732
126.4	Lesser Starlet coral	Sid radi	2.8	1	1	0.25	1	1	1731
126.6	Lesser Starlet coral	Sid radi	3	5	5	0.25	2	25	1731
129	Lesser Starlet coral	Sid radi	6	10	15	0.5	1	150	1735
129.4	Lesser Starlet coral	Sid radi	6	7	5	0.25	1	35	1735
130.2	Lesser Starlet coral	Sid radi	5.2	3	3	0.25	1	9	1735
130.8	Lesser Starlet coral	Sid radi	5.4	6	6	0.5	1	36	1735

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
129	Lesser Starlet coral	Sid radi	5.1	4	4	0.25	1	16	1738
128.5	Symmetrical Brain coral	Dip stri	1.7	31	23	5	1	713	1741
130.9	Lesser Starlet coral	Sid radi	3.5	6	6	0.25	1	36	1739
134.4	Grooved Brain coral	dip labr	6.5	7	7	5	1	49	1743
135.8	Lesser Starlet coral	Sid radi	3.2	2	2	0.25	1	4	1745
138.5	Lesser Starlet coral	Sid radi	3.3	4	4	0.25	1	16	1752
139.5	Lesser Starlet coral	Sid radi	3.9	1	1	0.25	1	1	1751
139.6	Diffuse Ivory Bush coral	Ocu diff	6	8	13	4	1	104	1750
139.9	Diffuse Ivory Bush coral	Ocu diff	6	6	5	3	1	30	1750
142.5	Boulder Brian coral	Mean mean	4.3	4	4	2	1	16	1750/1760
141.5	Lesser Starlet coral	Sid radi	6.5	1	1	0.25	1	1	1754
143.5	Lesser Starlet coral	Sid radi	4.5	3	3	0.25	1	9	1759
143.8	Lesser Starlet coral	Sid radi	4.7	1	1	0.25	1	1	1759
144	Lesser Starlet coral	Sid radi	5.2	2	2	0.25	1	4	1759
144	Elliptical Star coral	Dic stok	5.3	3	3	2	1	9	1757
143.5	Lesser Starlet coral	Sid radi	6.3	2	2	0.25	1	4	1756
144	Massive Starlet coral	Sid side	6.3	7	9	1	1	63	1756
144.2	Lesser Starlet coral	Sid radi	6	1	1	0.25	1	1	1764
144.3	Lesser Starlet coral	Sid radi	6.3	2	1	0.25	1	2	1764
144.8	Golfball coral	Fav frag	4.8	2	2	0.5	2	4	1770
145	Symmetrical Brain coral	Dip stri	5.8	13	15	2	1	195	1768/1763
145.6	Blushing Star coral	Ste Inte	5.8	4	4	0.5	1	16	1768
145.6	Starlet coral	Sid sp	6.3	1	1	0.25	2	1	1765
146.3	Massive Starlet coral	Sid side	6.3	3	5	0.5	1	15	1765
147	Grooved Brain coral	Dip labr	4.1	8	8	4	1	64	1771/1772
147	Lesser Starlet coral	Sid radi	5.8	3	4	0.25	1	12	1767
147.4	Starlet coral	Sid sp	6.1	6	7	0.5	1	42	1766
147.5	Lesser Starlet coral	Sid radi	4.2	3	2	0.25	1	6	1771
147.7	Massive Starlet coral	Sid side	4.3	6	3	0.5	1	18	1779
148.3	Lesser Starlet coral	Sid radi	4.4	5	6	0.25	1	30	1779
148.5	Massive Starlet coral	Sid side	4.5	18	15	3	1	270	1776
149	Lesser Starlet coral	Sid radi	3.4	4	6	1	1	24	1780
150	Lesser Starlet coral	Sid radi	4.3	6	5	0.25	1	30	1775
150	Massive Starlet coral	Sid side	4.3	17	16	3	1	272	1775
147.3	Starlet coral	Sid sp	13.3	3	3	0.5	2	9	1732
147.5	Massive Starlet coral	Sid side	12.5	5	5	1	1	25	1733
147.2	Lesser Starlet coral	Sid radi	12.5	7	10	1	1	70	1733
146.5	Starlet coral	Sid sp	13.3	4	5	1	1	20	1732
147	Blushing Star coral	Ste inte	12.2	14	8	2	1	112	1734
147.4	Lesser Starlet coral	Sid radi	10.7	5	7	0.5	1	35	1735
147.4	Lesser Starlet coral	Sid radi	11.0	4	4	0.5	1	16	1735
146.5	Blushing Star coral	Ste inte	8.8	17	12	2	1	204	1739
146.6	Massive Starlet coral	Sid side	9.0	3	5	0.5	1	15	1739
146.5	Lesser Starlet coral	Sid radi	9.2	3	2	0.25	1	6	1739
146.3	Massive Starlet coral	Sid side	13.0	2	1	0.5	1	2	1731
146.7	Massive Starlet coral	Sid side	13.2	3	4	1	1	12	1731
146.6	Massive Starlet coral	Sid side	13.3	12	10	1	1	120	1731
146.5	Blushing Star coral	Ste inte	13.4	5	4	1	1	20	1731
145.9	Lesser Starlet coral	Sid radi	9.1	4	2	0.25	2	8	1739
146	Rose coral	Man areo	8.8	2	2	0.5	1	4	1739
145.9	Lesser Starlet coral	Sid radi	8.7	1	2	0.25	1	2	1739
146.7	Massive Starlet coral	Sid side	13.2	3	3	1	1	9	1730
146.4	Massive Starlet coral	Sid side	13.4	9	9	1	1	81	1730
146.4	Blushing Star coral	Ste inte	13.5	4	3	1	1	12	1730
145.7	Blushing Star coral colony	Ste inte	9.0	30	39	6	1	1170	1738
145.8	Lesser Starlet coral	Sid radi	11.8	3	3	0.5	1	9	1728
145.5	Massive Starlet coral	Sid side	11.0	15	12	2	1	180	1737/1725
148	Massive Starlet coral	Sid side	12.0	7	7	0.5	1	49	1729
142.5	Smooth Star coral	Sol bour	11.2	21	30	6	1	630	1742
141.8	Blushing Star coral	Ste inte	11.3	15	10	2	1	150	1742
142.2	Blushing Star coral	Ste inte	11.9	18	45	5	1	810	1742
141.3	Massive Starlet coral	Sid side	11.4	13	18	1	1	234	1742
141.1	Starlet coral	Sid sp	11.7	7	5	0.5	1	35	1742
142.3	Blushing Star coral	Ste inte	12.9	10	10	3	1	100	1741
141.5	Massive Starlet coral	Sid side	12.6	4	3	0.5	1	12	1741
141.5	Mountainous Star coral	Orb fave	12.8	10	10	0.5	1	100	1741
141.3	Lesser Starlet coral	Sid radi	13.2	10	10	0.5	1	100	1741
141	Blushing Star coral	Ste inte	9.5	18	27	5	1	486	1746
140	Blushing Star coral	Ste inte	10.0	36	38	5	1	1368	1745
140	Lesser Starlet coral	Sid radi	14.4	3	2	0.25	1	6	1743
140	Massive Starlet coral	Sid side	14.3	6	9	0.5	1	54	1743
140.1	Blushing Star coral	Ste inte	14.7	18	20	4	1	360	1743

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
140.2	Starlet coral	Sid sp	15.0	6	7	0.5	1	42	1743
139	Blushing Star coral	Ste inte	16.5	25	18	2	1	450	1743/1744
139.5	Blushing Star coral	Ste inte	9.5	31	38	5	1	1178	1752
138.9	Lesser Starlet coral	Sid radi	10.6	17	18	1	1	306	1752
138.8	Lesser Starlet coral	Sid radi	10.0	9	4	1	1	36	1752
138.8	Symmetrical Brain coral	Dip stri	7.0	25	33	5	1	825	1755
138.8	Starlet coral	Sid sp	10.8	8	8	0.5	1	64	1751
138	Lesser Starlet coral	Sid radi	11.2	5	6	0.25	1	30	1750
138	Lesser Starlet coral	Sid radi	11.4	1	1	0.25	1	1	1750
138.8	Starlet coral	Sid sp	12.5	7	8	0.5	1	56	1749
138.8	Starlet coral	Sid sp	12.8	3	4	0.5	1	12	1749
139.1	Starlet coral	Sid sp	13.4	2	2	0.25	1	4	1749
138.5	Lesser Starlet coral	Sid radi	13.5	3	4	0.25	1	12	1749
137.7	Lesser Starlet coral	Sid radi	9.6	4	6	0.25	1	24	1754
137	Grooved Brain coral	Dip labr	8.3	25	30	5	1	750	1761
136.4	Blushing Star coral	Ste inte	8.4	8	7	1	1	56	1761
136.4	Boulder Brian coral	Mean mean	8.3	6	8	0.5	1	48	1761
136.8	Smooth Star coral	Sol bour	10.7	20	25	0.5	1	500	1756/1760
135.6	Elliptical Star coral	Dic stok	7.5	5	7	2	1	35	1765
136.5	Starlet coral	Sid sp	15.0	7	7	0.5	1	49	1757
135.6	Lesser Starlet coral	Sid radi	13.8	7	8	2	1	56	1757
134.7	Golfball coral	Fav frag	13.2	5	5	1	1	25	1759
134.5	Lesser Starlet coral	Sid radi	13.3	12	17	0.5	1	204	1759
134	Massive Starlet coral	Sid side	7.0	9	6	0.5	1	54	1762
134	Lobed Star coral	Orb annu	7.5	38	35	10	1	1330	1762
130.5	Massive Starlet coral	Sid side	9.5	6	4	1	1	24	1777
130.3	Lesser Starlet coral	Sid radi	9.5	20	31	3	1	620	1777
130.5	Lesser Starlet coral	Sid radi	9.8	12	15	1	1	180	1777
129.5	Massive Starlet coral	Sid side	9.6	11	12	2	1	132	1767
130	Blushing Star coral	Ste inte	9.5	27	27	2	1	729	1767
130.5	Massive Starlet coral	Sid side	9.3	6	4	1	1	24	1767
130.3	Lesser Starlet coral	Sid radi	11.0	9	5	1	1	45	1768
129.2	Massive Starlet coral	Sid side	13.3	5	10	2	1	50	1769
130.5	Massive Starlet coral	Sid side	13.4	4	5	0.5	1	20	1770
130.5	Massive Starlet coral	Sid side	14.2	10	9	1	1	90	1771
130.5	Blushing Star coral	Ste inte	14.4	20	31	2	1	620	1771
130.5	Blushing Star coral	Ste inte	14.8	32	44	2	1	1408	1771
130.5	Lesser Starlet coral	Sid radi	15.3	2	7	0.5	1	14	1771
130.5	Blushing Star coral	Ste inte	16.0	9	8	0.5	1	72	1771
129	Massive Starlet coral	Sid side	16.0	8	6	1	5	48	1772
129	Golfball coral	Fav frag	16.0	3	3	1	1	9	1772
128.7	Eliptical Star coral	Dic stok	11.0	25	28	4	1	700	1775
128.8	Massive Starlet coral	Sid side	9.4	7	9	2	1	63	1778
129.2	Golfball coral	Fav frag	9.2	2	2	0.5	1	4	1778
126	Mountainous Star coral	Mont fav	8.0	113	110	15	1	12430	.779, 80, 81, 85, 87, 88
127	Blushing Star coral	Ste inte	9.5	25	34	3	1	850	1783
126.5	Lesser Starlet coral	Sid radi	10.0	4	7	0.25	1	28	1783
127	Starlet coral	Sid sp	11.0	6	7	2	1	42	1782
127	Starlet coral	Sid sp	11.3	6	3	2	1	18	1782
125.5	Starlet coral	Sid sp	10.8	4	4	1	1	16	1782
125.5	Blushing Star coral	Ste inte	12.8	20	15	1	1	300	1783
125	Blushing Star coral	Ste inte	13.2	10	7	1	1	70	1783
125.1	Golfball coral	Fav frag	11.8	3	3	1	1	9	1785
125.1	Lobed Star coral	Orb annu	12.0	29	36	1	1	1044	1792 (2)
124.8	Mustard Hill coral	Por Astr	8.6	7	8	3	1	56	1788/1789
124.3	Massive Starlet coral	Sid side	7.5	4	4	0.5	1	16	1792
123.2	Massive Starlet coral	Sid side	9.0	6	4	1	1	24	1791
123.1	Lesser Starlet coral	Sid radi	9.0	9	10	1	1	90	1791
123.4	Lesser Starlet coral	Sid radi	9.4	3	3	0.25	2	9	1791
122	Massive Starlet coral	Sid side	12.5	4	4	0.5	1	16	1791 (2)
122	Rose coral	Man areo	12.5	3	3	0.5	1	9	1791 (2)
121.8	Starlet coral	Sid sp	13.2	5	7	2	1	35	1795
121.8	Massive Starlet coral	Sid side	13.5	3	6	1	1	18	1795
121.2	Massive Starlet coral	Sid side	13.3	4	5	0.5	2	20	1795
121.5	Blushing Star coral	Ste inte	13.5	5	7	2	1	35	1795
121.3	Starlet coral	Sid sp	14.2	4	5	0.5	1	20	1795
122.5	Massive Starlet coral	Sid side	15.0	5	7	1	4	35	1793 (2)
122	Massive Starlet coral	Sid side	15.0	8	13	1	1	104	1793 (2)
122.2	Lesser Starlet coral	Sid radi	15.0	2	2	0.25	3	4	1793 (2)
120	Massive Starlet coral	Sid side	15.0	12	8	1	1	96	1796
120	Starlet coral	Sid sp	15.0	2	2	1.0	7	4	1796
120	Blushing Star coral	Ste inte	15.0	4.0	6.0	1.0	2	24	1796

