US Army Corps of Engineers®

Port Everglades' Technical Sub-Team Monitoring Plan Workshop
October 23 – 24, 2018
St. Leo's University, Orlando, Florida
Final Meeting Summary Notes
(Note – does not include WQ/Instrument Discussion)

Attendees:

In Person	Telephone
Kurtis Gregg, ERT Inc.,/NMFS	Kelly Logan, NMFS
Gina Ralph, USACE	Pace Wilber, NMFS
Jason Spinning, USACE	Jocelyn Karaszia, NMFS
Drew Condon, USACE	Debby Scerno, USACE
Mark Lamb, NMFS	Lacy Pfaff, USACE
Xaymara Serrano, USACE	Matt Miller, USACE
Lainie Edwards, DEP	Terri Jordan-Sellers, USACE
Jennifer Peterson, DEP	Lisa Gregg, FWC
Brendan Biggs, DEP	Matt Harold, Port Everglades
Greg Garis, DEP	Erin McDevitt, FWC
Vladimir Kosmynin, DEP	
Erik Neugaard, Port Everglades	
Wade Lehmann, EPA	
Anthony Priestas, USACE-ERDC	
Patrick Dickhardt, USACE-ERDC	

*Note: The IWG members who called in had a difficult time participating due to audio equipment problems.

<u>Meeting Goals:</u>

1. Agree on the specific goals for each monitoring event (pre, during and post-construction) and best methods to collect the data.
2. Identify specific protocols to be used for each survey, define the timing and sampling locations for surveys.
3. Determine most effective approach (es) to reduce time lag of data output and speed up communication process between contractors, USACE and IWG during construction.
4. Review DEP's proposed biological monitoring methods for the project and identify areas where USACE is considering supplementing these with additional monitoring (water quality/instrumentation) to address lessons learned in Miami
5. Identify what each agency's objectives are for the data generated by the monitoring plan. (NEW)

A. Introduction and Participants

1 Review of Agenda and Meeting Goals: There was consensus on the agenda with the comment from DEP that the most effective use of their time at the meeting was to complete the discussion of the Biological Monitoring Plan before going on to the Water Quality discussion. One item was added to the meeting goals ". Identify what each agency's objectives are for the data generated by the monitoring plan".

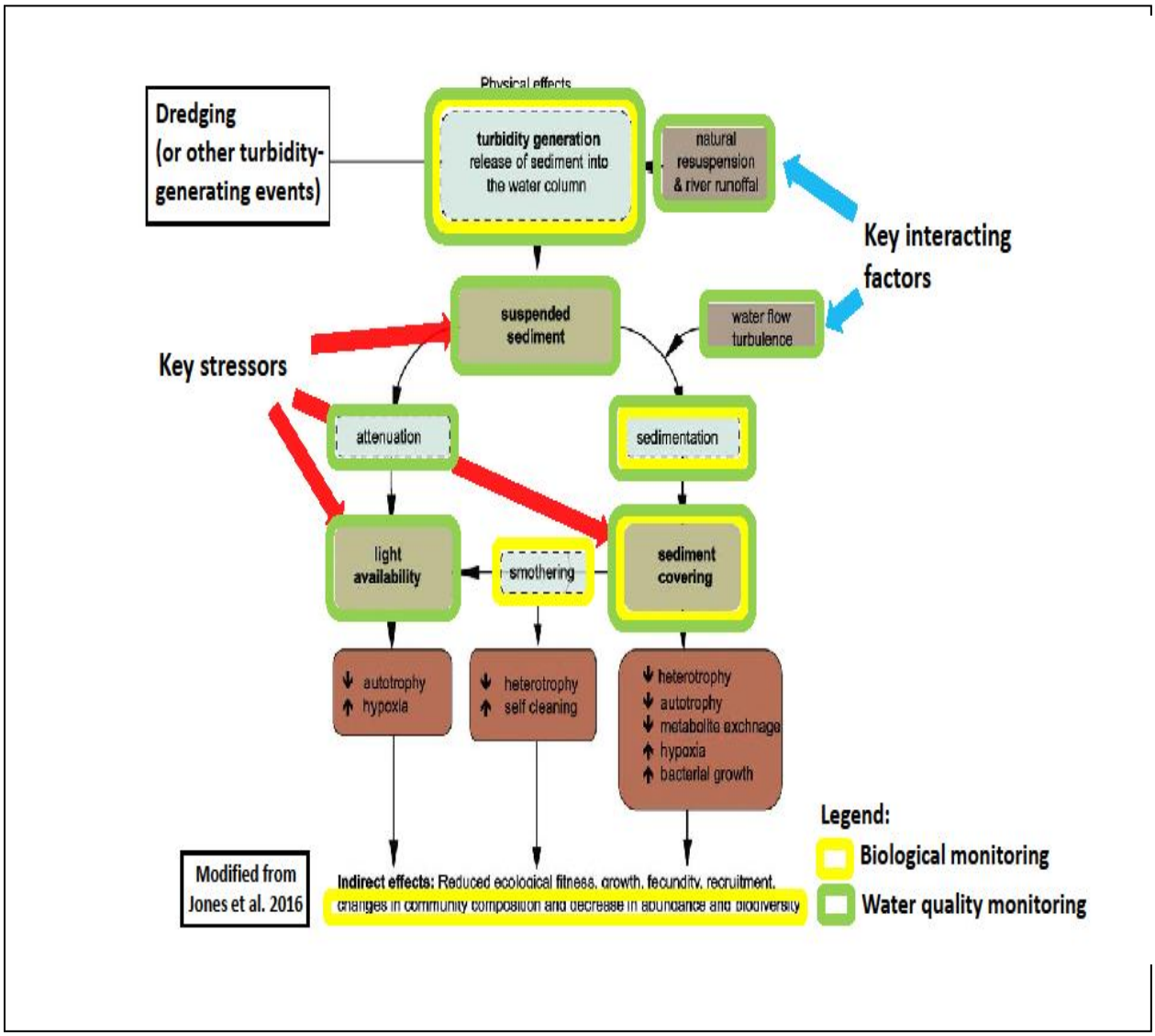
2. Monitoring Plan Goals: This topic was discussed to ensure that the IWG agreed upon the goals of the monitoring plan and that it reflected all the goals of the IWG. The following goals were reviewed by the group. The genesis of the list is from the *Review of Draft Biological Monitoring Methods for the Port Everglades Navigation Improvements Project* dated February 16, 2017, prepared by the Florida Department of Environmental Protection for use by the IWG in its crafting of a monitoring plan. Others were generated by the IWG at the July 2016 IWG Meeting in Orlando, Florida. Those that are struck through below were considered to already be included in other goals or deemed no longer applicable.

