

DRAFT

**Reconnaissance Survey Protocol
for
Port Everglades Expansion Project**

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(developed at IWG meeting October 4, 2016)

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TABLE OF CONTENTS

	Page
LIST OF TABLES	II
LIST OF FIGURES	II
1.0 RECONNAISSANCE SURVEY GOAL.....	1
2.0 RECONNAISSANCE SURVEY OBJECTIVES.....	1
3.0 SPATIAL EXTENT OF RECONNAISSANCE SURVEY	1
4.0 RECONNAISSANCE SURVEY ASSESSMENT AREAS.....	1
5.0 SURVEY METHODS	2
5.1 Transect Data Collection	2
6.0 QUALITY CONTROL/QUALITY ASSURANCE	3
7.0 REPORTING	3
8.0 LITERATURE CITED.....	4

LIST OF TABLES

	Page
Table 1 Port Everglades reconnaissance survey sampling design.	2
Table 2 Functional group data to be collected within reconnaissance survey quadrats.....	3

LIST OF FIGURES

	Page
Figure 1. Proposed Reconnaissance Survey Transect Locations	5

Reconnaissance Survey Protocol for Port Everglades Expansion Project

The following reconnaissance survey protocol for the Port Everglades Expansion Project reflects the methods described and discussed at the IWG meeting held on October 4, 2016 at Loxahatchee National Wildlife Refuge, Boynton Beach, Florida.

1.0 RECONNAISSANCE SURVEY GOAL

The goal of the Port Everglades reconnaissance survey is to obtain information on natural communities for project planning and FDEP state permitting within 150 m of the existing Port Everglades entrance channel. The area within 150m of the entrance channel was identified through the NEPA process by the Army Corps of Engineers (USACE) to be the area of direct and indirect impact associates with deepening and widening the Outer entrance channel (OEC) (USACE 2015).

2.0 RECONNAISSANCE SURVEY OBJECTIVES

The specific objectives of the reconnaissance survey are to obtain information to determine the following:

- a) Amount of compensatory mitigation required to offset impacts
 - i) UMAM (62-345, F.A.C.)
 - ii) Current condition of resources (373.414(1)(a)(7), and 373.414(18), F.S.)
- b) Mitigation Plan (373.414, F.S.)
 - i) Establish a reference dataset to set success criteria
 - ii) Determine appropriate enhancement activities (e.g., nurseries / out-planting).
- c) Impact Minimization (ERP Applicant's Handbook, Vol. 1, 10.2.1)
 - i) Distribution / abundance of benthic organisms (not limited to corals)
 - ii) Plan for relocation of benthic organisms out of the predicted impact area
- d) Consultation with NMFS and NEPA determinations, including Essential Fish Habitat - this is not addressed within these draft methods.

3.0 SPATIAL EXTENT OF RECONNAISSANCE SURVEY

The spatial extent of the reconnaissance survey area includes the predicted direct impact area for which mitigation will be provided and the 150 m indirect impact area (mixing zone) on both the north and south side of the channel. This area also includes potential anchoring areas outside of the dredge footprint. This area does not include the additional survey area requested by NMFS.

For the resources within the area of the dredging footprint; the data collected within the adjacent northern habitat type will be used to estimate the function of the third reef direct impact area that will not be surveyed due to concerns regarding diver safety. The same principal will be applied to the down slope areas east of the dredging footprint.

4.0 RECONNAISSANCE SURVEY ASSESSMENT AREAS

Reconnaissance survey areas will be conducted by habitat type, using the Walker and Klug 2014 data set. There are eight (8) habitat types on the north side of the channel and nine (9) habitat types on the south side of the channel. Habitat types to be assessed include 1.) inner reef: artificial, colonized pavement shallow, colonized pavement deep, linear reef – inner; 2) on the second reef: linear reef middle, on the outer reef: ridge shallow, linear reef outer, spur and groove, and aggregate patch reef deep.

The reconnaissance survey assessment areas do not include the EFH consultation area requested by NMFS.

5.0 SURVEY METHODS

Reconnaissance survey methods will employ *in situ* data collection methods by qualified scientific divers and be based on temporary transects; and transect video is required for each transect. No photographs are required by FDEP, however representative photographs including landscape photographs will be collected for all sites. See Figure 1 for graphic display of proposed sampling transects.