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
125	Blushing Star coral	Ste inte	9.0	10	7	1	1	70	1798
124.8	Symmetrical Brain coral	Dip stri	8.8	20	17	7	1	340	1798
123	Ten-Ray Star coral	Mad deca	9.0	17	15	1	1	255	1799/1800
122.5	Blushing Star coral	Ste inte	7.9	15	16	2	1	240	1800
121.8	Elliptical Star coral	Dic stok	8.3	7	10	2	1	70	1801
121	Blushing Star coral	Ste inte	10.7	5	7	0.5	1	35	1802
123.6	Massive Starlet coral	Sid side	13.3	5	6	0.5	2	30	1806
124	Blushing Star coral	Ste inte	13.6	5	6	0.5	1	30	1806
123.7	Massive Starlet coral	Sid side	14.0	7	10	1	1	70	1807
123.7	Rose coral	Man areo	14.0	5	5	1	1	25	1807
123.1	Starlet coral	Sid sp	13.4	4	4	0.5	1	16	1805
122.5	Massive Starlet coral	Sid side	13.5	4	3	1	2	12	1805
122.5	Blushing Star coral	Ste inte	13.3	5	6	0.5	1	30	1805
122.2	Lesser Starlet coral	Sid radi	13.2	2	2	0.25	1	4	1805
121.5	Blushing Star coral colony	Ste inte	13.2	20	13	2	1	260	1804
121.3	Blushing Star coral	Ste inte	11.7	25	25	5	1	625	1803
119.5	Smooth Star coral	Sol bour	7.8	12	25	2	1	300	1815
119	Blushing Star coral	Ste inte	7.6	10	10	3	1	100	1815
119.3	Lesser Starlet coral	Sid radi	9.6	7	5	1	1	35	1811
118.8	Grooved Brain coral	Dip labr	8.8	20	20	15	1	400	1812/1813
118	Starlet coral	Sid sp	12.3	12	12	0.5	1	144	1810
117.9	Starlet coral	Sid sp	13.2	4	2	0.25	1	8	1809
114.5	Boulder Brian coral	Mean mean	10.0	9	11	1	1	99	1816, 1824, 1825
116.2	Large Ivory Bush coral	Ocu vari	10.7	15	20	6	1	300	1821
116.3	Blushing Star coral	Ste inte	11.0	12	22	0.25	1	264	1822
116.5	Lesser Starlet coral	Sid radi	12.0	3	3	0.5	1	9	1819
115	Lesser Starlet coral	Sid radi	11.0	6	8	0.25	1	48	1823
115	Starlet coral	Sid sp	13.0	3	3	0.5	2	9	1818
114.1	Massive Starlet coral	Sid side	12.8	4	5	0.5	1	20	1817
113.5	Blushing Star coral	Ste inte	12.8	4	5	0.5	1	20	1817
112.5	Starlet coral	Sid sp	9.3	5	4	0.25	2	20	1828
112.5	Starlet coral	Sid sp	9.7	2	3	0.25	1	6	1828
111.8	Starlet coral	Sid sp	9.7	7	9	0.25	1	63	1828
112.9	Boulder Brian coral	Mean mean	11.5	3	7	0.5	1	21	1830
111.1	Massive Starlet coral	Sid side	11.5	3	3	0.5	1	9	1827
111.1	Massive Starlet coral	Sid side	11.5	6	7	1	1	42	1827
111.1	Massive Starlet coral	Sid side	9.6	9	7	0.5	1	63	1829
109.5	Ten-Ray Star coral	Mad deca	7.8	35	22	5	1	770	1831
109.3	Symmetrical Brain coral	Dip stri	7.5	20	24	10	1	480	1832
107.8	Massive Starlet coral	Sid side	10.0	3	2	0.25	3	6	1833
107.4	Starlet coral	Sid sp	7.8	11	12	1	1	132	1837
109	Great Star coral	Mon cave	8.0	15	20	4	1	300	1836
107.5	Massive Starlet coral	Sid side	13.0	9	7	1	1	63	1834
107.5	Lesser Starlet coral	Sid radi	13.0	6	6	1	2	36	1834
107.5	Blushing Star coral	Ste inte	13.0	10	12	2	1	120	1834
106.5	Starlet coral	Sid sp	9.0	43	40	5	1	1720	1,835
106	Ten-Ray Star coral	Mad deca	8.0	7	17	1	1	119	1842
103.4	Massive Starlet coral	Sid side	10.6	12	14	3	1	168	1841
103	Blushing Star coral	Ste inte	10.6	12	18	2	1	216	1841
103.2	Massive Starlet coral	Sid side	13.3	6	7	1	1	42	1840
101	Massive Starlet coral	Sid side	9.5	15	27	1	1	405	1847
100.8	Massive Starlet coral	Sid side	10.9	10	12	0.5	1	120	1845
100	Starlet coral	Sid sp	8.5	4	4	0.25	2	16	1849
100	Lesser Starlet coral	Sid radi	10.5	9	7	0.5	1	63	1843
99	Spiny Flower coral	Mus angu	7.5	13	13	4	1	169	1851
95.2	Lesser Starlet coral	Sid radi	10.5	2	3	0.25	1	6	1853
94.5	Blushing Star coral	Ste inte	10.5	9	9	2	1	81	1853
94.5	Blushing Star coral	Ste inte	10.8	11	15	2	1	165	1853
94.5	Starlet coral	Sid sp	11.1	3	9	0.5	1	27	1853
94.8	Elliptical Star coral	Dic stok	8.6	11	9	1	1	99	1860
95	Diffuse Ivory Bush coral	Ocu diff	15.0	8	4	3	1	32	1859
95.2	Starlet coral	Sid sp	12.9	38	35	2	1	1330	1854
95.5	Starlet coral	Sid sp	13.5	25	28	3	1	700	1854
94.3	Massive Starlet coral	Sid side	11.0	18	15	2	1	270	1858
94	Blushing Star coral	Ste inte	11.1	9	12	4	1	108	1858
93.9	Massive Starlet coral	Sid sp	11.3	6	9	0.5	1	54	1858
94.2	Starlet coral	Sid sp	11.9	7	10	0.5	1	70	1858/1856
93.8	Symmetrical Brain coral	Dip stri	11.9	5	3	0.5	1	15	1858/1856
93.5	Massive Starlet coral	Sid side	13.5	5	7	0.5	1	35	1855
92.9	Massive Starlet coral	Sid side	10.3	6	5	0.5	1	30	1868
90.5	Blushing Star coral	Ste inte	8.2	6	7	0.5	1	42	1870
90.2	Lesser Starlet coral	Sid radi	7.8	2	3	0.25	6	6	1870

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
91.2	Starlet coral	Sid sp	10.3	5	9	0.5	1	45	1866
90.9	Starlet coral	Sid sp	10.0	6	6	0.5	1	36	1866
90.5	Massive Starlet coral	Sid side	9.0	45	25	3	1	1125	1866
90.7	Diffuse Ivory Bush coral	Ocu diff	10.5	6	10	4	1	60	1866
89	Starlet coral	Sid sp	12.0	5	4	1	7	20	1862
89	Blushing Star coral	Ste inte	12.0	10	7	1	1	70	1862
88.7	Blushing Star coral	Ste inte	8.0	15	15	2	1	225	1879
88	Blushing Star coral	Ste inte	7.8	8	8	1	1	64	1880
88.7	Starlet coral	Sid sp	10.9	7	8	1	1	56	1875
87.8	Starlet coral	Sid sp	10.7	12	5	0.5	1	60	1875
87	Cactus coral sp.	Myc lama	11.1	7	7	0.5	1	49	1875/1876
87	Massive Starlet coral	Sid side	9.8	3	3	1	1	9	1871
87	Blushing Star coral	Ste inte	10.0	7	5	1	1	35	1871
86.3	Ten-Ray Star coral	Mad deca	10.5	25	22	2	1	550	1878/1877/1874
85.8	Lesser Starlet coral	Sid radi	11.5	7	8	0.5	1	56	1878/1877
85.6	Massive Starlet coral	Sid side	10.8	9	8	1	1	72	1878/1877
86.8	Starlet coral	Sid sp	14.5	5	5	0.5	1	25	1873/1872
86.5	Starlet coral	Sid sp	14.5	5	2	0.25	4	10	1873/1872
86	Starlet coral	Sid sp	13.8	3	3	0.25	2	9	1872
85.8	Starlet coral	Sid sp	13.8	7	12	0.5	1	84	1872
84	Blushing Star coral	Ste inte	7.8	35	28	3	1	980	1888
84	Blushing Star coral	Ste inte	8.7	3	9	0.5	2	27	1886
84	Lesser Starlet coral	Sid radi	10.3	2	7	0.25	1	14	1881
83.8	Blushing Star coral colony	Ste inte	12.9	25	33	5	1	825	1883
83.3	Massive Starlet coral	Sid side	12.9	6	8	1	1	48	1883
82.6	Ten-Ray Star coral	Mad deca	9.6	20	25	2	1	500	1885
81.3	Blushing Star coral colony	Ste inte	7.8	15	24	4	1	360	1898
81.5	Ten-Ray Star coral	Mad deca	8.3	20	17	5	1	340	1897
79.9	Elliptical Star coral	Dic stok	8.0	15	6	1	1	90	1896
79.3	Starlet coral	Sid sp	7.9	6	2	0.25	1	12	1896
80.4	Starlet coral	Sid sp	12.3	9	7	0.5	1	63	1892
80	Massive Starlet coral	Sid side	12.0	4	5	1	1	20	1893
80.7	Massive Starlet coral	Sid side	15.0	5	5	1	1	25	1891/1890
80.7	Lesser Starlet coral	Sid radi	15.0	8	9	1	1	72	1891/1890
80.7	Lesser Starlet coral	Sid radi	15.0	12	22	2	1	264	1891/1890
78.4	Lesser Starlet coral	Sid radi	7.5	3	3	0.5	1	9	1899
78	Lesser Starlet coral	Sid radi	7.3	2	4	0.25	1	8	1908
73.3	Rose coral	Man areo	8.2	5	6	1	1	30	1904
76.8	Smooth Star coral	Sol bour	11.3	22	17	1	1	374	1902/1903
77.4	Massive Starlet coral	Sid side	13.5	5	8	0.5	1	40	1901
75.3	Massive Starlet coral	Sid side	10.0	25	20	3	1	500	1912
73.7	Blushing Star coral	Ste inte	10.0	4	4	0.5	1	16	1913
73	Massive Starlet coral	Sid side	8.8	10	12	0.5	1	120	1914
72.9	Starlet coral	Sid sp	12.0	7	7	1	1	49	1911
72.8	Massive Starlet coral	Sid side	11.3	3	3	0.5	1	9	1925
72.2	Massive Starlet coral	Sid side	11.1	6	7	0.5	1	42	1925
71.8	Starlet coral	Sid sp	14.0	4	4	0.5	5	16	1922
71.8	Blushing Star coral	Ste inte	15.0	9	7	1	1	63	1921
71	Starlet coral	Sid sp	15.0	5	4	1	4	20	1921
71.8	Starlet coral	Sid sp	14.0	8	8	1	4	64	1922
72.5	Starlet coral	Sid sp	9.5	6	7	0.5	1	42	1918
71.5	Starlet coral	Sid sp	10.8	5	4	0.25	1	20	1918
71	Massive Starlet coral	Sid side	9.4	30	36	5	1	1080	1918
70.5	Lesser Starlet coral	Sid radi	12.8	6	4	0.5	1	24	1924
70.5	Blushing Star coral	Ste inte	12.8	4	2	0.5	1	8	1924
70.5	Blushing Star coral	Ste inte	12.8	3	3	0.5	1	9	1924
70.5	Lesser Starlet coral	Sid radi	13.0	2	2	0.25	1	4	1924
70.5	Large Ivory coral	Ocu vari	14.0	6	9	5	2	54	1923
63.5	Blushing Star coral	Ste inte	7.5	17	22	2	1	374	1939
62.2	Blushing Star coral colony	Ste inte	8.2	17	25	7	1	425	1937
61.5	Starlet coral	Sid sp	5.0	3	0.25	1	1	0.75	1930
60.8	Massive Starlet coral	Sid side	8.8	7	6	0.5	1	42	1936
61.2	Symmetrical Brain coral	Dip sti	12.0	22	17	2	1	374	1932
60.8	Massive Starlet coral	Sid side	10.9	50	39	5	1	1950	1927
62	Starlet coral	Sid sp	15.0	3	4	1	7	12	1928/1929
55	Massive Starlet coral	Sid side	10.0	10	12	0.5	1	120	
54.5	Lesser Starlet coral	Sid radi	10.5	10	12	0.5	1	120	
52	Massive Starlet coral	Sid side	>14	5	7	1	1	35	
51	Lesser Starlet coral	Sid radi	12.0	2	2	0.25	1	4	
51.5	Lesser Starlet coral	Sid radi	9.5	6	8	4	1	48	
53	Lesser Starlet coral	Sid radi	8.5	11	13	5	1	143	
53.5	Blushing Star coral	Ste inte	8.0	22	31	10	1	682	