- Provide the reasonable assurance that any unpermitted impacts will be identified, should they occur.
- Identify project-related unpermitted impacts and to determine their
  - Distribution,
  - Spatial extent (acreage),
  - Severity (functional degradation / loss), and
  - Persistence (during and after construction), should they occur.
- Commensurate with the scope and scale of the project and the potential spatial extent of sedimentation impacts
- ~~Provide adequate input parameters for uniform mitigation assessment model (UMAM)~~
- ~~Include input from the modeling (i.e., Starting point at from which to base monitoring stations) with goal of minimization and avoidance of impacts.~~
- Document changes in the condition of the resources/site over time.
- Define the appropriate temporal and spatial scale for the sediment impact and biological response to stressors.
- Differentiate between naturally induced (ambient) sedimentation and those from dredging (before/after impact design). Accounting for sedimentation impacts from all sources
- Feed into AMP.
- Define how the monitoring plan translates into mitigation requirements for both the direct (up-front) and indirect impacts (prediction) and what happens if the impacts for both are exceeded (unpermitted impacts).
- Defines what the data is yielding and the level of data resolution (deliverables).
- Defines how the data is presented and how the results should be communicated including any deadlines
- ~~Must define how the information from monitoring feeds the functional assessments and mitigation~~
- Must reach consensus on statistical analysis details

- Agreement that AMP is separate but related and is fed by the triggers from data identified in the monitoring plan

3. Review of Draft Biological Monitoring Methods for the Port Everglades Navigation Improvements Project dated February 16, 2017. (See the attached outline).

Prior to the start of the Draft Biological Monitoring Plan the Corps introduced the graphic below to illustrate how the Biological monitoring plan and the water quality plan would intersect and what each would address.



4. Summary of yesterday's meeting & continuation or wrap up issues on Draft Biological Monitoring Plan (See the attached outline).

Review of Draft Biological Monitoring Methods for the Port Everglades Navigation Improvements Project dated February 16, 2017.
Meeting Notes

Notes:

- (Outline prepared for the October 23-24 IWG Meeting**; areas in red denote discussion points; areas in blue are USACE's recommendations).**
- Meeting Notes follow as Meeting Discussion, Outcomes and Taskers.

1.0 Introduction

2.0 Assessment Area and Control Site Monitoring

2.1 Spatial arrangement of permanent monitoring stations

For discussion: Alternative placement of ~12 sites proposed on breakwaters (artificial)?

USACE recommendation: Re-locate these sites and use as control sites. This are pre-existing man-made structures built as part of the construction of the PEV OEC and is included as part of the federally authorized project (US House of Representatives 1930), with very little benthic cover (based on results from ESA and RECON surveys). In addition, USACE is not proposing to provide compensatory mitigation for resources that have colonized these structures.

Meeting Discussion: The monitoring efforts described here are commensurate with the scope and scale of the project and the potential spatial extent of sedimentation impacts. There was discussion about the breakwater/rubble areas on either side of the entrance channel that are part of the Federal navigation project and the presence of monitoring stations that should be moved.

Outcome: Rubble areas that are part of the project will not require mitigation but will require minimization. On the second day the presence of another site on the north closer to shore was discussed and appeared to be a shallow area that also needs to be observed. No data currently exists at that site – Follow-up for more information at the next meeting.

Taskers:

- **Corps to document that these breakwaters are part of the Federal project and provide to DEP – Xaymara/Jason**
- **Differentiate stations that would be moved to other areas – Xaymara**
- **Identify shallow area brought up on the second day – known as the "bean". Marie/Wade**

2.1.1 Selection of Control Stations – Review of alternatives

Alternative 1: no control stations
Alternative 2: include control stations

For discussion:
How many and how far from the project area should control sites be?
What is the most appropriate way to select control sites? Identifying sites with similar attributes (e.g., relief and water depth) and benthic species make-up as the non-control (project area) sites will require a considerable amount of work to be completed PRIOR to beginning the pre-construction baseline survey.

USACE recommendation: Include control stations (alternative 2). Suggest using a total of N = 16 control stations located ~2 km outside project area (N = 8 both north and south of channel) but need to discuss with IWG how to best identify where to specifically locate the control sites.

Meeting Discussion: There was considerable discussion about the pros and cons of having and not having control sites. Below are some points brought up during the discussion.

