Florida Department of Environmental Protection

Office of Communications

Turbidity Monitoring Work Group (TMWG)

Conclusions and Recommendations

February 4, 2014





Objectives

Established TMWG to address concerns about turbidity monitoring raised by DEP staff, Permittees and the Public

- Outline problems and concerns
- Discuss probable causes
- Consider possible solutions

Participants

TMWG Representation:

- Permittees
- Consultants
- Contractors
- Environmental Groups
- Regulators

Appreciate participation by the following:

Participants (1 of 2)

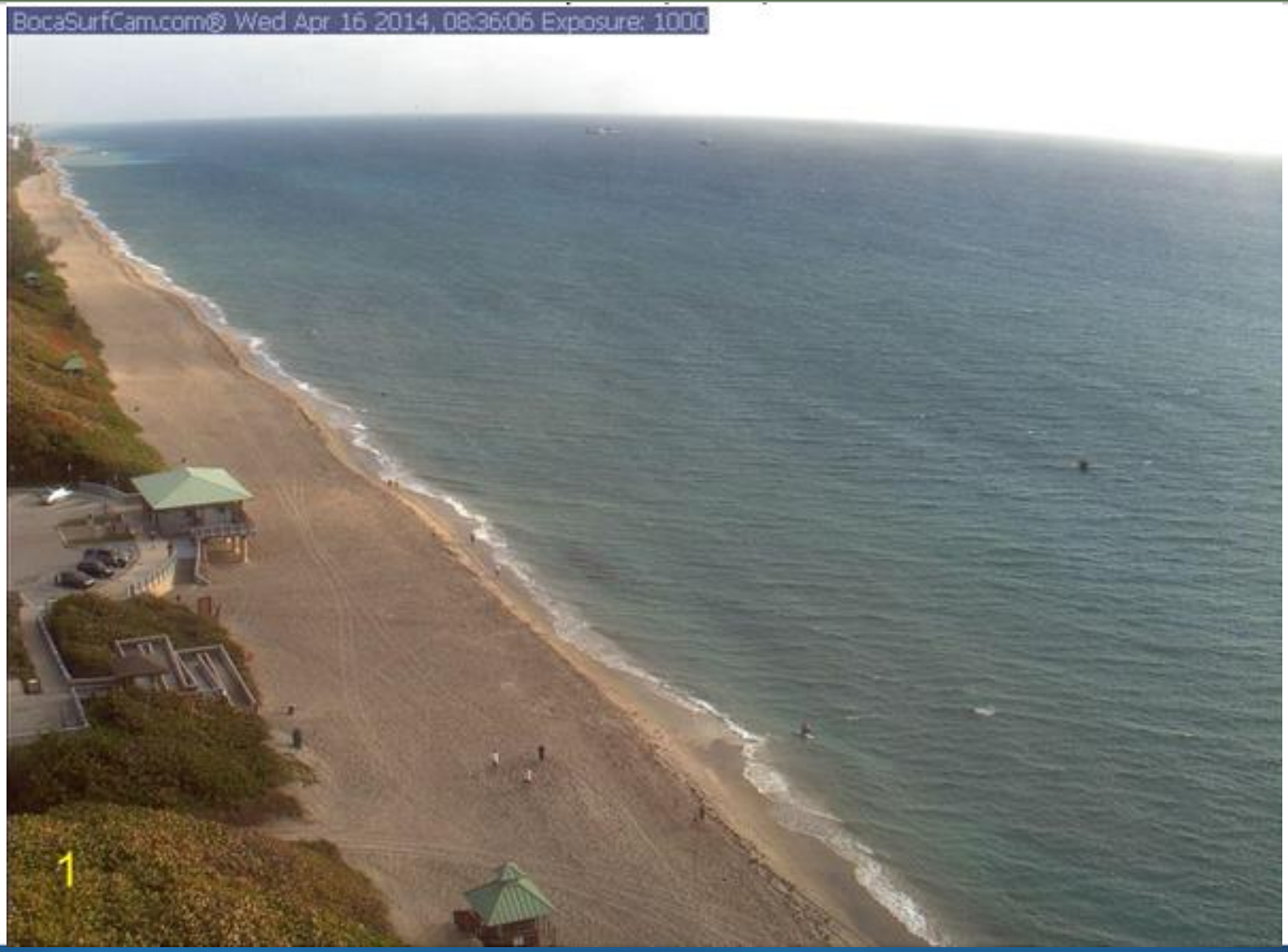
- Katy Collins (DEP, SE District)
- Paul Davis (PB County, retired)
- Kathy FitzPatrick (Martin County)
- Greg Garis (DEP, BIP)
- Charlotte Hand (DEP, JCP Compliance Officer)
- Mike Jenkins (Applied Tech. and Mgmt.)
- Craig Kruempel (Tetra Tech)
- Christian Lambright (DEP, SE District)
- Mike Mcgarry (Brevard County)