Each transect will be 30 m long. Within each transect a 1 meter wide belt survey (30 m long x 1 m wide = 30 m²) will be conducted on the right hand side of the transect tape. On the left hand side of the transect tape, quadrat data will be collected within 7 0.5 m² quadrats for a total area of 3.5m² quadrat data per transect.

Transects will be randomly stratified in each assessment area. Transects will be placed so that no transects touch or overlap each other. Based upon bathymetry data, the proposed transects are in water ranging in depth from 11-88 feet. There are 61 transects in 11-29 feet, 67 transects in 30-59 feet, and 42 transects in water from 60-88 feet. In each habitat type 10 transects will be sampled, for a total of 170 transects (Figure 1 and Table 1).

Table 1 Port Everglades reconnaissance survey sampling design.

	Port Everglades Reconnaissance Survey Plan
Number of transects	170
Number of quadrats per transect	7
Area per quadrat (m ²)	0.5
Area sampled in quadrats per transect (m ²)	3.5
Area sampled in belt per transect (m ²)	30
Total area sampled in quads (m ²)	595
Total area sampled in belt (m ²)	5,100
Acres of reef within mixing zone	109
Reef (m ²) area within mixing zone	441,107.3
% of area sampled with quads	0.13
% of area sampled with belt	1.16

5.1 Transect Data Collection

The following data will be collected along the transect line:

1. Digital video will be collected 50 cm above the bottom, no analysis of the video is required under the reconnaissance survey. It should be noted that small organisms (<3 cm) from this height may not be identifiable to species.
2. Physical features, including sand patches and substrate type along the transect, will be noted.

The following data will be collected from within the belt transect:

1. Coral identification to species, maximum dimension measured, and counted.
2. *X. muta* counts by size classes (0-10 cm, 11-25 cm, 26-50 cm, >50 cm).

The following data will be collected from within each quadrat:

1. Percent cover by functional groups (simplified BEAMR). See Table 2 for a list of parameters.
2. Octocorals: identification to genus, maximum dimension measured, and counted.
3. Sponges will be identified by morphotype and counted by size class (0-10 cm, 11-25 cm, 26-50 cm, >50 cm).

Table 2 Functional group data to be collected within reconnaissance survey quadrats.

Functional Groups to be Used (N=12):
Sediment (by type: rubble, sand, mud, etc.)
Bare substratum
Macroalgae (by Family)
Turf algae
CCA
Sponges
Corals
Octocorals
Zoanthids
Hydrocorals
Sessile worms
"Other invertebrates"
"Other Invertebrates" includes:
-Anemones
-Bivalves
-Barnacles
-Bryozoans
-Tunicates

6.0 QUALITY CONTROL/QUALITY ASSURANCE

Quality control and quality assurance (QA/QC) are an ongoing process with checks and balances to insure accurate and precise data collection, entry, and analysis. Quality control begins with scientific diver training and calibration exercises, before actual data collection commences. Scientific divers will spend up to 3 full field days training, collecting data, comparing results and discussing differences in order to reduce inter observer variability. Agency staff are invited to participate in part or all of the QA/QC field days.

During data collection all scientific divers will check their own field datasheets for completeness after a dive (or no later than at the end of the field day) to insure completeness, legibility and accuracy. Once field data sheets are cleaned and dried at the office, data will be entered into a project specific Excel spreadsheet. A staff member other than the person who entered the data will QA/QC the entered Excel data against the original data sheet (or a copy) to insure the entered data are accurate. Any changes to data sheets will be done in a colored marker. Data sheets will be electronically scanned for the record. All photographs and video will be filed in site specific folders on a routine basis.

7.0 REPORTING

Data deliverables will include digital video files named with transect information, sorted by assessment area, copies of field datasheets (if requested by agencies), and Excel spreadsheets with all complete and accurate data.

A narrative report will be written and provided with descriptive statistics (mean and standard deviation presented in tabular format), which shall be summarized by transect, assessment area, habitat type, and reef zone. The report will include qualitative description of assessment areas, a list of taxa observed, and any notable physical features.

The data (video files, scanned data sheets, and Excel spreadsheets) will be available within 30 days after all field data collection is completed. A hard drive with data will be submitted to the Port. A draft report will be provided to the Port 90 days after field data collection is completed. Once the report is acceptable to the Port, the report will be sent to agencies for review. A final draft will be submitted within 10 days of receiving comments from agencies.