- **Sampling the sediment itself – desirable (DEP)**
- **Wade: Suggestion to establish test plots….exact same composition in both. There is time. Find similar sites in similar locations.**
- **Assumption for Alt 2: Any link between dredging and impacts easier to ascertain.**
- **Some believed that having control sites are best to determine potential dredging impacts.**
- **How to determine when to take sediment sample - based on a trigger? Blend of two?**
- **Total of 42 extra stations were discussed by members for replication**
- **Look at temporal or spatial component? Generalizing and buffer differences between the sites. Look at community changes through time.**
- **Looking at spatial extent of impacts…how to get at? Use grid system to get temporal impacts.**
- **Temporal Control: Hinges on signature of material from dredging. Big Assumption. Need testing of material….Compare samples collected previously and now to look at differences? Ration of low to high magnesium calcite and aragonite?**
- **Wade: grab samples from channel to characterize material coming from the channel. Is information collecting enough to segregate impacts from the project versus disease?**
- **Jenny: Remember that they are looking at quadrat related data which includes all the benthic species.**

Outcome: Some leaning toward Alternative 1 – no control stations instead measure the sediment itself. Others favor Alternative 2 with control sites. Not a consensus among the group. Alternative 1 would only be acceptable if: a. there was a definitive way to identify a sediment characteristic originating from dredging & b. If there is no discernible difference with a measured accumulation of sediment at the monitoring stations will the Corps accept that mitigation will be required? No decisions can be made until the answers to the taskers are reviewed.

Taskers:

- Corps to brainstorm and demonstrate the difference between the dredging characteristics and non-dredge sediment characteristics. – Xaymara/Anthony
- Corps decision on accepting need for mitigation if no discernible difference in sediment characteristics. (Jason)

2.2 Monitoring Events (Timing and frequency)

Pre-construction (Baseline) survey
For discussion: One full scale survey prior to begin construction or split effort into multiple surveys?

USACE recommendation: Will consider splitting effort into 2 surveys (wet and dry seasons ~spring and fall) if the IWG feels is appropriate. If that is the case, USACE suggests alternating sites from grid in each survey to get same spatial coverage, which results in no significant net increase in costs associated with the survey.

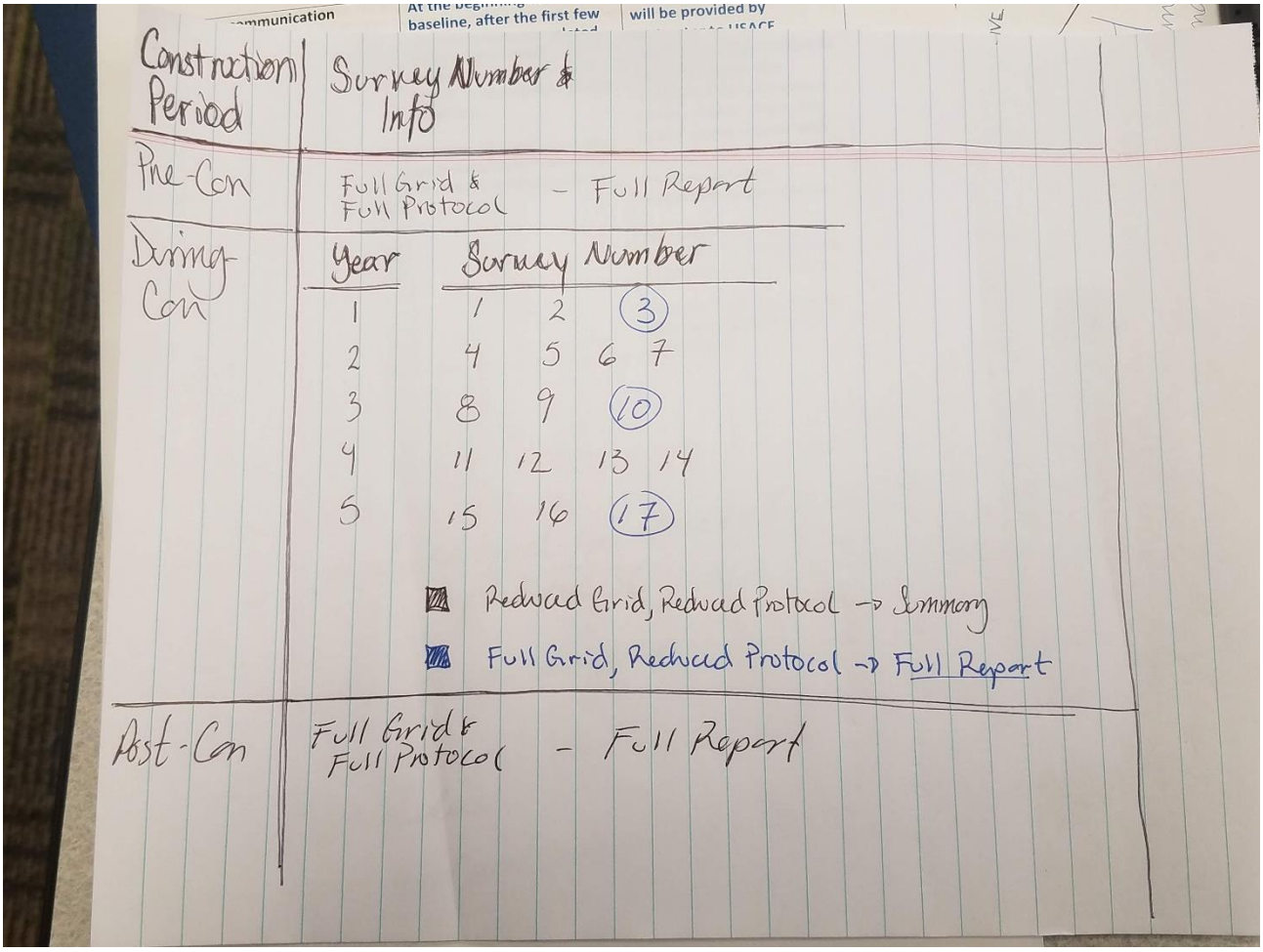
Meeting Discussion: Remember we are not sampling a habitat but sampling a set. Specific sites trying to determine impacts. Need same baseline for all the sites. There is not a single data point that determines impacts..reliance on all organisms and multiple data points.