Participants (2 of 2)

- Matt Miller (Corps, Jax District)
- Charlynn Moore (ITS Marine)
- David Olin (Olin Hydrographic Solutions)
- Randy Parkinson (Env. Remed. & Recovery)
- Sirisha Rayaprolu (Corps, Jax District)
- Marty Seeling (DEP, BIP)
- Nicole Sharp (Broward County)
- Ed Tichenor (Reef Rescue)

Turbidity form Nourishment

Plume Example (time-lapse)



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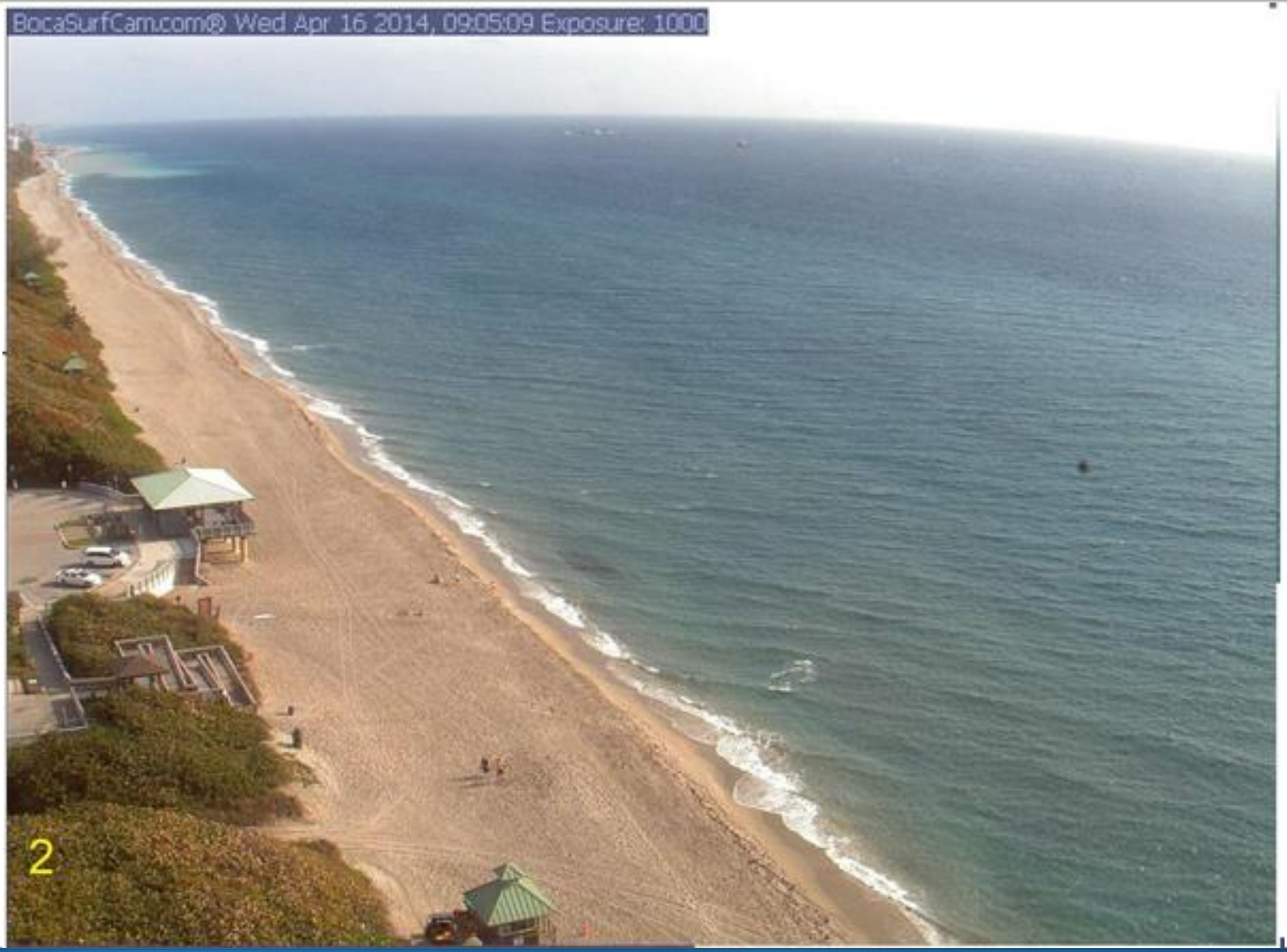