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
54	Rose coral	Man areo	8.0	20	19	8	1	380	
53	Rose coral	Man areo	8.0	5	5	1	1	25	
53	Lesser Starlet coral	Sid radi	8.0	2	2	0.25	1	4	
49	Lesser Starlet coral	Sid radi	>14	8	11	0.5	1	88	
49	Great Star coral	Mon cave	>14	25	27	11	1	675	
48.5	Great Star coral	Mon cave	>14	17	13	5	1	221	
48	Blushing Star coral	Ste inte	>14	5	5	2	6	25	
48.5	Lesser Starlet coral	Sid radi	12.0	3	3	0.5	1	9	
47	Blushing Star coral	Ste inte	>14	47	53	8	1	2491	
46.5	Massive Starlet coral	Sid side	>14	5	5	1	1	25	
47	Mountainous Star coral	Orb fave	9.0	33	30	3	1	990	
45.5	Great Star coral	Mon cave	9.0	52	69	10	1	3588	
45	Lesser Starlet coral	Sid radi	8.5	9	9	4	1	81	
45	Mustard Hill coral	Por astr	8.0	7	10	6	1	70	
44.5	Lesser Starlet coral	Sid radi	>14	12	13	3	1	156	
44	Lesser Starlet coral	Sid radi	>14	11	15	2	1	165	
40	Lesser Starlet coral	Sid radi	>14	5	5	1	1	25	
40	Lesser Starlet coral	Sid radi	>14	6	6	1	1	36	
39	Blushing Star coral	Ste inte	>14	12	15	4	1	180	
39	Blushing Star coral	Ste inte	>14	4	4	0.5	1	16	
39	Lesser Starlet coral	Sid radi	>14	2	2	0.25	1	4	
40	Blushing Star coral	Ste inte	>14	4	5	0.5	4	20	
35.5	Blushing Star coral	Ste inte	>14	2	2	0.5	1	4	
36	Great Star coral	Mon cave	>14	15	15	0.5	1	225	
34	Lesser Starlet coral	Sid radi	>14	5	4	0.5	1	20	
42	Lesser Starlet coral	Sid radi	>14	7	7	0.5	1	49	
40	Smooth Star coral	Sol bour	>14	90	70	8	1	6300	
33	Mountainous Star coral	Orb fave	>14	11	20	0.5	1	220	
33	Blushing Star coral	Ste inte	>14	8	24	2	1	192	
33	Blushing Star coral	Ste inte	>14	11	5	0.5	1	55	
33	Blushing Star coral	Ste inte	11.0	13	15	0.5	1	195	
31	Blushing Star coral	Ste inte	11.0	22	20	6	1	440	
31	Blushing Star coral	Ste inte	11.5	3	5	1	1	15	
32.5	Mustard Hill coral	Por astr	9.0	20	35	10	1	700	
32	Lesser Starlet coral	Sid radi	9.5	2	3	0.25	2	6	
31	Blushing Star coral	Ste inte	9.5	3	4	0.5	1	12	
29.5	Lesser Starlet coral	Sid radi	8.0	7	10	0.25	1	70	
28	Mustard Hill coral	Por astr	8.0	17	20	6	1	340	
28.5	Lesser Starlet coral	Sid radi	8.0	8	10	0.5	1	80	
28.5	Blushing Star coral	Ste inte	10.5	19	27	3	1	513	
28.5	Massive Starlet coral	Sid side	10.5	4	3	1	1	12	
28.5	Lesser Starlet coral	Sid radi	10.5	1	1	0.25	2	1	
27.5	Lesser Starlet coral	Sid radi	10.5	3	2	0.5	1	6	
27.5	Lesser Starlet coral	Sid radi	10.5	10	10	0.5	1	100	
26	Blushing Star coral	Ste inte	10.5	5	4	0.5	1	20	
26.5	Blushing Star coral	Ste inte	>14	4	3	0.5	1	12	
26.5	Blushing Star coral	Ste inte	>14	8	5	0.5	1	40	
26.5	Blushing Star coral	Ste inte	>14	7	7	0.5	1	49	
24	Lesser Starlet coral	Sid radi	8.5	5	5	0.5	1	25	
22.5	Mustard Hill coral	Por astr	8.0	20	17	3	1	340	
21.5	Blushing Star coral	Ste inte	>14	25	15	1	1	375	
21	Blushing Star coral	Ste inte	>14	17	14	1	1	238	
21.5	Large Ivory coral	Ocu vari	>14	8	10	7	1	80	
20.5	Lesser Starlet coral	Sid radi	>14	4	4	0.25	1	16	
20	Blushing Star coral	Ste inte	>14	20	14	4	1	280	
20	Lesser Starlet coral	Sid radi	>14	3	6	0.5	1	18	
19	Blushing Star coral	Ste inte	>14	38	20	10	1	760	
17.5	Blushing Star coral	Ste inte	>14	5	5	1	1	25	
17.5	Lesser Starlet coral	Sid radi	>14	2	2	0.25	1	4	
16.5	Massive Starlet coral	Sid side	>14	6	5	1	1	30	
17.5	Blushing Star coral	Ste inte	>14	10	6	1	1	60	
18	Blushing Star coral	Ste inte	10.0	20	21	3	1	420	
18	Massive Starlet coral	Sid side	9.5	6	8	0.5	1	48	
16	Blushing Star coral	Ste inte	9.5	28	26	8	1	728	
16	Lesser Starlet coral	Sid radi	9.5	2	2	0.5	1	4	
16.5	Blushing Star coral	Ste inte	10.5	8	5	0.5	1	40	
15	Blushing Star coral	Ste inte	11.0	12	17	3	1	204	
14	Lesser Starlet coral	Sid radi	12.0	4	4	0.25	1	16	
14	Blushing Star coral	Ste inte	13.0	4	4	0.5	1	16	
13.5	Blushing Star coral	Ste inte	13.0	20	16	2	1	320	
14.5	Massive Starlet coral	Sid side	12.0	10	8	1	1	80	
14.5	Blushing Star coral	Ste inte	11.0	15	11	2	1	165	

Coral Colonies Observed Along EAST WALL (Transect 2)
Attachment 7

Location	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Photo #
				Length	Width	Height			
14.5	Massive Starlet coral	Sid side	11.0	6	7	1	1	42	
15	Great Star coral	Mon cave	8.0	15	13	2	1	195	
13.5	Great Star coral	Mon cave	8.0	5	15	1	1	75	
11	Blushing Star coral	Ste inte	9.0	12	15	2	1	180	
9	Lesser Starlet coral	Sid radi	9.0	3	3	0.5	1	9	
8.5	Lesser Starlet coral	Sid radi	9.0	20	15	5	1	300	
7	Blushing Star coral	Ste inte	>14	5	7	1	1	35	
6.5	Blushing Star coral	Ste inte	>14	27	35	8	1	945	
4	Massive Starlet coral	Sid side	>10	8	10	1	1	80	
4	Blushing Star coral	Ste inte	9.0	25	22	3	1	550	
4	Lesser Starlet coral	Sid radi	8.0	10	10	1	5	100	
4	Great Star coral	Mon cave	8.0	10	12	1	1	120	
4	Massive Starlet coral	Sid side	8.0	8	8	1	4	64	
TOTAL							731	109,006.25	

Coral Colonies Observed Along Transect 2 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
3.3	Lesser Starlet coral	Sid radi	3	2	2	0.5	1	4
3.3	Lesser Starlet coral	Sid radi	5.9	2	4	0.5	1	8
3.5	Mustard Hill coral	Por astr	3.2	3	6	1	1	18
3.5	Lesser Starlet coral	Sid radi	4	6	5	0.5	1	30
4	Boulder Brain coral	Col nata	3.4	13	13	5	1	169
4	Great Star Coral	Mont Cav	4	18	20	4		360
4	Lesser Starlet coral	Sid radi	6	8	10	0.5	1	80
4	Massive Starlet coral	Sid side	>10	8	10	1	1	80
4	Blushing Star coral	Ste inte	9.0	25	22	3	1	550
4	Lesser Starlet coral	Sid radi	8.0	10	10	1	5	100
4	Great Star coral	Mon cave	8.0	10	12	1	1	120
4	Massive Starlet coral	Sid side	8.0	8	8	1	4	64
5	Lesser Starlet coral	Sid radi	4.2	3	5	0.5	1	15
5.1	Lesser Starlet coral	Sid radi	3.5	2	3	0.5	1	6
5.3	Lesser Starlet coral	Sid radi	4.2	1	1	0.5	1	1
5.5	Lesser Starlet coral	Sid radi	4.2	6	8	0.5	1	48
5.5	Lesser Starlet coral	Sid radi	6	3	6	0.5	1	18
6	Lesser Starlet coral	Sid radi	4	2	2	0.5	1	4
6.5	Lesser Starlet coral	Sid radi	4	3	2	0.5	1	6
6.5	Blushing Star coral	Ste inte	>14	27	35	8	1	945
6.7	Lesser Starlet coral	Sid radi	4	3	2	0.5	1	6
6.8	Lesser Starlet coral	Sid radi	6	6	10	0.5	1	60
7	Lesser Starlet coral	Sid radi	4	4	4	0.5	1	16
7	Blushing Star coral	Ste inte	>14	5	7	1	1	35
7.1	Lesser Starlet coral	Sid radi	4	3	4	0.5	1	12
7.3	Lesser Starlet coral	Sid radi	6.5	2	2	0.5	1	4
7.4	Massive Starlet coral	Sid side	2.8	2	2	1	1	4
7.5	Massive Starlet coral	Sid side	6.5	2	2	0.5	1	4
7.7	Lesser Starlet coral	Sid radi	4.8	6	9	0.5	1	54
7.8	Rose Coral	Man areo	5.5	4	3	1	1	12
7.8	Lesser Starlet coral	Sid radi	5.8	9	12	1	1	108
8	Lesser Starlet coral	Sid radi	4.8	10	8	0.5	1	80
8.2	Lesser Starlet coral	Sid radi	3.3	4	5	0.5	1	20
8.3	Golfball coral	Fav frag	5.7	2	2	1	1	4
8.5	Lesser Starlet coral	Sid radi	6.5	8	8	0.5	1	64
8.5	Lesser Starlet coral	Sid radi	9.0	20	15	5	1	300
8.8	Lesser Starlet coral	Sid radi	6	13	10	1	1	130
9	Lesser Starlet coral	Sid radi	9.0	3	3	0.5	1	9
9.4	Blushing Star coral	Ste Inte	2.6	36	31	3	1	1116
9.9	Lesser Starlet coral	Sid radi	4.1	3	3	0.5	1	9
10	Lesser Starlet coral	Sid radi	5.2	1	1	0.5	1	1
10.5	Lesser Starlet coral	Sid radi	4	8	10	0.5	2	80
11	Lesser Starlet coral	Sid radi	6	1	1	0.5	3	1
11	Lesser Starlet coral	Sid radi	6	2	2	0.5	1	4
11	Blushing Star coral	Ste inte	9.0	12	15	2	1	180
SUBTOTAL 0 - 12.5							54	4939
12.9	Lesser Starlet coral	Sid radi	2.5	6	3	0.5	1	18
13.1	Lesser Starlet coral	Sid radi	2.5	6	6	0.5	1	36
13.5	Blushing Star coral	Ste inte	13.0	20	16	2	1	320
13.5	Great Star coral	Mon cave	8.0	5	15	1	1	75
13.6	Lesser Starlet coral	Sid radi	4	3	4	0.5	1	12
13.7	Lesser Starlet coral	Sid radi	5.3	2	2	0.5	1	4
13.8	Lesser Starlet coral	Sid radi	2.5	5	4	0.5	2	20
13.8	Lesser Starlet coral	Sid radi	2.7	7	5	0.5	1	35
13.8	Lesser Starlet coral	Sid radi	5.8	6	6	0.5	1	36
13.8	Lesser Starlet coral	Sid radi	4.5	2	2	0.5	2	4
13.8	Massive Starlet coral	Sid side	5.2	8	11	1	1	88
13.8	Lesser Starlet coral	Sid radi	6.3	6	7	0.5	1	42

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
14	Lesser Starlet coral	Sid radi	12.0	4	4	0.25	1	16
14	Blushing Star coral	Ste inte	13.0	4	4	0.5	1	16
14.3	Lesser Starlet coral	Sid radi	3.4	7	7	0.5	1	49
14.5	Massive Starlet coral	Sid side	12.0	10	8	1	1	80
14.5	Blushing Star coral	Ste inte	11.0	15	11	2	1	165
14.5	Massive Starlet coral	Sid side	11.0	6	7	1	1	42
15	Blushing Star coral	Ste inte	11.0	12	17	3	1	204
15	Great Star coral	Mon cave	8.0	15	13	2	1	195
15.3	Lesser Starlet coral	Sid radi	3.3	11	9	0.5	1	99
15.6	Lesser Starlet coral	Sid radi	3	9	7	0.5	1	63
15.9	Lesser Starlet coral	Sid radi	3	6	5	0.5	1	30
16	Blushing Star coral	Ste inte	9.5	28	26	8	1	728
16	Lesser Starlet coral	Sid radi	9.5	2	2	0.5	1	4
16.4	Lesser Starlet coral	Sid radi	2.5	1	2	0.5	1	2
16.5	Lesser Starlet coral	Sid radi	3.6	5	5	0.5	1	25
16.5	Lesser Starlet coral	Sid radi	2.5	1	1	0.5	2	1
16.5	Massive Starlet coral	Sid side	>14	6	5	1	1	30
16.5	Blushing Star coral	Ste inte	10.5	8	5	0.5	1	40
17	Lesser Starlet coral	Sid radi	2.7	5	6	0.5	1	30
17.2	Lesser Starlet coral	Sid radi	3	5	6	0.5	1	30
17.5	Blushing Star coral	Ste inte	>14	5	5	1	1	25
17.5	Lesser Starlet coral	Sid radi	>14	2	2	0.25	1	4
17.5	Blushing Star coral	Ste inte	>14	10	6	1	1	60
18	Blushing Star coral	Ste inte	10.0	20	21	3	1	420
18	Massive Starlet coral	Sid side	9.5	6	8	0.5	1	48
18.5	Lesser Starlet coral	Sid radi	3	3	4	0.5	1	12
18.6	Lesser Starlet coral	Sid radi	3.1	6	8	0.5	1	48
18.7	Lesser Starlet coral	Sid radi	3.1	8	10	0.5	1	80
18.7	Lesser Starlet coral	Sid radi	3.3	0.5	0.5	0.5	2	0.25
19	Blushing Star coral	Ste inte	>14	38	20	10	1	760
19.5	Lesser Starlet coral	Sid radi	5.9	2	1	0.5	1	2
19.5	Lesser Starlet coral	Sid radi	6.1	1	1	0.5	2	1
19.5	Lesser Starlet coral	Sid radi	6.1	4	5	0.5	1	20
20	Blushing Star coral	Ste inte	>14	20	14	4	1	280
20	Lesser Starlet coral	Sid radi	>14	3	6	0.5	1	18
20.5	Lesser Starlet coral	Sid radi	>14	4	4	0.25	1	16
21	Blushing Star coral	Ste inte	>14	17	14	1	1	238
21.4	Lesser Starlet coral	Sid radi	3.3	5	8	1	1	40
21.5	Blushing Star coral	Ste inte	>14	25	15	1	1	375
21.5	Large Ivory coral	Ocu vari	>14	8	10	7	1	80
22.5	Mustard Hill coral	Por astr	8.0	20	17	3	1	340
22.8	Lesser Starlet coral	Sid radi	2.6	5	6	0.5	1	30
22.8	Lesser Starlet coral	Sid radi	4.2	2	2	0.5	1	4
22.9	Lesser Starlet coral	Sid radi	5.7	5	8	0.5	1	40
23.2	Lesser Starlet coral	Sid radi	2.7	2	3	0.5	1	6
23.5	Lesser Starlet coral	Sid radi	3.6	3	4	0.5	1	12
23.9	Lesser Starlet coral	Sid radi	3.2	3	6	0.5	1	18
24	Lesser Starlet coral	Sid radi	8.5	5	5	0.5	1	25
SUBTOTAL 12.6 - 25							65	5541.25
25.8	Lesser Starlet coral	Sid radi	3.4	3	6	0.5	1	18
26	Lesser Starlet coral	Sid radi	3	3	8	0.5	1	24
26	Blushing Star coral	Ste inte	10.5	5	4	0.5	1	20
26.2	Lesser Starlet coral	Sid radi	3	4	6	0.5	1	24
26.5	Lesser Starlet coral	Sid radi	3.3	5	8	0.5	1	40
26.5	Lesser Starlet coral	Sid radi	2.9	5	8	0.5	1	40
26.5	Lesser Starlet coral	Sid radi	2.9	3	8	0.5	1	24
26.5	Blushing Star coral	Ste inte	>14	4	3	0.5	1	12
26.5	Blushing Star coral	Ste inte	>14	8	5	0.5	1	40

