

An underwater photograph of a coral reef. The central focus is a large, textured, brownish-grey rock covered in a dense carpet of small, fuzzy organisms, likely a type of coral or sponge. Several sea anemones are visible, some with white and brown tentacles. The background is dark and shows more of the reef structure. The overall lighting is dim, typical of an underwater environment.

# Workshop on Innovative Shore Protection Technology

February 23, 2006

Environmental Permitting & the  
Experimental Test Plan

# Experimental Shore Protection Projects

- **Joint Coastal Permit (JCP)**
- Coastal Construction Control Line Permit (CCCL)



# Experimental Coastal Construction

62B-41.0075 – Special Criteria



62B-41.0075

- (1)(a) The proposed location must be in an erosion area as identified in the Department's Beach Restoration Management Plan.

# Critically Eroded Beaches

- [http://www.dep.state.fl.us/beaches/publications/tech-rpt.htm#Critical\\_Erosion\\_Reports](http://www.dep.state.fl.us/beaches/publications/tech-rpt.htm#Critical_Erosion_Reports)



## 62B-41.0075

- (1)(b) The proposed location must be properly suited for a non-biased comprehensive analysis of the results of the proposed coastal construction and must include sufficient *control sites* where comparative monitoring data can be obtained which is not influenced by the proposed new technology.

# Control Sites

An underwater photograph of a coral reef. The scene is dimly lit, with a dark blue-green background. In the foreground, there is a large, textured, brownish-grey rock or coral structure. Several sea anemones are visible, some with white and orange tentacles. A small, colorful sea slug is also present on the rock.

- Area nearby which is subject to the same in situ conditions as the test site without the presence of the new technology, to which the test site can be compared (i.e. how does the beach/coastal system behave with and without the presence of the new technology)

An underwater photograph of a coral reef. The scene is dimly lit, showing various types of coral, including some with white polyps and others with more textured, brownish surfaces. A small, reddish fish is visible near the center of the frame. The background is dark, suggesting a deep or shaded underwater environment.

62B-41.0075

- (1)(c) The proposed location must be situated in an area which is NOT considered to be an environmentally sensitive area by the Department.

# Environmentally Sensitive Areas

An underwater photograph of a coral reef. The scene is dimly lit, showing various types of coral and sea anemones. A prominent feature is a large, brownish, textured coral structure in the center. To its left, there are colorful, branching corals. Several sea anemones with white and brown tentacles are visible, some with small fish nearby. The background is dark and filled with more coral structures.

- Nearshore/Offshore Hardbottom Communities
- Reef Communities/Corals/Sponges
- Fish Habitat
- Seagrass Communities/SAV's
- Aquatic Preserves/OFW's
- Wetlands
- Marine Turtles: Nesting Habitat/Foraging Areas/Access Pathways
- Shorebird Usage Areas

## 62B-41.0075

- (1)(d) The project must be supported by adequate scientific, engineering and design theory or experimental data demonstrating that it has the potential to provide a positive benefit to the coastal system and is not expected to result in a significant adverse impact. The size and scope of the field test shall not exceed that necessary to adequately address the test plan objective. The requirement for supporting experimental data shall be waived by the Department if it finds that the proposed project has minimal potential for adverse impact.



# Adequate Scientific, Engineering & Design Theory Demonstrating Potential to Provide Positive Benefit to Coastal System...

- Based on engineering and scientific theory.
- Demonstrate potential for positive benefit to coastal system over traditional shore protection methods..
- Detailed literature review of similar existing systems, their successes, failures and the difference between those systems and the one proposed.

An underwater photograph of a coral reef. The scene is dimly lit, with a dark blue-green background. In the foreground, there is a large, textured rock covered in brown and orange coral. Several small, colorful fish are visible, including a prominent one with orange and white stripes on the left. The overall atmosphere is serene and natural.

## Or Experimental Data Demonstrating Potential to Provide Positive Benefit to Coastal System

- Laboratory Results with scale model
  - University, Corps of Engineers, etc.
  - Results from previous prototype installations
- Data should illustrate benefit to the coastal system over traditional erosion control technology.



62B-41-0075

- (e) Requests for permits under this rule must be presented by a riparian property owner or governmental entity. (a.k.a. Local Sponsor).

## 62B-41.0075

- (2) The Department may confer with a special scientific third party consultant to assist in the review of such proposed projects, to oversee the experiments and to provide an assessment of results and appropriate recommendations.