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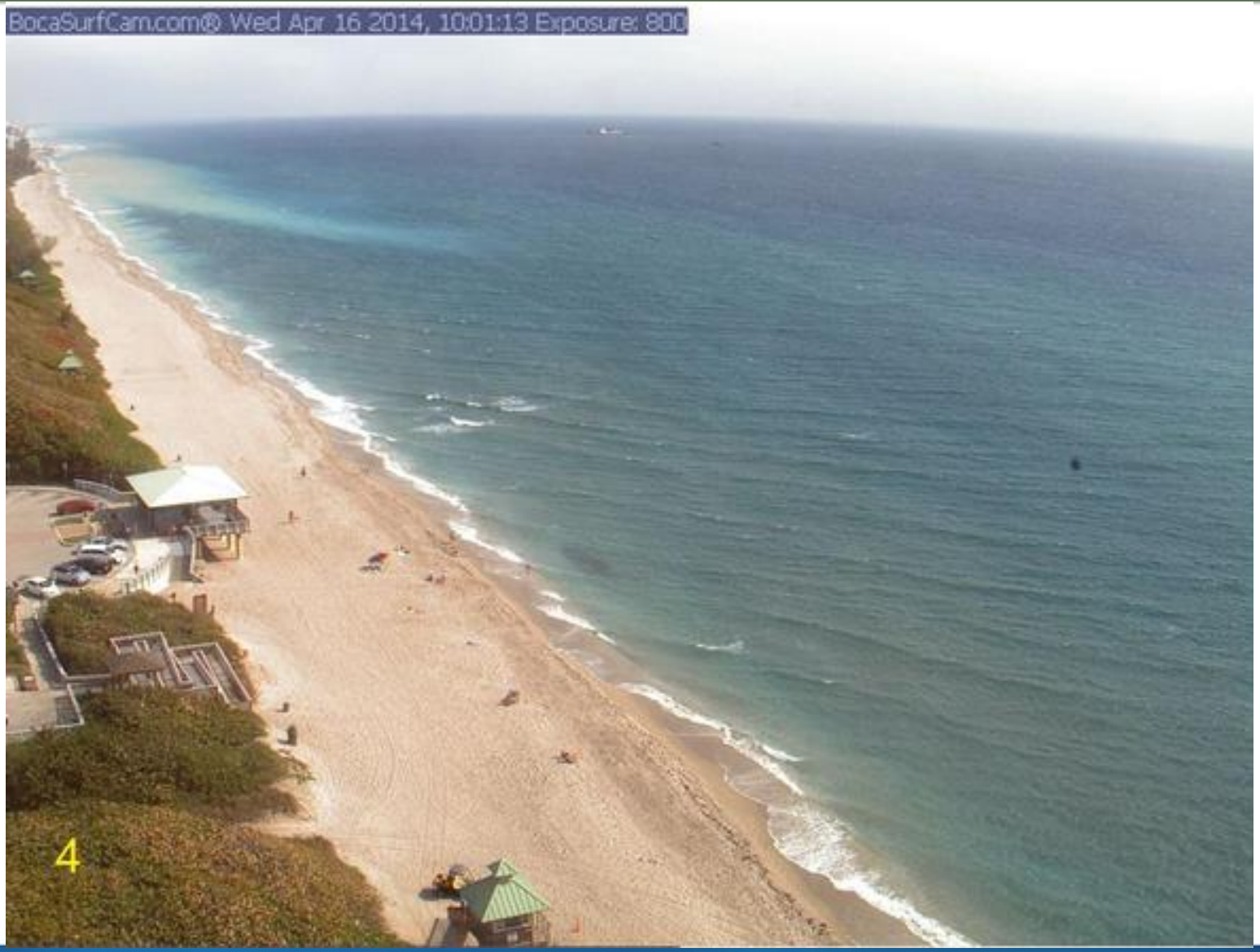

Plume Example (time-lapse)

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Discussed Current Situation

How is turbidity monitoring being conducted now?