Baseline = current condition of the organisms. This is what the community looks like.

Many ways to look at the community using robust data even with bleaching.

NMFS would like to see two full surveys, 1 baseline per season, Spring/Fall.

Outcome: Initially agreement to stay with language in the original draft. On the second day DEP brought up the concern that the language needs to be reconsidered in light of a possible 5 year dredging period. See diagram below for their suggestion. There were no objections to this schedule from the agencies present in the room.



Construction Period	Survey Number & Info
Pre-Con	Full Grid & Full Protocol - Full Report
During Con	Year / Survey Number 1: 1, 2, (3) 2: 4, 5, 6, 7 3: 8, 9, (10) 4: 11, 12, 13, 14 5: 15, 16, (17) Reduced Grid, Reduced Protocol → Summary Full Grid, Reduced Protocol → Full Report
Post-Con	Full Grid & Full Protocol - Full Report

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During construction monitoring (scaled-down design)
For discussion: FDEP recommends an interval (2-6 months). This makes it challenging to use data in adaptive management plan and more frequent surveys = huge increment in costs; not necessarily a better outcome (Miami as example - ~10,000 dives).

USACE recommendation: Conduct triannual surveys (3 events per year) to capture seasonal variability (spring-summer-fall). Avoid winter when weather is expected to hamper ability to conduct surveys due to high winds and associated high seas. However, note that USACE is considering conducting additional scaled-back surveys (e.g. spot dives) if triggered by adaptive management plan (TBD).

Meeting Discussion: (First day discussions)

- Envision two vessels operating constantly - at least 3 surveys per year. Don't want to see a long lag between surveys. Be able to tie data to a change.

Looking for sedimentation…intent is to give 3-4 months to complete a survey given bad weather days.

- No gap for more than 4 months on data collection.
- As data is collected should be real time data, and transparent if there are changes due to QA/QC. Do not need lengthy report to bog things down; Desire excel format; not lengthy reports.
- Jenny gave an example of a Julia Tuttle template for excel sheet; built in graphs etc; figures automatically generate. Pivot Tables are immediate.
- Length of time for dredging – pre and post construction survey is problematic. Precon – full survey: Const. Reduced grid and full protocol (twice?). Jason: Clamshell is the slowest so a 5 year dredging window is planning for the worst case scenario. Depends on the type of equipment. Add if-then condition (Lainie).
- DEP – Ok with 3 surveys though minimally acceptable. Do as many as you can get in per yr.
- NOAA & FWC– Wants to know what is the WQ monitoring program before they decide if they are ok with 3 surveys per year to ensure there is a sufficiently robust monitoring plan.

Second Day: See DEP proposal in previous item which includes suggested sampling during construction**.**

Outcome: See previous item.
Taskers: Corps will evaluate costs as previously noted.

Post-construction survey: FDEP recommends completion within 90 days after project ends.

USACE recommendation: No proposed changes but surveys will be season and weather dependent and could take longer to be completed (for example if the project ends at the beginning of the winter season). Survey initiation also dependent upon the season when project is completed.

Meeting Discussion:

- Reason for 90 days is to give some urgency to the permittee to get in the water to do the post construction survey.
- Concern over when an area is considered "Post-Construction". Jason gave the example - 11 months working in the outer entrance channel then there is a 3 month coral window. If condition says completion of the outer entrance channel or if the Corps has accepted that section as complete is that post construction? They Corps may need to come back later if it's not completed due to a coral window.
- Important to define completely finished as dredges leave and come back. Assessing temporary impacts as well.
- Would like to see a list of construction scenarios.
- Post const. surveys should be done within a given time frame.

Outcome: As discussion continued it became apparent that the bigger issue was to have a common definition of Pre, Start of Construction, End of Construction and what constitutes post construction. Important to determine construction scenarios to be considered including If/thens in permitting conditions on the various construction scenarios.

Taskers:

- List of if/then scenarios – Jason
- Draft definition of Pre, Start of construction, end of construction and post – Jason.

GENERAL CONCERN FOR ALL MONITORING EVENTS: What if we have a natural event (e.g., storms) or other weather issues in the middle of a monitoring survey?

USACE recommendation: Continue/complete survey as soon as possible but note which sites were surveyed before and after (e.g., RECON). Alternatively, need to discuss with IWG if we want to start over if we just started a survey or if we want to stop the data collection if the survey was close to completion prior to the event. Need agreement on what percentage of sites completed/remaining triggers the do over/stop decision.

Meeting Discussion: This is another scenario where if/then condition needs to be laid out. Opportunities of starting over or continuing once a storm or event has passed. Remember a comprehensive survey is the goal. Important to try and finish before September.

Example: Baseline and comprehensive survey at year 2, then storm, will rely on previous survey. Different options to look into. It was also suggested to just continue and compare the information from multiple years.

Example given that the Recon report made statements based on comparing stations data gathering before a storm and after a storm. Saying that there is a difference based on this type of data gathering is valid and the commenter cautioned that this should not be repeated in the future.

Doing latitudinal approach was not supported as it gets away from the issue and the order of operations for the survey.

Outcome: There are numerous scenarios that could be envisioned and thought needs to be given to various if/then scenarios and how to address.

Taskers: List if/then scenarios if weather or other events interrupt surveys and suggested methods of addressing – Jason/Xaymara

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2.3 Monitoring Protocols

For discussion: How to accomplish tasks with limited bottom time at sites with depths of ~60-90 ft (outer reef)?