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
26.5	Blushing Star coral	Ste inte	>14	7	7	0.5	1	49
26.8	Lesser Starlet coral	Sid radi	3.8	6	5	0.5	1	30
26.8	Lesser Starlet coral	Sid radi	3.6	3	3	0.5	1	9
27	Lesser Starlet coral	Sid radi	2.9	4	5	0.5	1	20
27.2	Lesser Starlet coral	Sid radi	2.6	10	9	1	1	90
27.5	Lesser Starlet coral	Sid radi	5.9	8	13	1	1	104
27.5	Lesser Starlet coral	Sid radi	10.5	3	2	0.5	1	6
27.5	Lesser Starlet coral	Sid radi	10.5	10	10	0.5	1	100
28	Mustard Hill coral	Por astr	8.0	17	20	6	1	340
28.3	Lesser Starlet coral	Sid radi	3.3	5	5	0.5	1	25
28.5	Lesser Starlet coral	Sid radi	8.0	8	10	0.5	1	80
28.5	Blushing Star coral	Ste inte	10.5	19	27	3	1	513
28.5	Massive Starlet coral	Sid side	10.5	4	3	1	1	12
28.5	Lesser Starlet coral	Sid radi	10.5	1	1	0.25	2	1
29.5	Lesser Starlet coral	Sid radi	8.0	7	10	0.25	1	70
30.4	Lesser Starlet coral	Sid radi	4.7	0.5	0.5	0.25	1	0.25
30.4	Lesser Starlet coral	Sid radi	5.8	2	2	1	1	4
30.4	Elliptical Star coral	Dic stok	6.5	8	10	2	1	80
30.5	Lesser Starlet coral	Sid radi	4.3	8	9	1	1	72
31	Blushing Star coral	Ste inte	11.0	22	20	6	1	440
31	Blushing Star coral	Ste inte	11.5	3	5	1	1	15
31	Blushing Star coral	Ste inte	9.5	3	4	0.5	1	12
31.5	Starlet coral	Sid sp	6	1	1	0.5	5	1
32	Lesser Starlet coral	Sid radi	9.5	2	3	0.25	2	6
32.5	Mustard Hill coral	Por astr	9.0	20	35	10	1	700
33	Mountainous Star coral	Orb fave	>14	11	20	0.5	1	220
33	Blushing Star coral	Ste inte	>14	8	24	2	1	192
33	Blushing Star coral	Ste inte	>14	11	5	0.5	1	55
33	Blushing Star coral	Ste inte	11.0	13	15	0.5	1	195
33.5	Starlet coral	Sid sp	2.9	3	3	0.5	1	9
33.8	Lesser Starlet coral	Sid radi	6.2	10	21	1	1	210
34	Lesser Starlet coral	Sid radi	>14	5	4	0.5	1	20
34.5	Blushing Star coral	Ste Inte	5	21	33	2	1	693
34.5	Lesser Starlet coral	Sid radi	2.8	2	2	0.5	1	4
34.5	Lesser Starlet coral	Sid radi	3.1	3	9	0.5	1	27
35.5	Blushing Star coral	Ste inte	>14	2	2	0.5	1	4
36	Great Star coral	Mon cave	>14	15	15	0.5	1	225
36.6	Lesser Starlet coral	Sid radi	2.6	8	20	1	1	160
SUBTOTAL 25.1 - 37.5							53	5035.25
38	Lesser Starlet coral	Sid radi	5.8	13	10	0.5	1	130
39	Blushing Star coral	Ste inte	>14	12	15	4	1	180
39	Blushing Star coral	Ste inte	>14	4	4	0.5	1	16
39	Lesser Starlet coral	Sid radi	>14	2	2	0.25	1	4
39.5	Lesser Starlet coral	Sid radi	5.6	13	13	1	1	169
40	Lesser Starlet coral	Sid radi	>14	5	5	1	1	25
40	Lesser Starlet coral	Sid radi	>14	6	6	1	1	36
40	Blushing Star coral	Ste inte	>14	4	5	0.5	4	20
40	Smooth Star coral	Sol bour	>14	90	70	8	1	6300
41	Lesser Starlet coral	Sid radi	4.5	8	6	0.5	2	48
41.3	Lesser Starlet coral	Sid radi	4	5	6	0.5	1	30
41.3	Lesser Starlet coral	Sid radi	5	5	5	0.5	1	25
41.6	Lesser Starlet coral	Sid radi	4.2	2	2	0.5	1	4
41.9	Lesser Starlet coral	Sid radi	3.9	5	8	0.5	1	40
42	Lesser Starlet coral	Sid radi	3.8	7	8	0.5	1	56
42	Lesser Starlet coral	Sid radi	>14	7	7	0.5	1	49
42.6	Lesser Starlet coral	Sid radi	2.5	11	8	0.5	1	88
42.9	Smooth Star coral	Sol bour	5.5	8	6	0.5	1	48
43.2	Lesser Starlet coral	Sid radi	2.5	2	3	0.5	1	6

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
43.8	Lesser Starlet coral	Sid radi	2.5	3	8	0.5	1	24
44	Lesser Starlet coral	Sid radi	>14	11	15	2	1	165
44.5	Lesser Starlet coral	Sid radi	>14	12	13	3	1	156
44.7	Lesser Starlet coral	Sid radi	3.1	4	6	0.5	1	24
45	Lesser Starlet coral	Sid radi	8.5	9	9	4	1	81
45	Mustard Hill coral	Por astr	8.0	7	10	6	1	70
45.5	Elliptical Star coral	Dic stok	3.5	12	14	2	1	168
45.5	Great Star coral	Mon cave	9.0	52	69	10	1	3588
45.9	Lesser Starlet coral	Sid radi	4.2	1	1	0.25	1	1
45.9	Lesser Starlet coral	Sid radi	6.2	8	5	0.5	1	40
45.9	Lesser Starlet coral	Sid radi	5.8	1	1	0.25	1	1
46.5	Lesser Starlet coral	Sid radi	3.8	5	7	0.5	1	35
46.5	Massive Starlet coral	Sid side	>14	5	5	1	1	25
46.6	Lesser Starlet coral	Sid radi	5.5	1	1	0.25	1	1
47	Lesser Starlet coral	Sid radi	3.2	6	6	0.5	1	36
47	Blushing Star coral	Ste inte	>14	47	53	8	1	2491
47	Mountainous Star coral	Orb fave	9.0	33	30	3	1	990
48	Blushing Star coral	Ste inte	>14	5	5	2	6	25
48.5	Great Star coral	Mon cave	>14	17	13	5	1	221
48.5	Lesser Starlet coral	Sid radi	12.0	3	3	0.5	1	9
48.8	Lesser Starlet coral	Sid radi	5.4	2	3	0.5	1	6
49	Lesser Starlet coral	Sid radi	>14	8	11	0.5	1	88
49	Great Star coral	Mon cave	>14	25	27	11	1	675
49.5	Lesser Starlet coral	Sid radi	4.1	7	6	0.5	1	42
49.5	Lobed Star coral	Orb annu	1.6	20	21	5	1	420
49.8	Lesser Starlet coral	Sid radi	3	3	5	0.5	1	15
50	Lesser Starlet coral	Sid radi	3.7	5	6	0.5	1	30
50	Elliptical Star coral	Dic stok	2.7	8	9	2	1	72
50	Lesser Starlet coral	Sid radi	3	4	8	0.52	2	32
50	Lesser Starlet coral	Sid radi	5	1	1	0.25	2	1
SUBTOTAL 37.6 - 50							60	16806
50.3	Symmetrical Brain coral	Dip strig	5.5	20	19	2	1	380
50.4	Lesser Starlet coral	Sid radi	5	6	10	0.5	1	60
51	Lesser Starlet coral	Sid radi	12.0	2	2	0.25	1	4
51.5	Lesser Starlet coral	Sid radi	9.5	6	8	4	1	48
52	Massive Starlet coral	Sid side	>14	5	7	1	1	35
52.9	Lesser Starlet coral	Sid radi	4.9	3	3	0.25	1	9
53	Lesser Starlet coral	Sid radi	8.5	11	13	5	1	143
53	Rose coral	Man areo	8.0	5	5	1	1	25
53	Lesser Starlet coral	Sid radi	8.0	2	2	0.25	1	4
53.3	Elliptical Star coral	Dic stok	5.4	9	9	1	1	81
53.4	Lesser Starlet coral	Sid radi	5.2	2	2	0.25	1	4
53.4	Lesser Starlet coral	Sid radi	5.2	2	3	0.25	1	6
53.5	Blushing Star coral	Ste inte	8.0	22	31	10	1	682
54	Rose coral	Man areo	8.0	20	19	8	1	380
54.5	Lesser Starlet coral	Sid radi	10.5	10	12	0.5	1	120
55	Massive Starlet coral	Sid side	10.0	10	12	0.5	1	120
55.2	Symmetrical Brain coral	Dip strig	1.6	15	13	2	1	195
55.2	Lesser Starlet coral	Sid radi	3.7	2	3	0.5	1	6
56.3	Blushing Star coral	Ste Inte	6.2	28	27	2	1	756
57.1	Lesser Starlet coral	Sid radi	4.8	3	6	0.5	1	18
57.2	Lesser Starlet coral	Sid radi	7.5	10	10	1	1	100
57.2	Lesser Starlet coral	Sid radi	7.8	1	1	0.25	1	1
57.5	Lesser Starlet coral	Sid radi	5.7	3	3	0.5	1	9
57.5	Elliptical Star coral	Dic stok	4.5	12	14	6	1	168
57.6	Lesser Starlet coral	Sid radi	5.6	3	3	0.5	1	9
57.6	Lesser Starlet coral	Sid radi	3.6	3	4	0.5	1	12
58	Lesser Starlet coral	Sid radi	7	10	12	1	1	120

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
58	Great Star Coral	Mont Cav	9	30	20	2	1	600
58.5	Lesser Starlet coral	Sid radi	7.3	1	1	0.25	1	1
59.4	Lesser Starlet coral	Sid radi	6	12	8	0.5	1	96
60	Lesser Starlet coral	Sid radi	6.8	2	2	0.25	3	4
60	Lesser Starlet coral	Sid radi	6.8	1	1	0.25	2	1
60.8	Massive Starlet coral	Sid side	8.8	7	6	0.5	1	42
60.8	Massive Starlet coral	Sid side	10.9	50	39	5	1	1950
61	Lesser Starlet coral	Sid radi	6.8	1	1	0.25	1	1
61	Lesser Starlet coral	Sid radi	3.2	2	1	0.25	2	2
61.2	Symmetrical Brain coral	Dip sti	12.0	22	17	2	1	374
61.5	Starlet coral	Sid sp	5.0	3	0.25	1	1	0.75
62	Starlet coral	Sid sp	15.0	3	4	1	7	12
62.2	Blushing Star coral colony	Ste inte	8.2	17	25	7	1	425
SUBTOTAL 50.1 - 62.5							50	7003.75
62.9	Lesser Starlet coral	Sid radi	4	3	5	0.5	1	15
63.5	Blushing Star coral	Ste inte	7.5	17	22	2	1	374
64.2	Grooved Brain coral	Dip labr	3.8	10	10	5	1	100
65.7	Elliptical Star coral	Dic stok	4.4	6	7	1	1	42
69	Lesser Starlet coral	Sid radi	5.9	1	1	0.25	1	1
69.2	Lesser Starlet coral	Sid radi	5.8	6	6	0.5	1	36
69.8	Blushing Star coral	Ste Inte	7	30	31	2	1	930
70.5	Lesser Starlet coral	Sid radi	12.8	6	4	0.5	1	24
70.5	Blushing Star coral	Ste inte	12.8	4	2	0.5	1	8
70.5	Blushing Star coral	Ste inte	12.8	3	3	0.5	1	9
70.5	Lesser Starlet coral	Sid radi	13.0	2	2	0.25	1	4
70.5	Large Ivory coral	Ocu vari	14.0	6	9	5	2	54
71	Starlet coral	Sid sp	15.0	5	4	1	4	20
71	Massive Starlet coral	Sid side	9.4	30	36	5	1	1080
71.5	Starlet coral	Sid sp	10.8	5	4	0.25	1	20
71.8	Starlet coral	Sid sp	14.0	4	4	0.5	5	16
71.8	Blushing Star coral	Ste inte	15.0	9	7	1	1	63
71.8	Starlet coral	Sid sp	14.0	8	8	1	4	64
72.1	Lesser Starlet coral	Sid radi	5	6	5	0.5	1	30
72.2	Massive Starlet coral	Sid side	11.1	6	7	0.5	1	42
72.3	Lesser Starlet coral	Sid radi	5.3	3	4	0.25	1	12
72.5	Starlet coral	Sid sp	9.5	6	7	0.5	1	42
72.8	Massive Starlet coral	Sid side	11.3	3	3	0.5	1	9
72.9	Starlet coral	Sid sp	12.0	7	7	1	1	49
73	Massive Starlet coral	Sid side	8.8	10	12	0.5	1	120
73.3	Rose coral	Man areo	8.2	5	6	1	1	30
73.7	Lesser Starlet coral	Sid radi	3.5	8	11	1	1	88
73.7	Blushing Star coral	Ste inte	10.0	4	4	0.5	1	16
SUBTOTAL 62.6 - 75							39	3298
75.2	Mustard Hill coral	Por astr	4.9	9	8	1	1	72
75.3	Massive Starlet coral	Sid side	10.0	25	20	3	1	500
75.8	Symmetrical Brain coral	Dip stri	5.2	18	20	9	1	360
75.8	Elliptical Star coral	Dic stok	2	16	15	1	1	240
76.8	Elliptical Star coral	Dic stok	2.2	36	30	2	1	1080
76.8	Smooth Star coral	Sol bour	11.3	22	17	1	1	374
77.4	Massive Starlet coral	Sid side	13.5	5	8	0.5	1	40
78	Lesser Starlet coral	Sid radi	7.3	2	4	0.25	1	8
78.4	Lesser Starlet coral	Sid radi	7.5	3	3	0.5	1	9
79.3	Starlet coral	Sid sp	7.9	6	2	0.25	1	12
79.9	Elliptical Star coral	Dic stok	8.0	15	6	1	1	90
80	Massive Starlet coral	Sid side	12.0	4	5	1	1	20
80.4	Starlet coral	Sid sp	12.3	9	7	0.5	1	63
80.5	Blushing Star coral	Ste Inte	5.3	17	20	2	1	340
80.7	Massive Starlet coral	Sid side	15.0	5	5	1	1	25