- Review permit conditions
  - Different interpretations
- Discuss implementation
  - Equipment
  - Methodologies

Current Situation

What are the limitations and difficulties

- Interpretation of conditions
- Policies, Guidelines, Protocols
- Equipment (for access, sampling, measuring, etc.)
- Weather
- Dredge-related variability
  - Silt pockets, pumping rates, etc.

Interpreting Mixing Zone

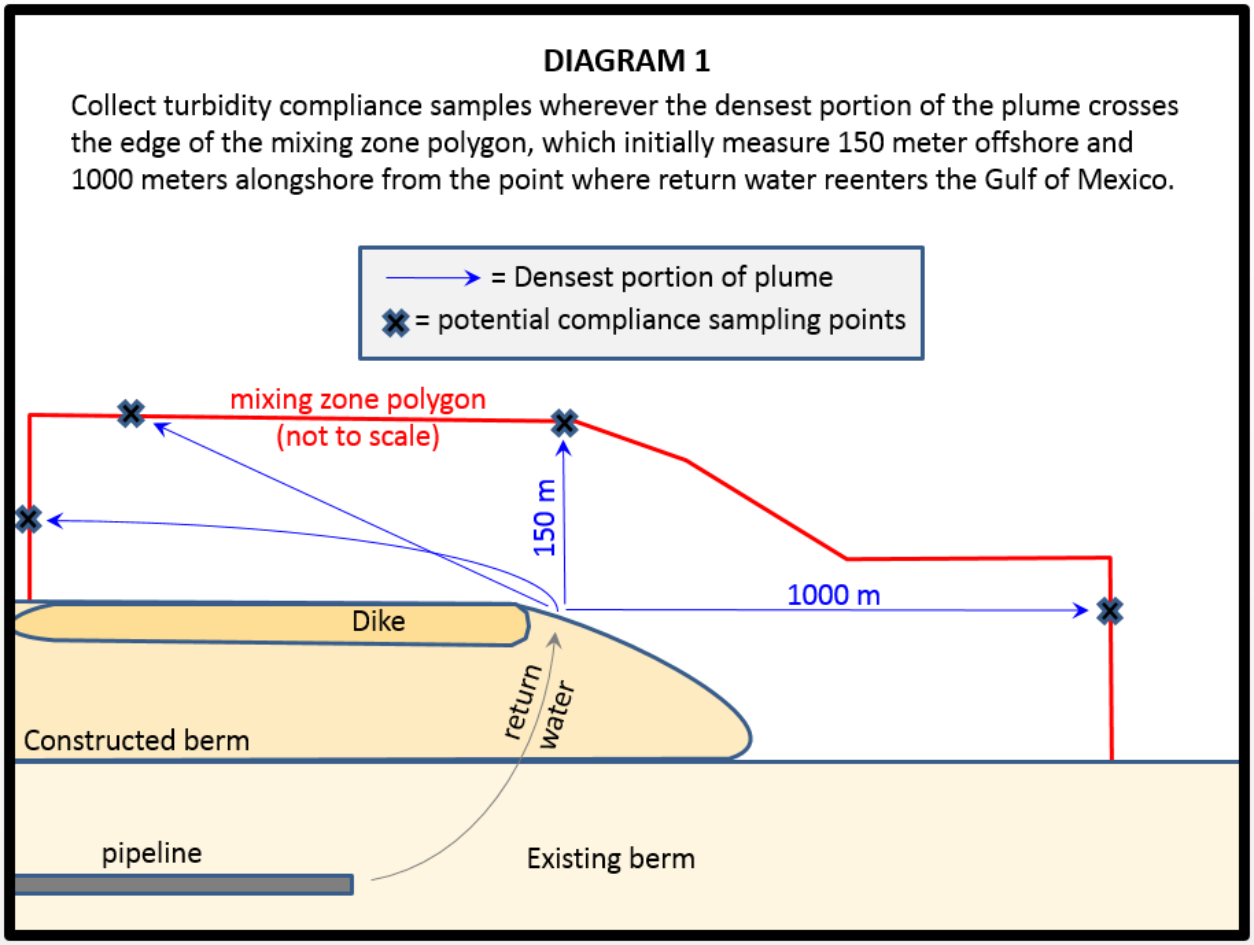
Example of a nearshore turbidity plume

Interpreting Mixing Zone

- Added requirement for the Turbidity Monitor to attend preconstruction meeting
- Added clarifying language:
  - *Note: If the plume flows parallel to the shoreline, the densest portion of the plume may be close to shore, in shallow water. In that case, it may be necessary to access the sampling location from the shore, in water that is too shallow for a boat*.

Interpreting Mixing Zone

- Added Diagram:



Interpreting Mixing Zone

So where would you collect the sample?

Accessing Sampling Site

Breaking surf at sampling site

- Nearshore may be inaccessible by boat

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Breaking surf at sampling site

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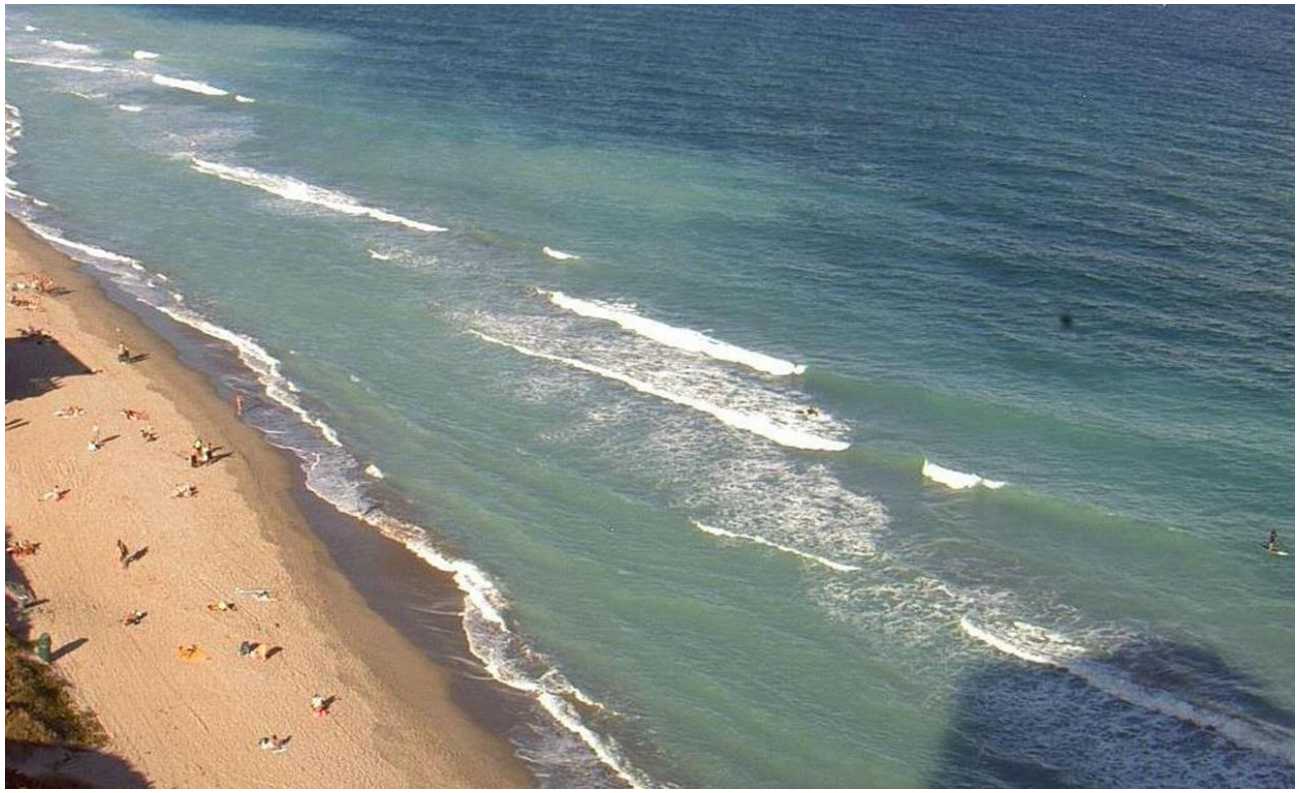

Accessing Sampling Site

Other alternatives?