USACE recommendations: USACE does not allow the use of mixed gases for their employees and/or contractors (diving regulation EM 385-1-1), and tasks require a huge amount of effort that will likely require multiple days of diving at each site to complete transects. One alternative for consideration is using Remote Operated Vehicles (ROV) for benthic data collection at these sites (USACE currently owns a ROV which could be used, or a minimum specification for ROVs could be developed with the IWG to meet the minimum data collection parameters; e.g.,GPS enabled, red filters, scales in view, etc). In addition, USACE could deploy acoustic altimeters at all these sites (N = 16) long-term to assess temporal and spatial changes in bed elevation (as a proxy for sediment accumulation).

If the IWG thinks is appropriate, similar methods could be used for monitoring potential downslope impacts (given similar depth ranges) (i.e., ROV, unsure if altimeters could be deployed in this area due to dive safety regulations).

For discussion: If using 2 dive teams at all times (recommended), N = 3 transects per site (20 m long each) make it difficult to split roles among teams.

USACE recommendation: Increase transects to N = 4 per site to split roles appropriately among dive teams, but use 15 m long transects to get similar spatial coverage and bottom time.

Meeting Discussion: There are at least 18 sites in the outer reef grid in depths of 60 to 90 feet of water. Concern over safety and long decomp times to accomplish the surveys.

DEP - Does not want two different methodologies with ROV & sediment collection in other areas.

BIN: Previously agreed to where divers can't be used but could use ROV's for eastern most portion of third reef and down slope areas in channel where safety is an issue.

It should never fall to a single vessel working a specific area. No solo units out there working along. What is the backup plan? Back-up boat to get people in the water. Into contracts for who is doing the work. Tell exactly what is necessary.

Transects – sediment depths: monitoring protocol will run a transect out in unbiased position along the transect. No random placement and permanent transects to reduce error in future. Data is pulled every single meter….when placing transects don't just have posts at the end and start….also in the middle. Method of reducing error when taking measurements.

Outcome: It is up to the contractor to make these types of decisions as they execute the scope of work on how they will accomplish the bottom sampling at deeper depths. There will be reliance upon the contractor to operate in a safe manner.

Taskers: None

2.3.1 Transect, belt transect, and quadrat configuration and establishment

2.3.1.1 Transect configuration and establishment

2.3.1.2 Belt transect configuration and establishment

2.3.2 Survey Methods

2.3.2.1 Digital Video Surveys

For discussion: FDEP recommends this as an archival dataset- quantitative analyses are not a requirement.

USACE recommendation: Analysis of the video data would be done as the surveys are completed, results and video archived which would enable immediate review of the analyses as a result of a triggering incident instead of waiting months to begin the review of the video data associated with the triggering incident. This data would not be provided to the agencies until such time as a triggering event required discussions of the videos. Would like input from the IWG as to the type of analyses proposed; e.g. point counts using CPCe).

Meeting Discussion: Release of video data and archiving of the data, - where would it be stored? Digital data - where and when to do analysis. When is it necessary how often to analyze sediment and video data together. Immediate analysis of the video data would be nice but cost requires that this be categorized as a want or a need. Right now it is categorized as a want and a need if there is a trigger requiring closer scrutiny. Rapid to get and useful to have; don't spend all money on the labor…visual observations can guide you when to look.

Is there a way to make sure funding is in place to do the analysis? Corps stated that it is important to get contingencies ahead of time to know how to cover costs; contractors get funded yearly.

Regulatory assurance – ability to retrieve and process information when needed.

Outcome: Group agrees that it would be desirable to accept the Corps recommendation but concerned about cost and the tradeoffs with other more important monitoring needs.

Taskers: Corps to review cost including data storage and evaluation to see if this is feasible**.** **(Jason)**

2.3.2.2 Sediment survey Protocols

2.3.2.2.1 Interval sediment depth measurements

For discussion: Need to ensure consistency in data collection among observers and appropriate cross-training & calibration exercises. This applies for all data collection, not just sediment depth measurements.

USACE recommendation: Need to discuss with IWG appropriate cross training and calibration exercises to be conducted by observers PRIOR to each monitoring event. In addition, contractor will need to coordinate with IWG to ensure appropriate methods of data collection (including format and content of spreadsheet templates to use) prior to beginning the pre-construction (baseline) survey.

Note that for adaptive management, USACE is considering supplementing sediment depths with bed elevation data collected from acoustic altimeters at ~20 sites spread across project area (subset of locations proposed for biological monitoring). Data would be downloaded from instruments either 30-45 days (or as required due to fouling, etc.) or would be collected real-time, depending on the budget.

Meeting Discussion: Agencies want ability to join contractor in the field during their training **before** baseline dataset is collected. There should be less than 10 percent error between observers before starting; cross training is important; calibration should be documented - not just for sediment – all data. Observations should only be on reef framework. QA/QC transparent. Data collected appropriately in the field. Contractor should put together a QAQC plan; provide SOPs on how to do things; percentages for QAQC checks; spelling out up front the QA/QC plan and present for review. DEP wants to avoid a mod for changes to the QAQC plan. Get all on front end. Idea to look at SOPs used by IWG members and come up with a template?

Quality Check with IWG.

1. Have a face to face in contract with IWG on interpretation; on land and water.
2. One team collect data initially; another team, third party to also collect data.
3. Need someone who has experience with these large data sets. Highly qualified team for this….Protocol for naming conventions etc.
4. Minimum requirements need to be met.
5. Incorporate into Biological Monitoring Plan QAQC.

Presentation by ERDC – Acoustical Altimeters. Getting information on sediment accumulating on the reef. Pat.

Outcome: There is a need to have as much specific language as possible to be placed in the contracting specifications, which will become permit conditions, to give reasonable assurance that QA/QC will be done properly and in a transparent way. It was also important that IWG members have the opportunity to meet with the contractors up front to learn about their QAQC measures and to repeat these meetings periodically.