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
80.7	Lesser Starlet coral	Sid radi	15.0	8	9	1	1	72
80.7	Lesser Starlet coral	Sid radi	15.0	12	22	2	1	264
81.3	Blushing Star coral colony	Ste inte	7.8	15	24	4	1	360
81.5	Ten-Ray Star coral	Mad deca	8.3	20	17	5	1	340
82	Grooved Brain coral	Dip labr	4.4	8	8	2	1	64
82.6	Ten-Ray Star coral	Mad deca	9.6	20	25	2	1	500
83	Symmetrical Brain coral	Dip stri	3.5	15	15	1	1	225
83	Great Star Coral	Mont Cav	2.2	6	7	1	1	42
83.2	Rose Coral	Man areo	4.2	3	3	1	1	9
83.3	Massive Starlet coral	Sid side	12.9	6	8	1	1	48
83.8	Blushing Star coral colony	Ste inte	12.9	25	33	5	1	825
84	Lesser Starlet coral	Sid radi	5.5	2	1	0.5	2	2
84	Blushing Star coral	Ste inte	7.8	35	28	3	1	980
84	Blushing Star coral	Ste inte	8.7	3	9	0.5	2	27
84	Lesser Starlet coral	Sid radi	10.3	2	7	0.25	1	14
84.8	Massive Starlet coral	Sid side	5.4	12	10	2	1	120
85	Lesser Starlet coral	Sid radi	5.9	1	1	0.5	1	1
85	Lesser Starlet coral	Sid radi	6	1	1	0.25	1	1
85.4	Lesser Starlet coral	Sid radi	6	2	1	0.5	1	2
85.6	Massive Starlet coral	Sid side	10.8	9	8	1	1	72
85.8	Lesser Starlet coral	Sid radi	11.5	7	8	0.5	1	56
85.8	Starlet coral	Sid sp	13.8	7	12	0.5	1	84
86	Lesser Starlet coral	Sid radi	5.6	2	2	0.5	1	4
86	Starlet coral	Sid sp	13.8	3	3	0.25	2	9
86.3	Ten-Ray Star coral	Mad deca	10.5	25	22	2	1	550
86.5	Starlet coral	Sid sp	14.5	5	2	0.25	4	10
86.8	Starlet coral	Sid sp	14.5	5	5	0.5	1	25
87	Knobby Brain coral	Dip cliv	11.1	7	7	0.5	1	49
87	Massive Starlet coral	Sid side	9.8	3	3	1	1	9
87	Blushing Star coral	Ste inte	10.0	7	5	1	1	35
87.1	Elliptical Star coral	Dic stok	6.4	7	7	2	1	49
SUBTOTAL 75.1 - 87.5							52	8081
87.8	Starlet coral	Sid sp	10.7	12	5	0.5	1	60
88	Blushing Star coral	Ste inte	7.8	8	8	1	1	64
88.3	Lesser Starlet coral	Sid radi	6	1	1	0.25	1	1
88.7	Blushing Star coral	Ste inte	8.0	15	15	2	1	225
88.7	Starlet coral	Sid sp	10.9	7	8	1	1	56
89	Starlet coral	Sid sp	12.0	5	4	1	7	20
89	Blushing Star coral	Ste inte	12.0	10	7	1	1	70
89.2	Lesser Starlet coral	Sid radi	5	5	9	0.25	1	45
90	Massive Starlet coral	Sid side	6.1	12	13	3	1	156
90.2	Lesser Starlet coral	Sid radi	7.8	2	3	0.25	6	6
90.5	Blushing Star coral	Ste inte	8.2	6	7	0.5	1	42
90.5	Massive Starlet coral	Sid side	9.0	45	25	3	1	1125
90.7	Diffuse Ivory Bush coral	Ocu diff	10.5	6	10	4	1	60
90.9	Starlet coral	Sid sp	10.0	6	6	0.5	1	36
91.2	Starlet coral	Sid sp	10.3	5	9	0.5	1	45
91.8	Elliptical Star coral	Dic stok	4.3	18	17	4	1	306
92.9	Massive Starlet coral	Sid side	10.3	6	5	0.5	1	30
93.4	Diffuse Ivory Bush coral	Ocu diff	4.1	7	6	3	1	42
93.4	Lesser Starlet coral	Sid radi	4	2	2	0.25	1	4
93.5	Knobby Brain coral	Dip cliv	4.1	36	35	5	1	1260
93.5	Massive Starlet coral	Sid side	13.5	5	7	0.5	1	35
93.7	Lobed Star coral	Orb annu	4.5	20	12	2	1	240
93.8	Symmetrical Brain coral	Dip stri	11.9	5	3	0.5	1	15
93.9	Massive Starlet coral	Sid sp	11.3	6	9	0.5	1	54
94	Blushing Star coral	Ste inte	11.1	9	12	4	1	108
94.2	Lobed Star coral	Orb annu	4.8	25	20	2	1	500

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
94.2	Starlet coral	Sid sp	11.9	7	10	0.5	1	70
94.3	Massive Starlet coral	Sid side	11.0	18	15	2	1	270
94.5	Blushing Star coral	Ste inte	10.5	9	9	2	1	81
94.5	Blushing Star coral	Ste inte	10.8	11	15	2	1	165
94.5	Starlet coral	Sid sp	11.1	3	9	0.5	1	27
94.8	Elliptical Star coral	Dic stok	8.6	11	9	1	1	99
95	Diffuse Ivory Bush coral	Ocu diff	15.0	8	4	3	1	32
95.2	Lesser Starlet coral	Sid radi	10.5	2	3	0.25	1	6
95.2	Starlet coral	Sid sp	12.9	38	35	2	1	1330
95.5	Starlet coral	Sid sp	13.5	25	28	3	1	700
98.3	Blushing Star coral	Ste Inte	6.2	33	28	7	1	924
98.5	Knobby Brain coral	Dip cliv	1.5	16	14	4	1	224
99	Spiny Flower coral	Mus angu	7.5	13	13	4	1	169
100	Starlet coral	Sid sp	8.5	4	4	0.25	2	16
100	Lesser Starlet coral	Sid radi	10.5	9	7	0.5	1	63
SUBTOTAL 87.6 - 100							53	8781
100.1	Lesser Starlet coral	Sid radi	5.5	5	7	0.5	1	35
100.5	Symmetrical Brain coral	Dip stri	5.5	30	33	10	1	990
100.8	Massive Starlet coral	Sid side	10.9	10	12	0.5	1	120
101	Blushing Star coral	Ste Inte	5.4	33	48	8	1	1584
101	Massive Starlet coral	Sid side	9.5	15	27	1	1	405
101.2	Massive Starlet coral	Sid side	5.1	7	17	1	1	119
102.8	Lesser Starlet coral	Sid radi	5.2	4	6	0.25	1	24
102.9	Lesser Starlet coral	Sid radi	4.8	7	7	0.5	1	49
102.9	Lesser Starlet coral	Sid radi	3.5	5	7	0.5	1	35
103	Blushing Star coral	Ste inte	10.6	12	18	2	1	216
103.2	Massive Starlet coral	Sid side	13.3	6	7	1	1	42
103.4	Massive Starlet coral	Sid side	10.6	12	14	3	1	168
103.5	Lesser Starlet coral	Sid radi	5.1	6	4	0.5	1	24
103.7	Lesser Starlet coral	Sid radi	5.1	6	10	0.25	1	60
104.1	Lesser Starlet coral	Sid radi	4.6	3	6	0.25	1	18
105.5	Lesser Starlet coral	Sid radi	5.4	5	12	0.5	1	60
106	Ten-Ray Star coral	Mad deca	8.0	7	17	1	1	119
106.5	Starlet coral	Sid sp	9.0	43	40	5	1	1720
107.1	Lesser Starlet coral	Sid radi	6.7	1	1	0.25	1	1
107.4	Starlet coral	Sid sp	7.8	11	12	1	1	132
107.5	Massive Starlet coral	Sid side	13.0	9	7	1	1	63
107.5	Lesser Starlet coral	Sid radi	13.0	6	6	1	2	36
107.5	Blushing Star coral	Ste inte	13.0	10	12	2	1	120
107.8	Massive Starlet coral	Sid side	10.0	3	2	0.25	3	6
108	Lesser Starlet coral	Sid radi	3.3	6	15	0.5	1	90
108	Lesser Starlet coral	Sid radi	3.7	7	7	0.25	41	49
109	Great Star coral	Mon cave	8.0	15	20	4	1	300
109.3	Symmetrical Brain coral	Dip stri	7.5	20	24	10	1	480
109.5	Ten-Ray Star coral	Mad deca	7.8	35	22	5	1	770
111.1	Massive Starlet coral	Sid side	11.5	3	3	0.5	1	9
111.1	Massive Starlet coral	Sid side	11.5	6	7	1	1	42
111.1	Massive Starlet coral	Sid side	9.6	9	7	0.5	1	63
111.5	Knobby Brain coral	Dip cliv	6	5	5	1	1	25
111.8	Golfball coral	Fav frag	2.9	4	4	1	1	16
111.8	Starlet coral	Sid sp	9.7	7	9	0.25	1	63
112.5	Lesser Starlet coral	Sid radi	2.7	3	2	0.5	1	6
112.5	Lesser Starlet coral	Sid radi	6.5	1	1	0.25	3	1
112.5	Starlet coral	Sid sp	9.3	5	4	0.25	2	20
112.5	Starlet coral	Sid sp	9.7	2	3	0.25	1	6
SUBTOTAL 100.0 - 112.5							85	8086
112.9	Boulder Brain coral	Col nada	11.5	3	7	0.5	1	21
113.2	Blushing Star coral	Ste Inte	6.1	26	25	3	1	650

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
113.5	Blushing Star coral	Ste inte	12.8	4	5	0.5	1	20
114.1	Massive Starlet coral	Sid side	12.8	4	5	0.5	1	20
114.5	Boulder Brain coral	Col nada	10.0	9	11	1	1	99
115	Lesser Starlet coral	Sid radi	11.0	6	8	0.25	1	48
115	Starlet coral	Sid sp	13.0	3	3	0.5	2	9
115.9	Lesser Starlet coral	Sid radi	5.1	5	9	0.25	1	45
116.2	Large Ivory Bush coral	Ocu vari	10.7	15	20	6	1	300
116.3	Lesser Starlet coral	Sid radi	6.7	3	10	0.25	1	30
116.3	Blushing Star coral	Ste inte	11.0	12	22	0.25	1	264
116.5	Lesser Starlet coral	Sid radi	12.0	3	3	0.5	1	9
117.7	Lesser Starlet coral	Sid radi	4.8	1	1	0.25	1	1
117.9	Starlet coral	Sid sp	13.2	4	2	0.25	1	8
118	Starlet coral	Sid sp	12.3	12	12	0.5	1	144
118.7	Lesser Starlet coral	Sid radi	3.6	5	7	0.5	1	35
118.8	Grooved Brain coral	Dip labr	8.8	20	20	15	1	400
119	Blushing Star coral	Ste inte	7.6	10	10	3	1	100
119.3	Lesser Starlet coral	Sid radi	9.6	7	5	1	1	35
119.5	Smooth Star coral	Sol bour	7.8	12	25	2	1	300
119.6	Lesser Starlet coral	Sid radi	3	3	2	0.5	1	6
120	Massive Starlet coral	Sid side	15.0	12	8	1	1	96
120	Starlet coral	Sid sp	15.0	2	2	1.0	7	4
120	Blushing Star coral	Ste inte	15.0	4.0	6.0	1.0	2	24
120.8	Massive Starlet coral	Sid side	4.9	15	10	2	1	150
121	Golfball coral	Fav frag	6	2	2	1	1	4
121	Blushing Star coral	Ste inte	10.7	5	7	0.5	1	35
121.2	Massive Starlet coral	Sid side	13.3	4	5	0.5	2	20
121.3	Starlet coral	Sid sp	14.2	4	5	0.5	1	20
121.3	Blushing Star coral	Ste inte	11.7	25	25	5	1	625
121.5	Six-Ray Star Coral	Mad sen	5.9	2	2	0.25	1	4
121.5	Lesser Starlet coral	Sid radi	6.8	8	7	0.5	1	56
121.5	Blushing Star coral	Ste inte	13.5	5	7	2	1	35
121.5	Blushing Star coral colony	Ste inte	13.2	20	13	2	1	260
121.8	Starlet coral	Sid sp	13.2	5	7	2	1	35
121.8	Massive Starlet coral	Sid side	13.5	3	6	1	1	18
121.8	Elliptical Star coral	Dic stok	8.3	7	10	2	1	70
122	Massive Starlet coral	Sid side	12.5	4	4	0.5	1	16
122	Rose coral	Man areo	12.5	3	3	0.5	1	9
122	Massive Starlet coral	Sid side	15.0	8	13	1	1	104
122.2	Lesser Starlet coral	Sid radi	15.0	2	2	0.25	3	4
122.2	Lesser Starlet coral	Sid radi	13.2	2	2	0.25	1	4
122.5	Massive Starlet coral	Sid side	15.0	5	7	1	4	35
122.5	Blushing Star coral	Ste inte	7.9	15	16	2	1	240
122.5	Massive Starlet coral	Sid side	13.5	4	3	1	2	12
122.5	Blushing Star coral	Ste inte	13.3	5	6	0.5	1	30
123	Ten-Ray Star coral	Mad deca	9.0	17	15	1	1	255
123.1	Lesser Starlet coral	Sid radi	9.0	9	10	1	1	90
123.1	Starlet coral	Sid sp	13.4	4	4	0.5	1	16
123.2	Massive Starlet coral	Sid side	9.0	6	4	1	1	24
123.4	Lesser Starlet coral	Sid radi	9.4	3	3	0.25	2	9
123.6	Massive Starlet coral	Sid side	13.3	5	6	0.5	2	30
123.7	Massive Starlet coral	Sid side	14.0	7	10	1	1	70
123.7	Rose coral	Man areo	14.0	5	5	1	1	25
124	Massive Starlet coral	Sid side	6	15	14	3	1	210
124	Blushing Star coral	Ste inte	13.6	5	6	0.5	1	30
124.3	Smooth Star coral	Sol bour	4.3	30	31	7	1	930
124.3	Massive Starlet coral	Sid side	7.5	4	4	0.5	1	16
124.8	Lesser Starlet coral	Sid radi	3.2	5	7	1.5	1	35
124.8	Mustard Hill coral	Por Astr	8.6	7	8	3	1	56