- Wade out from shore (with or without SCUBA or snorkeling equipment)
  - Corps Safety Protocol
- Surf board, paddleboard, kayak, etc.
  - Corps Safety Protocol
- Jet ski (being used successfully at Jupiter Carlin)
- Casting sample bottle from fishing rod
- Data sondes
- Drone
- Permittee will propose methods in NTP submittal

Drone

aka, Unmanned Aerial Systems (UAS)
aka, Unmanned Aerial Vehicles (UAV)

Benefits of Drones

- Real-time birds eye view to locate the densest portion of the turbidity plume
- Safe sample collection at inaccessible or hazardous locations.
- Inexpensive alternative

Drone

Limitations on Drones

- FAA regulates commercial operation of drones
- Public Operations (Governmental), from FAA web page
  - *For public operation, the FAA issues a Certificate of Authorization or **Waiver** (COA) that permits **public agencies and organizations** to operate a particular UA, for a particular purpose, in a particular area*.
- FAA authorizes drone use for mosquito control in Florida Keys (Associated Press, Jan 2, 2015)
- Section 934.50(3), F.S., PROHIBITED USE OF DRONES: *A **law enforcement agency** may not use a drone to gather evidence or other information*.
  - Includes exceptions, but monitoring isn't currently listed

Sampling at Night

- Safety concerns
- Finding the “densest portion of plume”
- Purpose of monitoring is to spot check turbidity levels at times that are representative of the construction process
  - Needed for reasonable assurance
- If construction rates (and turbidity levels) are uniform all day long, then around-the-clock monitoring isn’t needed

Sampling at Night

- Night-time turbidity monitoring is no longer required unless turbidity is higher at night:
  - *Sampling shall be conducted* (2 or 3 times a day) *while the highest project-related turbidity levels are crossing the edge of the mixing zone*.
- Record “Pumping Rates” to document uniformity
  - *Since turbidity levels can be related to pumping rates, the dredge pumping rates shall be recorded, and provided to the Department upon request*.
- Still doesn’t account for silt pockets

Uniform Reporting

- Some turbidity reports are not easy to understand and may be missing important information
- The TMWG has developed a standardized form
  - Automated data entry
  - Easy to email
  - Location maps and aerials approved ahead of time
  - Will save time to prepare
  - Will save time to review

Qualifications for Monitors

- Need to establish minimum qualifications for people doing the monitoring.
- Permit Condition says:
  - *shall be monitored closely by an independent third party with formal training in water quality monitoring and professional experience in turbidity monitoring for coastal construction projects*.
- Considered (& rejected) a certification process.
- Will develop an on-line training program and certificate of achievement

Permit Conditions

- TMWG developed set of recommended turbidity monitoring conditions
  - To be adjusted case-by-case
  - More detailed turbidity monitoring protocol
  - Clarification on monitoring locations
  - Should avoid night-time monitoring
  - Qualifications for monitor
  - BMPs

Public Comments

- Developed better process for addressing reports from the public of turbidity exceedances
- Participation by DEP District Offices
  - Tallahassee staff can't inspect local sites very quickly
  - Familiarize District staff with beach projects
  - Provide equipment to help in the investigation
- Coordination with Permittee
  - Pumping or filling rates to confirm representative sampling
  - Quickly determine if project is in compliance

Recommendations (1 of 2)

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- Periodically revisit turbidity monitoring procedures and conditions to consider improvements
- Develop an on-line training program for JCP turbidity monitoring
  - Certificate of Achievement for those who complete the class and pass the test
  - Used to demonstrate that the Turbidity Monitor is qualified

Recommendations (2 of 2)

- Work with FSBPA and Department seeking legislation to add an exception to Section 934.50(3), F.S., for drones to monitor turbidity associated with JCPs
  - Drones appear to be an ideal tool for nearshore turbidity monitoring
  - Accurately identify correct monitoring location from bird's eye view
  - Safely access correct monitoring location to collect sample

Questions or Comments