62B-41.0075 (3)  
a.k.a. Experimental Test Plan

- (3) The applicant shall present a test plan to the Department for review. Such plan shall include a periodic monitoring schedule and periodic progress reporting schedule with, at a minimum, annual reporting after the test phase begins. The periodic reporting shall include project performance monitoring assessments and survey data and analyses.

# Experimental Test Plan continued

- The test plan shall also include:
  - (a) The objectives and nature of the experiment;
  - (b) The effectiveness measures;
  - (c) The measures of impacts to the coastal system, marine turtles, nests and their habitat, and such other measures as may be required to assess attainment of the objectives;
  - (d) The procedures to be followed;
  - (e) The time sequence;

# Experimental Test Plan continued

- (f) The data to be collected;
- (g) The test equipment to be used;
- (h) The names and technical qualifications of the individuals performing the tests and analyzing the results;
- (i) ***Contingency plans***; and
- (j) Such ***other components as may be necessary*** to assess the impacts and performance of the project ***as determined by the Department.***

# Basic Elements of an Experiment

An underwater photograph of a coral reef. In the foreground, there is a large, textured, brownish-grey rock covered in a dense carpet of small, dark organisms. Several sea anemones are visible, some with white and brown stripes, and others with reddish-orange tips. The background is dark and shows more coral structures.

- Problem Statement
- Background information
- Hypothesis
- Materials
- Methods
- Data & Observations
- Analysis
- Conclusions

# Problem Statement

- Typically something to do with addressing a shoreline erosion problem in an area defined critically eroded by the Department.

# Background Information

An underwater photograph of a coral reef. The scene is dimly lit, with a dark blue-green background. In the foreground, there is a large, textured, brownish-grey rock or coral structure. Several sea anemones are attached to this structure, showing their characteristic tentacles. Some anemones are white with brown centers, while others are more colorful, with shades of orange, red, and purple. The overall atmosphere is mysterious and natural.

- Discussion of project proposal background.
- Literature Review - Are there similar products out there? What has been tried before? What were the results?
- Define the innovative nature of the project.

# Hypothesis

- State the hypothesis: what do we hope to achieve with the system?
- How will we know if the system has been successful?
  - a) The objectives and nature of the experiment;
  - (b) The effectiveness measures;

# Materials/Equipment

An underwater photograph of a coral reef. The scene is dimly lit, showing a large, textured brown sponge in the foreground. Several sea anemones with colorful tentacles are visible, along with other smaller coral structures in the background.

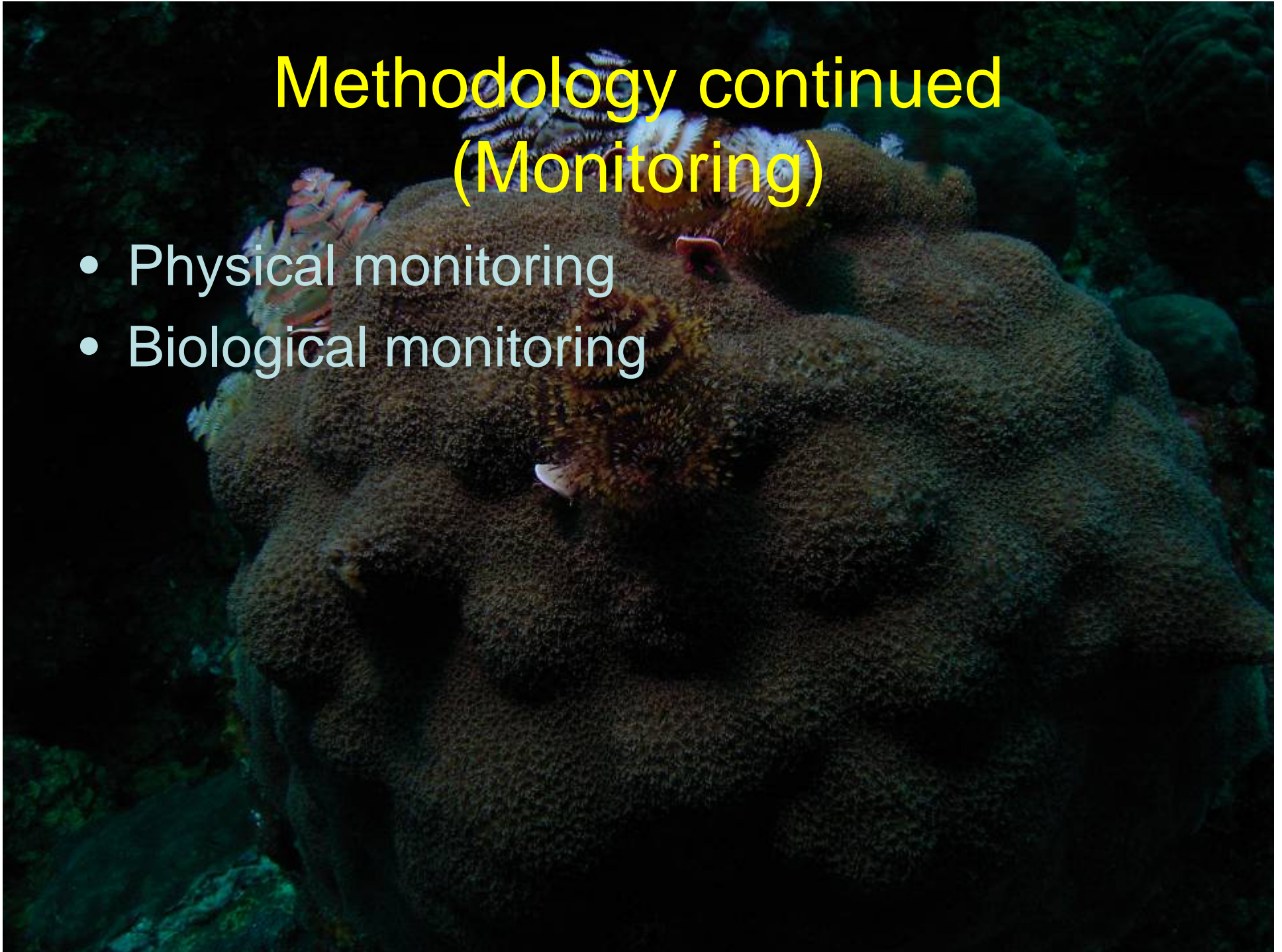
- State materials/equipment to be used
  - (g) The test equipment to be used