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
124.8	Symmetrical Brain coral	Dip stri	8.8	20	17	7	1	340
125	Blushing Star coral	Ste inte	13.2	10	7	1	1	70
125	Blushing Star coral	Ste inte	9.0	10	7	1	1	70
SUBOTAL 112.6 - 125							80	6730
125.1	Golfball coral	Fav frag	11.8	3	3	1	1	9
125.1	Lobed Star coral	Orb annu	12.0	29	36	1	1	1044
125.5	Starlet coral	Sid sp	10.8	4	4	1	1	16
125.5	Blushing Star coral	Ste inte	12.8	20	15	1	1	300
126	Mountainous Star coral	Mont fav	8.0	113	110	15	1	12430
126.4	Lesser Starlet coral	Sid radi	2.8	1	1	0.25	1	1
126.5	Lesser Starlet coral	Sid radi	10.0	4	7	0.25	1	28
126.6	Lesser Starlet coral	Sid radi	3	5	5	0.25	2	25
127	Blushing Star coral	Ste inte	9.5	25	34	3	1	850
127	Starlet coral	Sid sp	11.0	6	7	2	1	42
127	Starlet coral	Sid sp	11.3	6	3	2	1	18
128.5	Symmetrical Brain coral	Dip stri	1.7	31	23	5	1	713
128.7	Eliptical Star coral	Dic stok	11.0	25	28	4	1	700
128.8	Massive Starlet coral	Sid side	9.4	7	9	2	1	63
129	Lesser Starlet coral	Sid radi	6	10	15	0.5	1	150
129	Lesser Starlet coral	Sid radi	5.1	4	4	0.25	1	16
129	Massive Starlet coral	Sid side	16.0	8	6	1	5	48
129	Golfball coral	Fav frag	16.0	3	3	1	1	9
129.2	Massive Starlet coral	Sid side	13.3	5	10	2	1	50
129.2	Golfball coral	Fav frag	9.2	2	2	0.5	1	4
129.4	Lesser Starlet coral	Sid radi	6	7	5	0.25	1	35
129.5	Massive Starlet coral	Sid side	9.6	11	12	2	1	132
130	Blushing Star coral	Ste inte	9.5	27	27	2	1	729
130.2	Lesser Starlet coral	Sid radi	5.2	3	3	0.25	1	9
130.3	Lesser Starlet coral	Sid radi	9.5	20	31	3	1	620
130.3	Lesser Starlet coral	Sid radi	11.0	9	5	1	1	45
130.5	Massive Starlet coral	Sid side	9.5	6	4	1	1	24
130.5	Lesser Starlet coral	Sid radi	9.8	12	15	1	1	180
130.5	Massive Starlet coral	Sid side	9.3	6	4	1	1	24
130.5	Massive Starlet coral	Sid side	13.4	4	5	0.5	1	20
130.5	Massive Starlet coral	Sid side	14.2	10	9	1	1	90
130.5	Blushing Star coral	Ste inte	14.4	20	31	2	1	620
130.5	Blushing Star coral	Ste inte	14.8	32	44	2	1	1408
130.5	Lesser Starlet coral	Sid radi	15.3	2	7	0.5	1	14
130.5	Blushing Star coral	Ste inte	16.0	9	8	0.5	1	72
130.8	Lesser Starlet coral	Sid radi	5.4	6	6	0.5	1	36
130.9	Lesser Starlet coral	Sid radi	3.5	6	6	0.25	1	36
134	Massive Starlet coral	Sid side	7.0	9	6	0.5	1	54
134	Lobed Star coral	Orb annu	7.5	38	35	10	1	1330
134.4	Grooved Brain coral	dip labr	6.5	7	7	5	1	49
134.5	Lesser Starlet coral	Sid radi	13.3	12	17	0.5	1	204
134.7	Golfball coral	Fav frag	13.2	5	5	1	1	25
135.6	Elliptical Star coral	Dic stok	7.5	5	7	2	1	35
135.6	Lesser Starlet coral	Sid radi	13.8	7	8	2	1	56
135.8	Lesser Starlet coral	Sid radi	3.2	2	2	0.25	1	4
136.4	Blushing Star coral	Ste inte	8.4	8	7	1	1	56
136.4	Boulder Brain coral	Col nada	8.3	6	8	0.5	1	48
136.5	Starlet coral	Sid sp	15.0	7	7	0.5	1	49
136.8	Smooth Star coral	Sol bour	10.7	20	25	0.5	1	500
137	Grooved Brain coral	Dip labr	8.3	25	30	5	1	750
SUBTOTAL 125.1 - 137.5							55	23770
137.7	Lesser Starlet coral	Sid radi	9.6	4	6	0.25	1	24
138	Lesser Starlet coral	Sid radi	11.2	5	6	0.25	1	30
138	Lesser Starlet coral	Sid radi	11.4	1	1	0.25	1	1

Coral Colonies Observed Along Transect 2 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
138.5	Lesser Starlet coral	Sid radi	3.3	4	4	0.25	1	16
138.5	Lesser Starlet coral	Sid radi	13.5	3	4	0.25	1	12
138.8	Lesser Starlet coral	Sid radi	10.0	9	4	1	1	36
138.8	Symmetrical Brain coral	Dip stri	7.0	25	33	5	1	825
138.8	Starlet coral	Sid sp	10.8	8	8	0.5	1	64
138.8	Starlet coral	Sid sp	12.5	7	8	0.5	1	56
138.8	Starlet coral	Sid sp	12.8	3	4	0.5	1	12
138.9	Lesser Starlet coral	Sid radi	10.6	17	18	1	1	306
139	Blushing Star coral	Ste inte	16.5	25	18	2	1	450
139.1	Starlet coral	Sid sp	13.4	2	2	0.25	1	4
139.5	Lesser Starlet coral	Sid radi	3.9	1	1	0.25	1	1
139.5	Blushing Star coral	Ste inte	9.5	31	38	5	1	1178
139.6	Diffuse Ivory Bush coral	Ocu diff	6	8	13	4	1	104
139.9	Diffuse Ivory Bush coral	Ocu diff	6	6	5	3	1	30
140	Blushing Star coral	Ste inte	10.0	36	38	5	1	1368
140	Lesser Starlet coral	Sid radi	14.4	3	2	0.25	1	6
140	Massive Starlet coral	Sid side	14.3	6	9	0.5	1	54
140.1	Blushing Star coral	Ste inte	14.7	18	20	4	1	360
140.2	Starlet coral	Sid sp	15.0	6	7	0.5	1	42
141	Blushing Star coral	Ste inte	9.5	18	27	5	1	486
141.1	Starlet coral	Sid sp	11.7	7	5	0.5	1	35
141.3	Massive Starlet coral	Sid side	11.4	13	18	1	1	234
141.3	Lesser Starlet coral	Sid radi	13.2	10	10	0.5	1	100
141.5	Lesser Starlet coral	Sid radi	6.5	1	1	0.25	1	1
141.5	Massive Starlet coral	Sid side	12.6	4	3	0.5	1	12
141.5	Mountainous Star coral	Orb fave	12.8	10	10	0.5	1	100
141.8	Blushing Star coral	Ste inte	11.3	15	10	2	1	150
142.2	Blushing Star coral	Ste inte	11.9	18	45	5	1	810
142.3	Blushing Star coral	Ste inte	12.9	10	10	3	1	100
142.5	Boulder Brain coral	Col nada	4.3	4	4	2	1	16
142.5	Smooth Star coral	Sol bour	11.2	21	30	6	1	630
143.5	Lesser Starlet coral	Sid radi	4.5	3	3	0.25	1	9
143.5	Lesser Starlet coral	Sid radi	6.3	2	2	0.25	1	4
143.8	Lesser Starlet coral	Sid radi	4.7	1	1	0.25	1	1
144	Lesser Starlet coral	Sid radi	5.2	2	2	0.25	1	4
144	Elliptical Star coral	Dic stok	5.3	3	3	2	1	9
144	Massive Starlet coral	Sid side	6.3	7	9	1	1	63
144.2	Lesser Starlet coral	Sid radi	6	1	1	0.25	1	1
144.3	Lesser Starlet coral	Sid radi	6.3	2	1	0.25	1	2
144.8	Golfball coral	Fav frag	4.8	2	2	0.5	2	4
145	Symmetrical Brain coral	Dip stri	5.8	13	15	2	1	195
145.5	Massive Starlet coral	Sid side	11.0	15	12	2	1	180
145.6	Blushing Star coral	Ste Inte	5.8	4	4	0.5	1	16
145.6	Starlet coral	Sid sp	6.3	1	1	0.25	2	1
145.7	Blushing Star coral colony	Ste inte	9.0	30	39	6	1	1170
145.8	Lesser Starlet coral	Sid radi	11.8	3	3	0.5	1	9
145.9	Lesser Starlet coral	Sid radi	9.1	4	2	0.25	2	8
145.9	Lesser Starlet coral	Sid radi	8.7	1	2	0.25	1	2
146	Rose coral	Man areo	8.8	2	2	0.5	1	4
146.3	Massive Starlet coral	Sid side	6.3	3	5	0.5	1	15
146.3	Massive Starlet coral	Sid side	13.0	2	1	0.5	1	2
146.4	Massive Starlet coral	Sid side	13.4	9	9	1	1	81
146.4	Blushing Star coral	Ste inte	13.5	4	3	1	1	12
146.5	Starlet coral	Sid sp	13.3	4	5	1	1	20
146.5	Blushing Star coral	Ste inte	8.8	17	12	2	1	204
146.5	Lesser Starlet coral	Sid radi	9.2	3	2	0.25	1	6
146.5	Blushing Star coral	Ste inte	13.4	5	4	1	1	20
146.6	Massive Starlet coral	Sid side	9.0	3	5	0.5	1	15

Coral Colonies Observed Along Transect 2 - Subtotals by 12.5' Section

Location Linear Feet	Common Name	Coral Species Code	Depth	Area (cm)			Qty.	Total Area (cm2)
				Length	Width	Height		
146.6	Massive Starlet coral	Sid side	13.3	12	10	1	1	120
146.7	Massive Starlet coral	Sid side	13.2	3	4	1	1	12
146.7	Massive Starlet coral	Sid side	13.2	3	3	1	1	9
147	Grooved Brain coral	Dip labr	4.1	8	8	4	1	64
147	Lesser Starlet coral	Sid radi	5.8	3	4	0.25	1	12
147	Blushing Star coral	Ste inte	12.2	14	8	2	1	112
147.2	Lesser Starlet coral	Sid radi	12.5	7	10	1	1	70
147.3	Starlet coral	Sid sp	13.3	3	3	0.5	2	9
147.4	Starlet coral	Sid sp	6.1	6	7	0.5	1	42
147.4	Lesser Starlet coral	Sid radi	10.7	5	7	0.5	1	35
147.4	Lesser Starlet coral	Sid radi	11.0	4	4	0.5	1	16
147.5	Lesser Starlet coral	Sid radi	4.2	3	2	0.25	1	6
147.5	Massive Starlet coral	Sid side	12.5	5	5	1	1	25
147.7	Massive Starlet coral	Sid side	4.3	6	3	0.5	1	18
148	Massive Starlet coral	Sid side	12.0	7	7	0.5	1	49
148.3	Lesser Starlet coral	Sid radi	4.4	5	6	0.25	1	30
148.5	Massive Starlet coral	Sid side	4.5	18	15	3	1	270
149	Lesser Starlet coral	Sid radi	3.4	4	6	1	1	24
150	Lesser Starlet coral	Sid radi	4.3	6	5	0.25	1	30
150	Massive Starlet coral	Sid side	4.3	17	16	3	1	272
SUBTOTAL 137.6 - 150							85	10935
CORAL TOTALS FOR T2							731	109,006.25