Taskers: IWG members should gather QAQC SOPs and potential desirable methods to do QAQC and share them with the IWG members. - All

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2.3.2.2.2 Sediment characterization

For discussion: FDEP recommends a visual (diver) characterization + photograph. Visual sediment characterizations may take a long time (increasing bottom time) and everything is likely to be labeled as "mixed" (fines + sand).

USACE recommendation: Use photographs for visual characterization and for archival purposes. Can also use the data from the digital video surveys to characterize the sediments.

Meeting Discussion:

- Some members ok moving away from diver sediment characterization. The value of in water characterization = data entered quickly.
- Sediment characterization should be surficial sediment gathering from the hardbottoms
- Collecting sediment samples and sediment depths. How and where to measure sediment depths?
- Collection of sediment samples; analyze – split it and save some.
- Move more to sampling (quantification) not characterization. How to do that? Protocol detailed enough to ensure consistency.
- Jenny: If dive team SEEING accumulation of fine material should record it

Outcome: Unknown

Taskers: Unknown

2.3.2.2.3 Sediment Collection

For discussion: FDEP recommends analyses of samples if triggered by data indicating potential project-related impact. However, it could be challenging to clearly define what constitutes a project-related impact based just on sediment depths + benthic data.

USACE recommendation: Run ALL sediment samples for particle size distribution (PSD) analyses, not just when triggered by other data, in order to assess temporal and spatial changes in grain size should they occur. Recommend collecting 2 samples per transect (for a total of N = 6-8 per site). Additional samples may be collected for PSD when servicing proposed instrumentation (at the subset of stations with monitoring devices) for the water quality monitoring component.

Meeting Discussion:

Modern methods exost: Laser defraction devices measuring scattering angle and size of particle. Perhaps use a combination of these methods.

(Presentation by ERDC)
What defines a grain size?

- Sieve diameter,
- Volume equiv. diameter and
- Sedimentation diameter.
- Different methods give different results. Which is right? Whichever you do stick to same method.
- Don't need a lot of sample for instruments shown. Can run multiple small samples from one large sample. Excellent replication. Use to analyze fines.

- Mixture of sand and fines – wash material through 75 micron mesh sieve, supernatant split sample and …… Comes up with sands and TSS.
- Fines generated by crushing of the limestone – interested in.
- Interpretation of these samples. How is it linked to dredge material? Can take samples off the dredge in the water column, in hopper/scow to see what distribution look like. Distributions change over time. Useful in scows could take water sample prior to decanting to see what's likely to wind up in the water column.
- Proposed in Miami: settlement up to ½ hour before taking off shore. Potential to reduce time or prove time to show settling rates.
- What is effecting reef ecosystem? Taking them on the transects but also when divers in water and see material on organisms; collect and compare that to the barge. Compare grain size and composition. Where is the signal to connect the barge to the sediment sample?
- How much is on surface of reef before starting to dredge? Using it to see what decanting time makes sense and what does the plume look like?
- Before baseline…….Use of instruments and work out the kinks
- Turning Basin – might be an opportunity to work with Port to look at sampling.

Outcome: This methodology shows promise to the group but would like to see the protocol under different scenarios. Dredging of the turning basin (not a Federal Project) is expected to begin soon and this may be an opportunity to test.

Taskers: Protocol to come up with Corps and different scenarios plus interpretation – Corps (Xaymara & ERDC - Pat)

2.3.2.3 Belt transect surveys

2.3.2.3.1 Enumeration, identification and measurement of scleractinian corals

2.3.2.3.2 Assessment of tagged corals, octocorals and sponges

For Discussion: Would need to develop appropriate visual guides (flash cards, etc.) for divers to use prior to beginning the baseline survey to assess the different health "conditions" (bleached, diseased, sediment halo, etc.) of these groups, in particular for octocoral and sponges (for which there may be more limited data compared to scleractinian corals).

USACE recommendations – Would like FDEP to provide assessment criteria/protocols for octocorals and sponges to ensure adequate assessment of these functional groups per FDEP's monitoring plan. Recommend either peer reviewed criteria, or criteria developed for other projects permitted by FDEP.

Note: This topic was not discussed in the group as this is considered a contractor responsibility.

2.3.2.4 Modified BEAMR surveys within permanent quadrats

3.0 Monitoring Team

For discussion: Minimum qualifications of each team member and essential field/office staff requirements for data collection/QAQC/submittal.

FDEP/USACE recommended minimum qualifications: 1) BS or MS degree in Marine Biology, or similar degree (specific requirements for each team member listed below), 2) documented experience monitoring hardbottom / coral reef communities, and 3) Scientific knowledge of marine benthic ecosystems and organisms, including but not limited to scleractinian corals, octocorals, sponges and algae.

USACE recommended essential staff requirements
Field team staff (2 dive teams working simultaneously):
Divers/boat operators: BS degree
Field team leader (2): MS degree
Onsite QA/QC officer (1): MS degree

Office staff:
Data entry staff (2): BS degree in Biology/Environmental Science or commiserate experience
QA/QC officer (1): MS degree
Data manager: BS degree in Computer Science (or similar) or commiserate experience
Digital Video Survey Analysis: BS degree

Environmental management firm (3rd party contractor on-site):
Environmental manager: MS degree
Other team members: Appropriate degrees or qualifications

Meeting Discussion: Degree is good but very important that the divers have experience in benthic survey work. Experience can substitute for the degree. QAQC (office) – most are doing to double check the data (P2 or P3 level in EPA). Be cautious about being too restrive because may not get enough folks to do the job.

Positions: Preferred that the divers themselves fix any legibility problems. Has been an issue in the past.

Digital survey analysis: have multiple folks analyze to make sure it gets done.
Cross training important to ensure consistency.