8.0 LITERATURE CITED

USACE (United States Army Corps of Engineers). 2015. Final Feasibility Report and Environmental Impact Statement: Port Everglades Harbor Navigation Study. Broward County, FL. pp. 44, 99-100, 109, 111, 115.

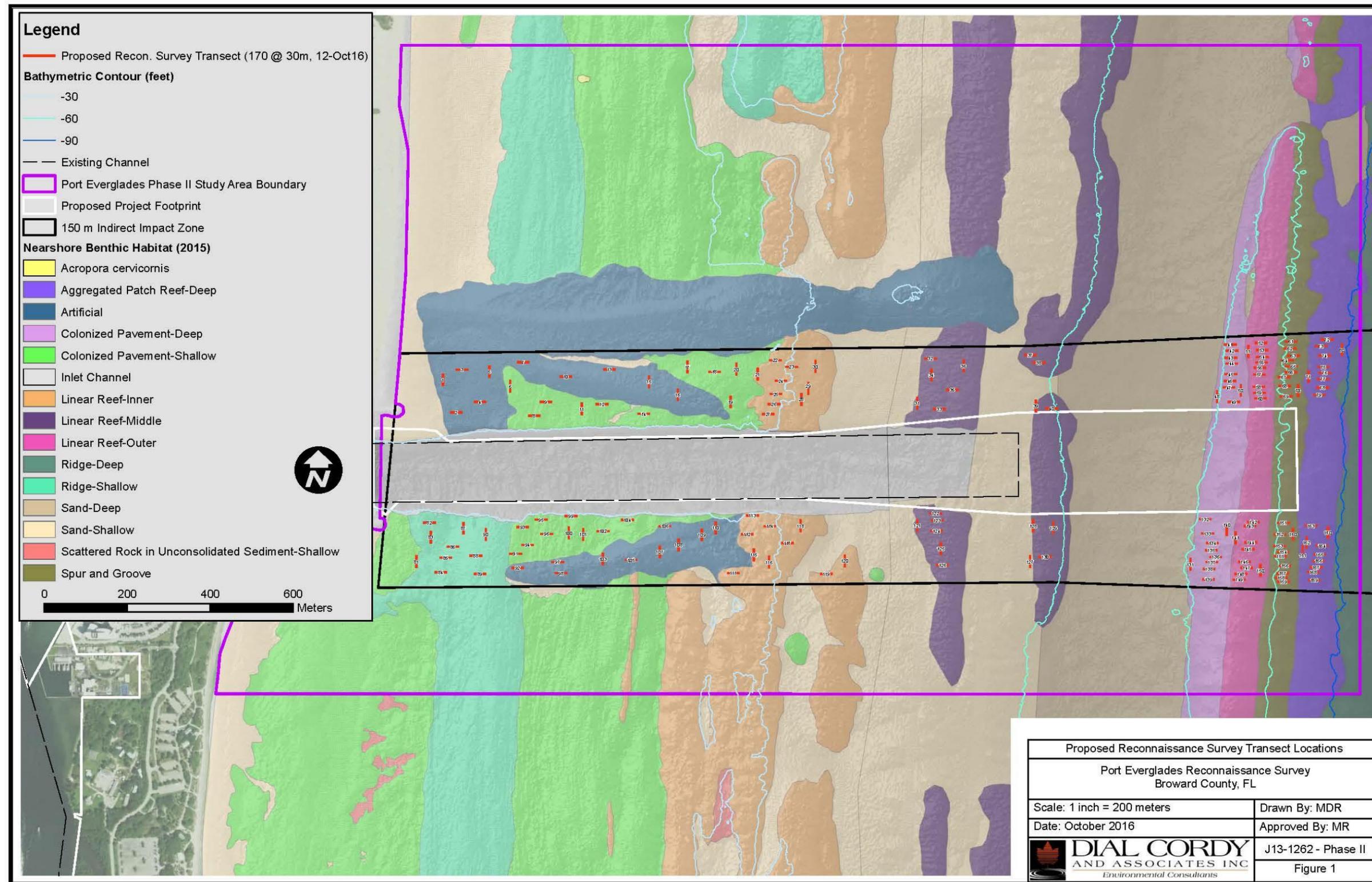


Figure 1. Proposed Reconnaissance Survey Transect Locations