Coral Colonies Observed on Pilings

Location-Piling ID #	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Subtotal per piling	Subtotal Area per	Location Piling ID #
				Length	Width	Height					
1	Rose Coral	Man areo	10	3	3	1	1	9	1	9	1
2	Rose coral	Man areo	12	4	3	2	1	12	1	12	2
3	Spiny Flower coral	Mus augu	17	4	3	1	1	12	1	12	3
4	Starlet Coral	Sid sp.	15	2	2	1	2	8	9	34	4
4	Starlet Coral	Sid sp.	15	2	1	1	1	2			
4	Golfball coral	Fav frag	10	2	2	1	6	24			
5	Elliptical Star coral	Dic stok	10	65	60	8	1	3900	7	4162	5
5	Grooved Brain coral	Dip labr	4	6	1	2	1	6			
5	Golfball coral	Fav frag	10	2	2	1	3	12			
5	Large Ivory Coral	Ocu vari	10	10	10	8	1	100			
5	Massive Star Coral	Sid side	10	12	12	2	1	144			
6	Great Star coral	Mon cave	10	54	30	8	1	1620	3	1900	6
6	Great Star coral	Mon cave	10	15	17	6	1	255			
6	Diffuse Ivory Bush coral	Ocu diff	4	5	5	3	1	25			
10	Golfball coral	Fav frag	7	3	3	1	1	9	7	116	10
10	Lesser Starlet coral	Sid radi	5	2	2	1	4	16			
10	Massive Star Coral	Sid side	8	1	1	1	1	1			
10	Massive Star Coral	Sid side	5	10	9	11	1	90			
12	Massive Star Coral	Sid side	7	3	3	1	2	18	3	98	12
12	Massive Star Coral	Sid side	7	8	10	2	1	80			
14	Great Star coral	Mon cave	8	150	90	12	1	13500	9	14300	14
14	Great Star coral	Mon cave	8	10	10	4	8	800			
16	Massive Star Coral	Sid side	7	2	2	1	1	4	1	4	16
18	Spiny Flower coral	Mus angu	10	4	4	1	1	16	4	114	18
18	Lesser Starlet coral	Sid radi	8	3	3	1	1	9			
18	Massive Star Coral	Sid side	9	3	3	1	1	9			
18	Massive Star Coral	Sid side	5	8	10	1	1	80			
19	Great Star coral	Mon cave	10	6	3	2	1	18	1	18	19
24	Elliptical Star coral	Dic stok	9	10	3	2	1	30	1	30	24
27	Ten-Ray Star coral	Mad deca	8	12	15	3	1	180	13	1788	27
27	Diffuse Ivory Bush coral	Ocu diff	20	3	2	4	1	6			
27	Diffuse Ivory Bush coral	Ocu diff	14	4	3	2	1	12			
27	Lesser Starlet coral	Sid radi	8	5	5	1	4	100			
27	Lesser Starlet coral	Sid radi	5	23	12	4	1	276			
27	Lesser Starlet coral	Sid radi	12	7	8	1	1	56			
27	Lesser Starlet coral	Sid radi	12	3	2	1	1	6			
27	Massive Star Coral	Sid side	8	8	6	2	1	48			
27	Massive Star Coral	Sid side	5	33	28	4	1	924			
27	Massive Star Coral	Sid side	4	15	12	2	1	180			
30	Great Star coral	Mon cave	16	9	7	1	1	63	3	81	30
30	Lesser Starlet coral	Sid radi	19	3	3	1	2	18			
32	Boulder Brain Coral	Col nata	6	20	13	5	1	260	7	655	32
32	Great Star coral	Mon cave	11	16	11	2	1	176			
32	Diffuse Ivory Bush coral	Ocu diff	19	5	3	2	1	15			
32	Lesser Starlet coral	Sid radi	21	3	2	1	1	6			
32	Lesser Starlet coral	Sid radi	16	12	15	2	1	180			
32	Massive Star Coral	Sid side	21	3	2	1	1	6			
32	Massive Star Coral	Sid side	15	4	3	1	1	12			
35	Grooved Brain coral	Dip labr	5	26	17	8	1	442	9	951	35
35	Ten-Ray Star coral	Mad deca	10	10	5	1	1	50			
35	Great Star coral	Mon cave	10	11	12	2	1	132			
35	Diffuse Ivory Bush coral	Ocu diff	10	1	2	2	1	2			
35	Knobby Star Coral	Sol hyad	5	10	7	4	1	70			
35	Blushing Star coral	Ste inte	10	7	8	1	1	56			
35	Blushing Star coral	Ste inte	10	11	10	1	1	110			
35	Blushing Star coral	Ste inte	5	8	5	1	1	40			
35	Blushing Star coral	Ste inte	6	7	7	1	1	49			

Location-Piling ID #	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Subtotal per piling	Subtotal Area per	Location Piling ID #
				Length	Width	Height					
38	Grooved Brain coral	Dip labr	13	30	30	2	1	900	1	900	38
40	Six-Ray Star	Mad sena	13	11	14	1	1	154			
40	Great Star coral	Mon cave	14	14	13	1	1	182	3	385	40
40	Great Star coral	Mon cave	12	7	7	1	1	49			
41	Great Star coral	Mon cave	9	12	12	1	1	144			
41	Lesser Starlet coral	Sid radi	13	7	8	1	1	56			
41	Lesser Starlet coral	Sid radi	13	4	3	1	1	12			
41	Massive Star Coral	Sid side	17	16	15	2	2	480			
41	Massive Star Coral	Sid side	20	10	10	1	1	100	11	921	41
41	Blushing Star coral	Ste inte	9	7	6	1	1	42			
41	Blushing Star coral	Ste inte	8	8	8	1	1	64			
41	Blushing Star coral	Ste inte	8	5	3	1	1	15			
41	Blushing Star coral	Ste inte	9	2	2	1	2	8			
42	Spiny Flower coral	Mus augu	18	3	3	1	1	9	1	9	42
44	Grooved Brain coral	Dip labr	4	32	35	5	1	1120	1	1120	44
45	Mustard Hill coral	Por astr	4	6	7	1	1	42	1	42	45
49	Large Ivory Coral	Ocu vari	9	7	10	8	1	70			
49	Lesser Starlet coral	Sid radi	9	5	2	1	1	10			
49	Lesser Starlet coral	Sid radi	9	3	2	1	1	6			
49	Lesser Starlet coral	Sid radi	9	5	6	1	1	30			
49	Lesser Starlet coral	Sid radi	6	2	2	1	1	4			
49	Lesser Starlet coral	Sid radi	5	15	18	2	1	270			
49	Lesser Starlet coral	Sid radi	5	5	6	1	1	30			
49	Lesser Starlet coral	Sid radi	5	4	1	1	1	4	15	1660	49
49	Lesser Starlet coral	Sid radi	4	4	2	1	1	8			
49	Lesser Starlet coral	Sid radi	4	8	8	1	1	64			
49	Lesser Starlet coral	Sid radi	3	8	7	1	1	56			
49	Lesser Starlet coral	Sid radi	4	10	8	1	1	80			
49	Massive Star Coral	Sid side	6	10	12	3	1	120			
49	Massive Star Coral	Sid side	6	4	2	1	1	8			
49	Massive Star Coral	Sid side	4	30	30	8	1	900			
56	Massive Star Coral	Sid side	11	13	20	9	1	260	1	260	56
57	Large Ivory Coral	Ocu vari	22	8	6	1	1	48	1	48	57
60	Diffuse Ivory Bush coral	Ocu diff	24	2	1	2	1	2			
60	Large Ivory Coral	Ocu vari	10	13	15	10	1	195			
60	Lesser Starlet coral	Sid radi	7	10	15	3	1	150			
60	Lesser Starlet coral	Sid radi	5	16	14	3	1	224			
60	Lesser Starlet coral	Sid radi	3	30	27	3	1	810			
60	Massive Star Coral	Sid side	11	9	9	1	1	81			
60	Massive Star Coral	Sid side	16	2	2	1	1	4	14	2933	60
60	Massive Star Coral	Sid side	16	1	1	1	1	1			
60	Massive Star Coral	Sid side	16	8	11	1	1	88			
60	Massive Star Coral	Sid side	10	12	11	2	1	132			
60	Massive Star Coral	Sid side	10	2	2	1	1	4			
60	Massive Star Coral	Sid side	7	28	24	4	1	672			
60	Massive Star Coral	Sid side	5	10	17	8	1	170			
60	Massive Star Coral	Sid side	3	20	20	5	1	400			
61	Diffuse Ivory Bush coral	Ocu diff	7	1	1	2	4	4			
61	Large Ivory Coral	Ocu vari	8	21	11	12	1	231			
61	Massive Star Coral	Sid side	15	4	3	1	1	12			
61	Massive Star Coral	Sid side	5	6	5	2	1	30	20	483	61
61	Massive Star Coral	Sid side	5	2	3	1	11	66			
61	Massive Star Coral	Sid side	16	4	5	1	1	20			
61	Blushing Star coral	Ste inte	3	12	10	3	1	120			
65	Diffuse Ivory Bush coral	Ocu diff	13	1	1	1	2	2	2	2	65
67	Diffuse Ivory Bush coral	Ocu diff	15	5	4	4	1	20			
67	Knobby Star Coral	Sol hyad	7	13	12	4	1	156	5	761	67

Location-Piling ID #	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Subtotal per piling	Subtotal Area per	Location Piling ID #
				Length	Width	Height					
67	Knobby Star Coral	Sol hyad	5	15	13	3	3	585			
69	Blushing Star coral	Sint Inte	15	3	3	1	1	9	1	9	69
70	Elliptical Star coral	Dic stok	8	8	15	2	1	120			
70	Mustard Hill coral	Por astr	8	28	10	3	1	280	3	435	70
70	Starlet Coral	Sid sp.	22	7	5	1	1	35			
71	Grooved Brain coral	Dip labr	6	30	25	10	1	750			
71	Symmetrical Brain coral	Dip strig	9	22	18	7	1	396			
71	Great Star coral	Mon cave	9	30	20	3	1	600			
71	Diffuse Ivory Bush coral	Ocu diff	21	5	5	4	1	25			
71	Massive Star Coral	Sid side	12	7	7	1	1	49			
71	Massive Star Coral	Sid side	12	3	3	1	1	9	12	2631	71
71	Massive Star Coral	Sid side	25	6	6	1	1	36			
71	Blushing Star coral	Sint Inte	19	13	15	1	1	195			
71	Smooth Star Coral	Sol bour	10	15	7	3	3	315			
71	Golfball coral	Fav frag	8	16	16	2	1	256			
72	Starlet Coral	Sid sp.	17	10	10	10	4	400	4	400	72
76	Large Ivory Coral	Ocu vari	19	9	6	10	1	54			
76	Massive Star Coral	Sid side	30	7	7	1	1	49			
76	Massive Star Coral	Sid side	26	10	9	1	1	90			
76	Massive Star Coral	Sid side	30	4	4	1	1	16			
76	Massive Star Coral	Sid side	24	3	3	1	1	9	8	360	76
76	Massive Star Coral	Sid side	25	5	5	1	1	25			
76	Massive Star Coral	Sid side	22	11	7	1	1	77			
76	Blushing Star coral	Ste inte	5	8	5	2	1	40			
77	Ten-Ray Star coral	Mad deca	10	28	20	10	1	560			
77	Ten-Ray Star coral	Mad deca	7	25	40	13	1	1000			
77	Diffuse Ivory Bush coral	Ocu diff	14	3	3	3	1	9			
77	Diffuse Ivory Bush coral	Ocu diff	28	6	4	3	2	48			
77	Diffuse Ivory Bush coral	Ocu diff	29	4	3	2	1	12			
77	Large Ivory Coral	Ocu vari	19	10	9	7	1	90			
77	Mustard Hill coral	Por astr	9	30	30	2	1	900			
77	Massive Star Coral	Sid side	10	25	25	6	1	625			
77	Massive Star Coral	Sid side	13	10	11	1	1	110	23	4317	77
77	Massive Star Coral	Sid side	12	4	4	1	1	16			
77	Blushing Star coral	Sint Inte	10	10	12	2	1	120			
77	Blushing Star coral	Sint Inte	15	10	10	1	2	200			
77	Blushing Star coral	Sint Inte	10	8	5	1	1	40			
77	Blushing Star coral	Sint Inte	21	12	10	1	2	240			
77	Blushing Star coral	Sint Inte	22	8	6	1	2	96			
77	Blushing Star coral	Sint Inte	30	7	7	1	3	147			
77	Blushing Star coral	Ste inte	10	8	13	2	1	104			
78	Grooved Brain coral	Dip labr	8	15	16	4	1	240			
78	Massive Star Coral	Sid side	29	12	12	2	1	144	3	580	78
78	Massive Star Coral	Sid side	29	14	14	2	1	196			
79	Knobby Star Coral	Sol hyad	5	8	10	3	1	80	2	185	79
79	Knobby Star Coral	Sol hyad	5	15	7	3	1	105			
80	Mustard Hill coral	Por astr	8	40	32	2	1	1280	1	1280	80
82	Golfball coral	Fav frag	7	4	3	2	1	12	1	12	82
84	Diffuse Ivory Bush coral	Ocu diff	9	5	4	5	3	60	3	60	84
85	Diffuse Ivory Bush coral	Ocu diff	4	5	4	5	1	20	1	20	85
86	Diffuse Ivory Bush coral	Ocu diff	5	7	3	5	3	63	3	63	86
89	Rose coral	Man areo	15	3	2	1	1	6	1	6	89
92	Golfball coral	Fav frag	6	1	1	1	4	4			
92	Massive Star Coral	Sid side	7	5	6	2	2	60	8	160	92
92	Knobby Star Coral	Sol hyad	8	6	8	1	2	96			
93	Lesser Starlet coral	Sid radi	7	2	2	1	5	20	10	40	93
93	Massive Star Coral	Sid side	7	2	2	1	5	20			