Outcome: Request degrees and substitute experience for the degree when appropriate. Experience is critical for even a degreed person. Experience essential and preferred degree level. No learning on the job preferred.

4.0 Additional Quality Assurance/Quality Control

Note: See Table Below for Meeting Discussion, Outcome and Taskers

For discussion: Additional factors to consider for successful implementation of biological monitoring plan. These include:

- **Reducing time lag of data availability and improving communication process between contractors, USACE and IWG (especially during construction)**

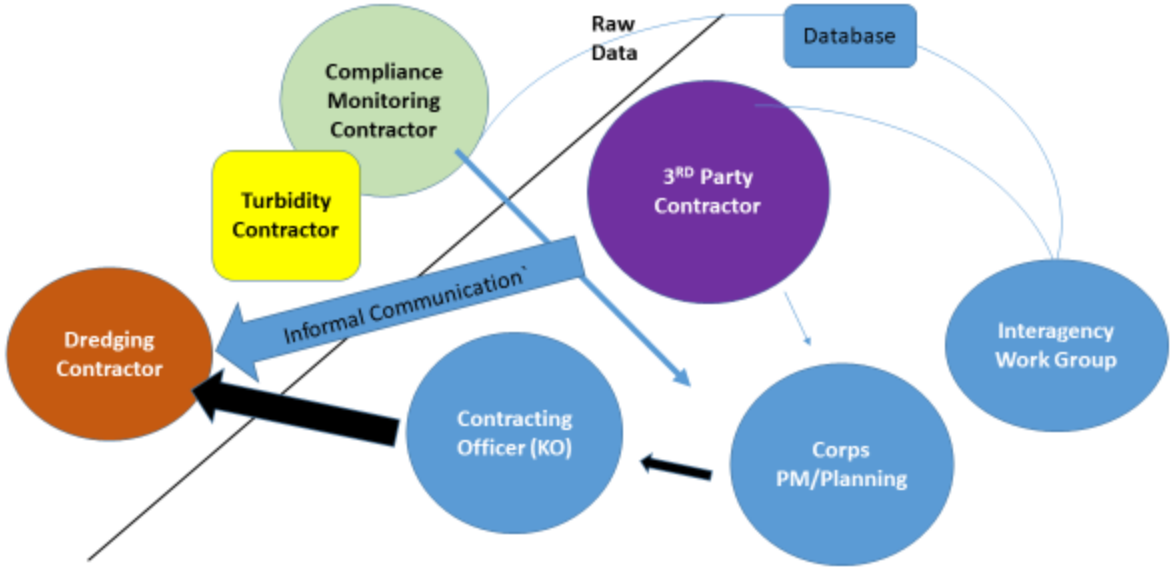
USACE recommendation: USACE is considering using an environmental contractor SEPARATE from the construction contractor to serve as the 3rd party contractor/monitoring firm. This contractor will hold multiple responsibilities including hiring the primary biological (data collection) monitoring firm, provide additional QA/QC, coordinate data management, reporting, deliverables/timelines, and serve as the primary contact (on-site) between contractors, dredge company, USACE and IWG. Responsible party for AMP data collection, analysis, dissemination TBD.

- **Meeting Discussion:** Much of the discussion centered on how a third party contractor would be linked or not linked to the dredge contractor. Also discussed was the linking of the monitoring contractors**.**

•Recommend SOP for third party on when to report trigger to Corps and KO. Example Port south port turning notch SOP.
• Third Party contractor does not collect primary data.
•Separate contract not under the dredging contract.
•Third party contractor needs to be independent
•DEP would hope for turbidity monitoring independent from the dredger. Group agrees.
•Scope includes in water work to repeat sampling to determine observations are quality across observers. Third party should not be hired by the dredger.

Outcome: Below is a diagram of the communication desires of the group.

DIAGRAM OF COMMUNICATION BETWEEN THIRD PARTY CONTRACTOR, IWG, THE DREDGE CONTRACTOR AND THE CORPS



Taskers: 1. Is this possible with Corps contracting requirements – Lacy/Jason

2. Is the 3rd party contractor the existing transparency contractor or other?

- **QA / QC process- roles and responsibilities and 3rd party contractor oversight**

USACE recommendation: Need to discuss with IWG but the plan is to have at least 3 levels of QA/QC (field, office and 3rd party contractor). FDEP recommends that the 3rd party firm QA/QC is done with 10% of the data and that surveys are conducted immediately AFTER the primary biological monitoring firm is done with the survey using a random set of control and non-control (project area) stations. Alternatively, the 3rd party QA/QC could be conducted at the same time as the primary monitoring firm using a subset (10%) of the sites already completed by the primary monitoring teams. QA/QC team will follow all of the same data collection requirements, archival and QA/QC for their data as is done by the primary teams.

USACE is also considering creating an in-house dive team which can serve as support personnel for proposed operations and will be trained on the protocols used to conduct surveys, service instrumentation, etc. as needed. Can also be part of the QA/QC process along with a sub-set of IWG members if such protocols are developed.

Meeting Discussion Points:

- Important to check the sites completed to see if data sampling is repeatable.
- May want to go to the area most likely to have impact first and then to move out from there.

- Timing on how QAQC was conducted. Can the QAQC person sample first? Yes from some but some prefer that the monitoring contractor pull the data first
- Timing is very important, short lag time between the dredging and pulling a sample. Ideally a week before or after.
- Goal to have error rate under 10%.
- Consider type of contracting and impacts on the cost.
- When comparing what is OK, LT 10% error in field data. If over 10% suggestions was to resurvey and recalibrate.
- If there is a discrepancy should be looking at why. Two firms get together and determine why and look at recalibrating.
- No redo video data or sediment collection if find 10% error.
- Sediment samples - 5 samples from numerous transects to get sufficient volume plus extra.
- In-house dive team can include IWG members.
- Struggle in past to ensure timing with contractors and when IWG members can get into the water.
- Desirable to conduct annual calibration work; building in inspection points with contractor.