# Methodology

- Describe the methods/procedures for the entire duration of the experiment
  - (d) The procedures to be followed;
  - (f) The data to be collected;
  - (e) The time sequence;
  - (c) The measures of impacts to the coastal system, marine turtles, nests and their habitat, and such other measures as may be required to assess attainment of the objectives;

# Methodology continued (Monitoring)

- Physical monitoring
- Biological monitoring

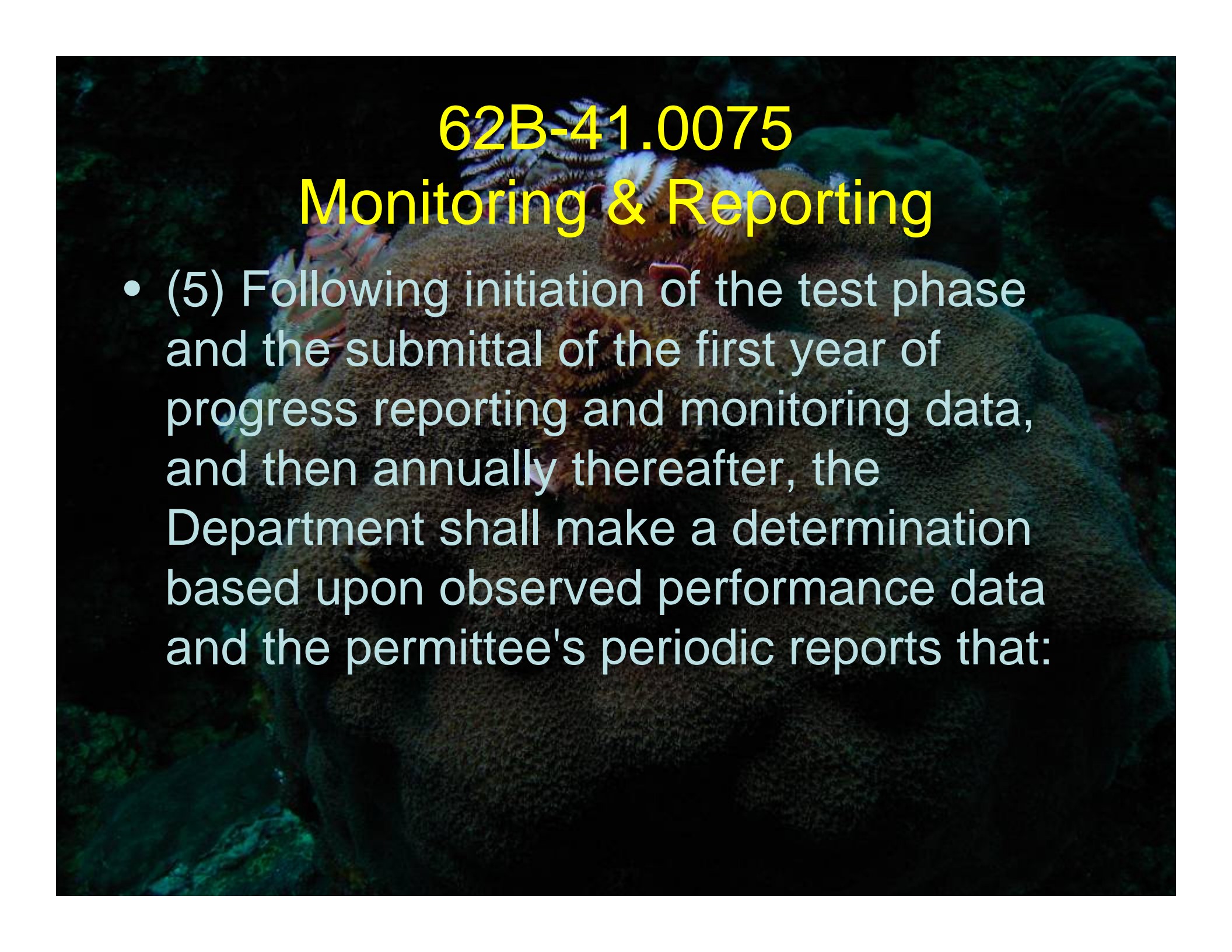


# Data Analysis

- Describe methods proposed to be used for data analysis and interpretation.
  - (h) The names and technical qualifications of the individuals performing the tests and analyzing the results;

# Conclusions

- Conclusions should be evident from the data analysis.
- In addition to conclusions presented by permittee, the third party independent evaluator will also present conclusions for the Department for consideration.

An underwater photograph of a coral reef. The scene is dimly lit, showing various types of coral and sea anemones. The colors are muted, with shades of brown, green, and blue. The text is overlaid on this background.

## 62B-41.0075

# Monitoring & Reporting

- (5) Following initiation of the test phase and the submittal of the first year of progress reporting and monitoring data, and then annually thereafter, the Department shall make a determination based upon observed performance data and the permittee's periodic reports that:

## 62B-41.0075(5) Continued

- (a) The project as constructed has not caused a significant adverse impact and may proceed; or
- (b) The project as constructed has caused a significant adverse impact and must be either removed or modified by the applicant to eliminate the significant adverse impact at no cost to the Department.

## 62B-41.0075

- (6) Experimental projects may be permitted with phases lasting up to three (3) years, including preparation of the final report. After three (3) years the project shall be evaluated by the Department to determine the feasibility of continued implementation of the project. Upon receipt of the final report the Department will review the report and make a written determination as to:

## 62B-41.0075(6) Continued

- (a) The effectiveness of the experiment in addressing a coastal erosion problem;
- (b) The feasibility of continued implementation of the pilot project; and
- (c) Any adverse impacts caused by the experiment.

## 62B-41.0075

- (7) If the experiment is determined to be ineffective in addressing a coastal erosion problem, or is expected to cause a significant adverse impact, all structures shall be removed. Removal or modification may also be ordered pursuant to Section 62B-41.015(1)(I).

## 62B-41.0075

- (8) Any time the Department determines that the project must be removed under the provisions of this Chapter, the permittee shall also be responsible for restoring the area of installation and any adversely affected areas to pre-project conditions. By acceptance of the permit, the permittee commits to the removal of any structure, object or installation relating to the project, as well as restoration of all affected areas, should the Department determine that removal is necessary as provided in Subsection (7) above. Costs of removal and restoration shall be borne by the permittee.

## 62B-41.0075

- (9) All new technologies shall be designed to be stable and durable in the coastal environment. Should the experimental project become dislocated or in disrepair at any time, during or after the initial three year period, it shall be the responsibility of the permittee to have the structures repaired or removed. If the permittee fails to repair or relocate the project within 90 days from receipt of notification of the need for such from the Department, the permittee shall be ordered to remove the project.

An underwater photograph of a coral reef. In the center, a large, brown, textured sea slug is resting on a piece of coral. The background is dark with various types of coral and other marine life visible.

# Test Plan

## Lessons Learned/Requests

- Keep it simple
- Keep it scientific
- No sales please
- No opinions, just the facts please
- Data/methods must be sufficient to prove (or disprove) hypothesis.
- Contingencies - the past two hurricane seasons – need we say more?