Location-Piling ID #	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Subtotal per piling	Subtotal Area per	Location Piling ID #
				Length	Width	Height					
94	Knobby Star Coral	Sol hyad	10	25	20	5	1	500	3	550	94
94	Knobby Star Coral	Sol hyad	10	5	5	1	2	50			
95	Large Ivory Coral	Ocu vari	13	8	6	6	1	48	11	106	95
95	Lesser Starlet coral	Sid radi	12	10	2	2	1	20			
95	Blushing Star coral	Sint Inte	12	3	2	1	1	6			
95	Blushing Star coral	Sint Inte	13	2	2	1	1	4			
95	Blushing Star coral	Ste inte	8	2	2	1	7	28			
97	Large Ivory Coral	Ocu vari	15	5	4	1	1	20	1	20	97
99	Great Star coral	Mon cave	15	27	23	4	1	621	2	646	99
99	Blushing Star coral	Sint Inte	14	5	5	1	1	25			
100	Lesser Starlet coral	Sid radi	15	4	4	1	1	16	3	50	100
100	Lesser Starlet coral	Sid radi	13	3	3	1	1	9			
100	Blushing Star coral	Ste inte	7	5	5	1	1	25			
101	Great Star coral	Mon cave	7	20	20	5	1	400	2	1025	101
101	Lesser Starlet coral	Sid radi	7	25	25	3	1	625			
104	Elliptical Star coral	Dic stok	8	30	25	9	2	1500	7	3447	104
104	Grooved Brain coral	Dip labr	7	30	25	9	2	1500			
104	Symmetrical Brain coral	Dip strig	9	20	21	1	1	420			
104	Lesser Starlet coral	Sid radi	7	2	1	1	1	2			
104	Blushing Star coral	Ste inte	15	5	5	1	1	25			
105	Elliptical Star coral	Dic stok	15	3	4	2	1	12	15	2105	105
105	Golfball coral	Fav frag	9	1	1	1	1	1			
105	Golfball coral	Fav frag	9	6	4	1	1	24			
105	Diffuse Ivory Bush coral	Ocu diff	8	6	5	5	1	30			
105	Great Star coral	Mon cave	15	25	40	1	1	1000			
105	Lesser Starlet coral	Sid radi	15	5	7	1	1	35			
105	Lesser Starlet coral	Sid radi	15	8	10	2	1	80			
105	Lesser Starlet coral	Sid radi	8	20	12	1	1	240			
105	Massive Star Coral	Sid side	12	5	7	1	1	35			
105	Massive Star Coral	Sid side	15	4	4	1	1	16			
105	Massive Star Coral	Sid side	16	6	6	2	1	36			
105	Blushing Star coral	Ste inte	15	4	4	1	1	16			
105	Blushing Star coral	Ste inte	15	17	15	3	2	510			
105	Blushing Star coral	Ste inte	16	10	7	3	1	70			
110	Golfball coral	Fav frag	9	3	6	2	2	36	8	242	110
110	Ten-Ray Star coral	Mad deca	10	2	2	1	3	12			
110	Lesser Starlet coral	Sid radi	6	11	10	5	1	110			
110	Blushing Star coral	Ste inte	15	7	6	1	2	84			

Location-Piling ID #	Common Name	Coral Code	Depth	Area (cm)			Qty.	Total Area (cm2)	Subtotal per piling	Subtotal Area per	Location Piling ID #
				Length	Width	Height					
111	Ten-Ray Star coral	Mad deca	10	2	2	1	6	24			
111	Lesser Starlet coral	Sid radi	9	4	3	1	2	24			
111	Blushing Star coral	Ste inte	13	6	5	1	1	30			
111	Blushing Star coral	Ste inte	16	15	14	1	1	210			
111	Blushing Star coral	Ste inte	6	6	5	1	1	30			
111	Blushing Star coral	Ste inte	17	20	22	2	1	440			
111	Blushing Star coral	Ste inte	18	7	4	7	1	28			
111	Blushing Star coral	Ste inte	13	15	14	1	1	210			
111	Blushing Star coral	Ste inte	15	6	5	4	2	60	27	1963	111
111	Blushing Star coral	Ste inte	15	10	10	1	1	100			
111	Blushing Star coral	Ste inte	14	6	5	1	1	30			
111	Blushing Star coral	Ste inte	17	20	12	1	1	240			
111	Blushing Star coral	Ste inte	18	7	4	2	1	28			
111	Blushing Star coral	Ste inte	13	16	15	3	1	240			
111	Blushing Star coral	Ste inte	25	6	6	1	2	72			
111	Blushing Star coral	Ste inte	25	6	6	1	2	72			
111	Blushing Star coral	Ste inte	24	5	5	1	1	25			
111	Blushing Star coral	Ste inte	10	10	10	1	1	100			
114	Mustard Hill coral	Por astr	10	24	19	3	1	456	1	456	114
TOTALS for QC Verification							320	54976	320	54976	

USCG Sector Key West - Total Coral Summary by Species

			North Bulkhead (T1)		East Bulkhead (T2)		Pilings		Combined Totals	
Common Name	Genus/Species	Species Code	Total # Coral Colonies	Total Area Cm^2/species	Total # Coral Colonies	Total Area Cm^2/species	Total # Coral Colonies	Total Area Cm^2/species	Total # Coral Colonies	Total Area Cm^2/species
Lesser Starlet coral	Siderastrea radians	Sid radi	225	11,841	327	10,052	48	3,662	600	25,555
Blushing Star coral	Stephanocoenia intersepta	Ste inte	101	18,739	107	33,782	62	4,403	270	56,924
Massive Starlet coral	Siderastrea siderea	Sid side	58	3,481	98	10,173	68	6,762	224	20,416
Starlet coral	Siderastrea species	Sid spec	115	2,455	93	5,384	8	445	216	8,284
Diffuse Ivory Bush coral	Oculina diffusa	Ocu diff	23	1,558	5	268	26	355	54	2,181
Great Star coral	Montastraea cavernosa	Mon cave	4	4,940	10	6,401	22	19,560	36	30,901
Elliptical Star coral	Dichocoenia stokesi	Dic stok	6	368	16	3,289	6	5,562	28	9,219
Ten-Ray Star coral	Madracia decatis	Mad deca	2	136	7	2,538	14	1,980	23	4,654
Golfball coral	Favia fragum	Fav frag	0	0	9	75	13	378	22	453
Smooth Star coral	Solenastrea bournoni	Sol bour	9	806	7	9,082	3	315	19	10,203
Symmetrical Brain coral	Diploria strigosa	Dip stri	4	221	12	5,092	2	816	18	6,129
Hidden Cup coral	Phyllangia americana	Phy amer	18	1	0	0	0	0	18	1
Grooved Brain coral	Diploria labyrinthiformis	Dip labr	2	67	6	1,427	8	4,958	16	6,452
Mustard Hill coral	Porites astreoides	Por Astr	3	386	7	1,596	5	2,958	15	4,940
Rose coral	Manicina areolata	Man areo	1	16	8	494	3	27	12	537
Knobby Star Coral	Solenastrea hyades	Sol hyad	0	0	0	0	12	1,642	12	1,642
Large Ivory coral	Oculina varicosa	Ocu vari	2	9	0	0	9	856	11	865
Boulder Brain coral	Colpophyllia natans	Col nata	1	361	5	353	1	260	7	974
Lobed Star coral	Agaricia humilis	Aga humi	0	0	5	3,534	0	0	5	3,534
Knobby Brain coral	Diploria clivosa	Dip cliv	1	270	4	1,588	0	0	5	1,858
Mountainous Star coral	Montastrea faveolat	Mon fave	0	0	4	13,740	0	0	4	13,740
Spiny Flower coral	Mussa angulosa	Mus angu	0	0	1	169	3	37	4	206
		Totals	575	45,656	731	109,036	313	54,976	1,619	209,668

Appendix F Observed Species List

USCG Sector Key West: Other Species Observed During the Benthic Survey Period (12/4-12/7/2018)

Phylum Pheaophyta (Brown Algae)

- Y-branched algae (Dictyota sp.)

- White scroll algae (Padina jamaicensis)

Phylum Rhodophyta (Red Algae)

- Pink bush algae (Wrangelia penicillata)

Phylum Chlorophyta (Green Algae)

- Green feather algae (Caulerpa sertularioides)

- Green grape algae (Caulerpa racemose)

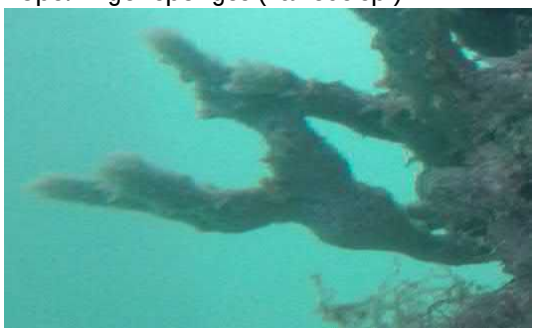
- Watercress algae (Halimeda opuntia)

Phylum Porifera (Sponges)

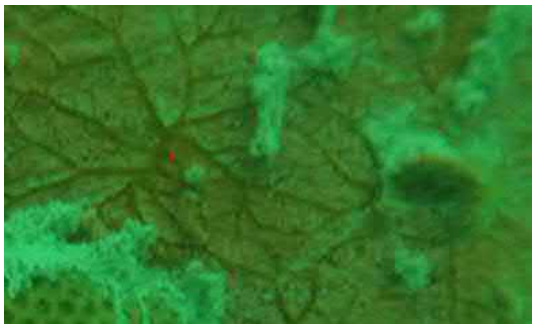
Numerous species of sponges were observed during the survey. Abundant or notable sponges included, but were not limited to:

- Black ball sponge (Ircinia strobolina)

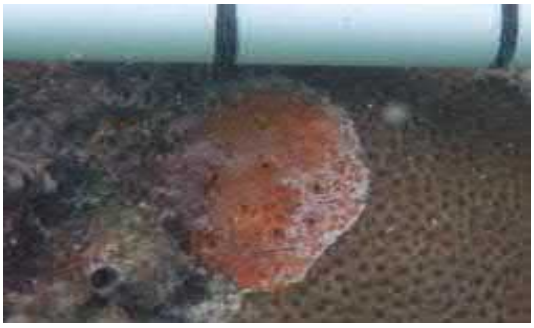
- Leathery barrel sponge (Geodia neptuni)
- Pink & red encrusting sponge (Spirastrella coccinea)
- Rope/finger sponges (various sp.)



- Orange-veined encrusting sponge (Rhaphidophlus venosus)



- Red boring sponge (Cliona delitrix)



Phylum Cnidaria (Cnidarians)

- Hydroids – Numerous species of hydroids were observed during the survey.

- Banded tube-dwelling anemone (Arachnanthus nocturnus)

- Branching anemone (Lebrunia danae)

Phylum Cnidaria (Cnidarians) (continued)

- Ringed anemone (Bartholomea annulata)

- Mangrove upside-down jellyfish (Cassiopea xamachana)

Phylum Annelida (Segmented worms)

- Bearded fireworm (Hermodice carunculata)

- Christmas tree worm (Spirobranchus giganteus)

- Split-crown feather Duster (Anamobaea oerstedi)

Phylum Arthropoda (Crustaceans)

- Caribbean Spiny Lobster (Panulirus argus)

- Florida stone crab (Menippe mercenaria)
- Red-ridged clinging crab (Mithraculus forceps)

Phylum Mollusca (Mollusks)

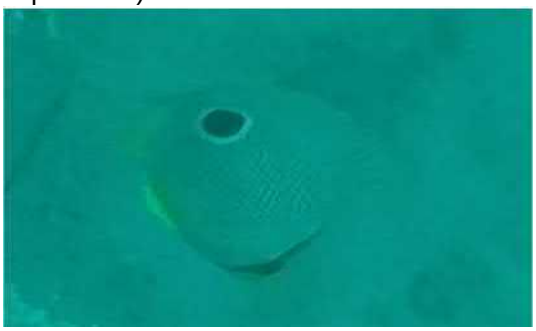
- Flat tree oyster (Isognomon alatus)

Phylum Chordata (Tunicates)

- Black condominium tunicate (Eudistoma obscuratum)

Phylum Chordata (Fish)

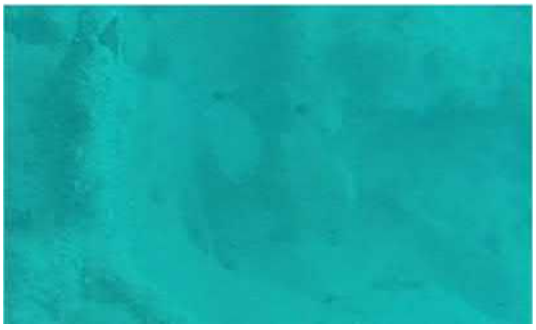
- Foureye butterflyfish (Chaetodon capistratus)



- Spotfin butterflyfish (Chaetodon ocellatus)

- Gray Angelfish (Pomacanthus arcuatus)
- Pinfish (Lagodon rhomboids)
- Porkfish (Anisotremus virginicus)

- White grunt (Haemulon plumierii)
- Tomtate (Haemulon aurolineatum)



- Balloonfish (Diodon holocanthus)

- Sheepshead (Archosargus probatocephalus)

- Leather jack (Oligoplites saurus)

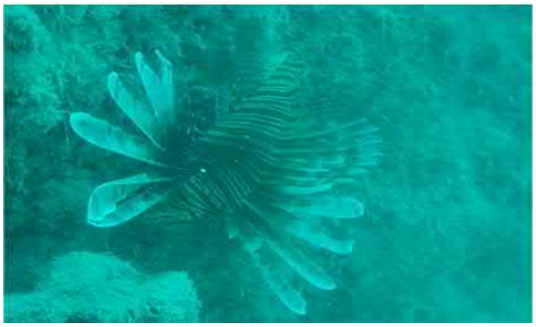
- Crevalle jack (Caranx hippos)
- Great Barracuda (Sphyraena barracuda)
- Needlefish (sp.)
- Stoplight parrotfish (Sparisoma viride)

Phylum Chordata (Fish) (continued)

- Gray Snapper (Lutjanus griseus)

- Lane Snapper (Lutjanus synagris)
- Yellowtail snapper (Ocyurus chrysurus)
- Striped Mullet (Mugil cephalus)

- Common (Red) Lionfish (Pterois volitans) INVASIVE



- Southern stingray (Dasyatis Americana)