Outcome:

- Need to take these suggestions and come up with a process or scope on communication between 3rd party contractors, Corps, monitoring company etc.
- SOP needed to include IWG points.

Taskers:

- What actions would be taken if the sampling error is over 10%? – IWG
- Provide the Corps with a list of SOP suggestions - IWG

Data management

USACE recommendation: Hire a data management person (see above), with duties including storage of data, organization of files, submitting to data storage and dissemination website/location, etc.. This will be part of the responsibilities of the environmental manager/firm (see above).

Meeting Discussion Points:

- How to address each of these factors? What does USACE recommends for each?
- Make it transparent as possible to point someone to a public web site.
- Website will need to keep very organized.
- Data manager should be with the Port/Corps. Available data manager with FWC via Lisa Gregg. Security factor.
- Can ask contractor to establish a site?

Outcome: Numerous suggestions on how to address a data management person. There was agreement that for the volume of data being generated it is important to have a central person be the data manager.

Taskers: Follow-up with person suggested by Lisa Gregg with FWC to obtain more information on their data manager experience, criteria and duties. - Xaymara

- **Reporting requirements, timelines, data formats, mechanism for data submittal and communication process among parties**

The table below includes USACE's recommendations based on a tiered approach for data analyses. Need to discuss with IWG. Will need to develop a similar table for the water quality monitoring component as the data will come at different intervals (monthly/bi-monthly or near real-time).

	Timing	
Factor under consideration	**Pre- and post-construction surveys (~154 sites including control sites)**	**During construction (~61 sites including control sites)**
Reporting requirements	**Tier 1** **Raw data QA/QC'ed** **Tier 2** **Descriptive statistics** **Tier 3** **Report with in-depth analyses (content TBD by USACE/IWG)**	**Tier 1** **Raw data QA/QC'ed** **Tier 2** **Descriptive statistics** **Tier 3** ~~**Report with in-depth analyses (content TBD by USACE/IWG**~~**) Summary report with figures.** **Tier 4 following pre and post construction surveys.** **Annual reports (content TBD by USACE/IWG) with cumulative data analyses** **Summary or synopsis would be ok but yearly not after every monitoring event.** **Perhaps after every cycle.** **See Brendan's diagram**
Meeting Discussion: Avoid reports whenever possible to avoid need for formal comments. Get data QAQC by monitoring firm. 45 days for raw data processing? Talking about a rolling process to receive the data. See comments in green above. **Outcome:** Annual IWG work team to look at data collection. Need a data report with consistent presentation of data. Agreed upon format and data needs **Taskers:** • Template for tier 2 summary, table of deliverables and presentation in excel spread sheet. • Define report (full versus abbreviated) • Scenarios on how to address if dredging stops. • Regular check-ins once a year.		

	Timing	
Factor under consideration	**Pre- and post-construction surveys (~154 sites including control sites)**	**During construction (~61 sites including control sites)**
Reporting timelines	**Tier 1** **Rolling availability as each site is completed and raw data QA/QCed. All data available within 1 month of survey completion.** **Tier 2** **2 months after survey is complete** **Tier 3** **3 months after survey is complete**	**Tier 1** **Rolling availability as each site is completed and data QA/QCed. All data available within 2 weeks after survey is complete** **Tier 2** **1 month after survey is complete** **Tier 3** **1.5 months after survey is complete** **Tier 4** **Annually**
Meeting Discussion: Group wants raw data: field data sheets, photographs (tagged and quadrats) and excel spreadsheet. Desire to Include video – possible to upload to You Tube as Port did for the Recon? Very time consuming. Takes 45 days from the time is survey is done. **Outcome:** No decisions made. **Taskers:** • What are desired timelines – possible and feasible for data receipt– Corps/DEP • Effort needed to upload video (Erik).		
Format of data • **GIS video link very transparent; also show data and spreadsheet.** • **Tasker: What does IWG need to see?**	**Tier 1** **Excel or text file + scanned/ QAed field data sheets in color** **Tiers 2 & 3** **Word and pdf files**	**Tier 1** **Excel or text file + scanned/QAed field data sheets in color** **Tiers 2-4** **Word and pdf files**
Data submittal • **When to submit – by site, by?**	**Tier 1** **Public data access point** **Tiers 2 & 3** **Contractor will set up data storage method for reports.**	**Tier 1** **Public data access point** **Tiers 2-4** **Contractor will set up data storage method for reports.**

	Timing	
Factor under consideration	**Pre- and post-construction surveys (~154 sites including control sites)**	**During construction (~61 sites including control sites)**
Data communication . .	**At the beginning of the baseline, after the first few sites have been completed, the IWG shall meet (webinar) to confirm data format is appropriate and as expected.** **Monthly IWG webinars after each data/report submittal to discuss results/analyses** **During construction survey – environmental calls.- weekly.**	**Notable field observations will be provided by contractor to USACE contracting officer within 48-hrs with appropriate supporting documentation (notes, photos, video, etc). USACE communicates with IWG regarding notable event via email including supporting documentation.** **IWG weekly calls following each data/report submittal to discuss results/analyses** **Bi-annual IWG meetings to discuss issues and how to solve them.**

Meeting Discussion: When the dredge starts digging be in the water during entire construction phase - when they produce turbidity**.** Get surveys done as quickly/frequently as possible. Make sure to write in flexibility for contractor. Do need some temporal spread? Difference between "continual" monitoring and what Brendan laid out on the board. May be delay between monitoring events.

Tasker: Provide a plan to address data communication. – Jason/Xaymara