Section 7
Site construction and management

7.1 INTRODUCTION

7.2 GUIDING PRINCIPLES

7.3 TECHNIQUES AVAILABLE

7.4 SUMMARY

7.5 BIBLIOGRAPHY

7.6 GLOSSARY

Keita FURUKAWA, NILIM

7.1 INTRODUCTION

What is “Site Construction” ?

→ Chap 3

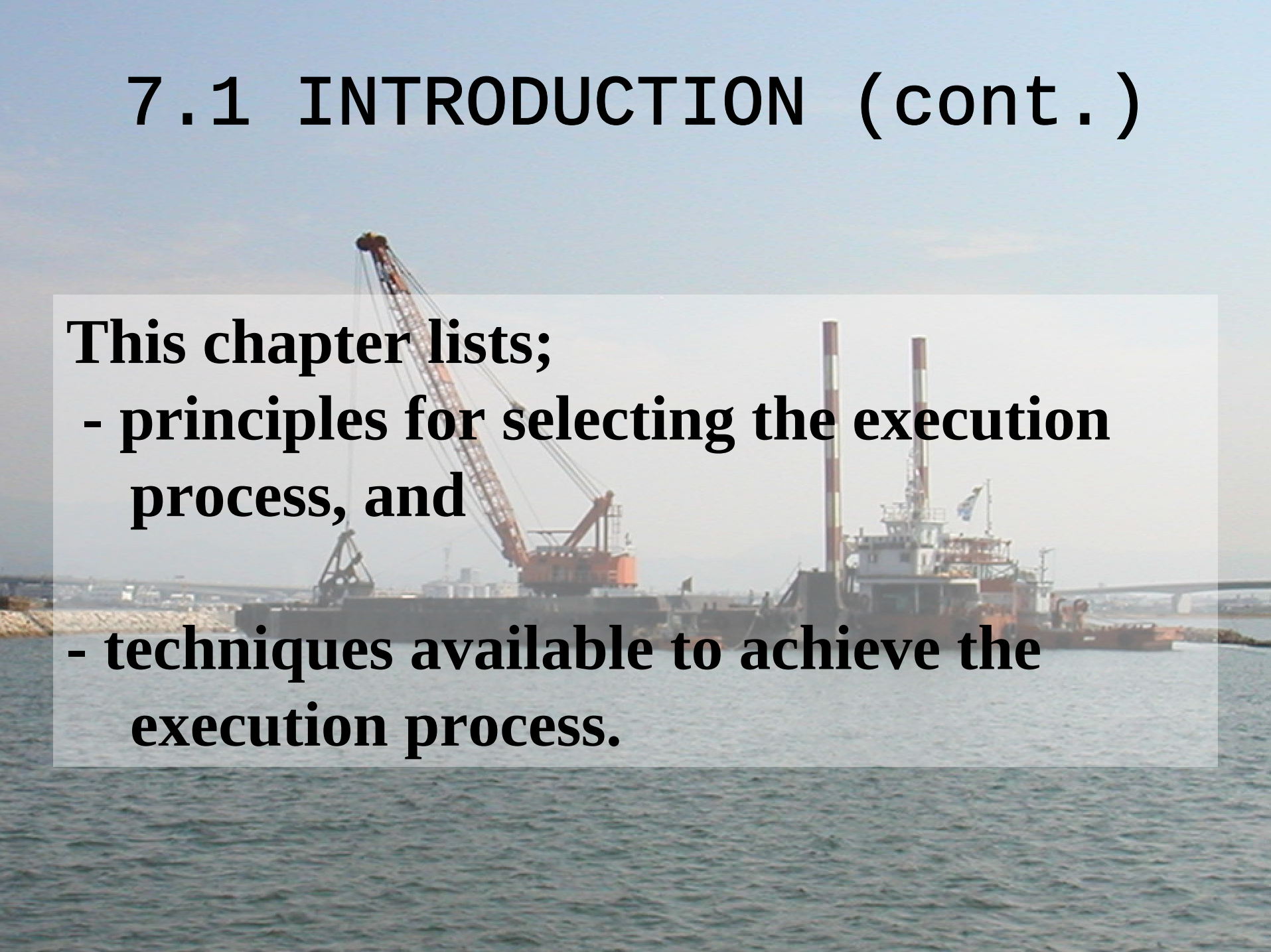
What is goals and objectives?

→ Chap 5

How the detailed design is presented?

→ Chap 6

7.1 INTRODUCTION (cont.)



This chapter lists;

- principles for selecting the execution process, and

- techniques available to achieve the execution process.

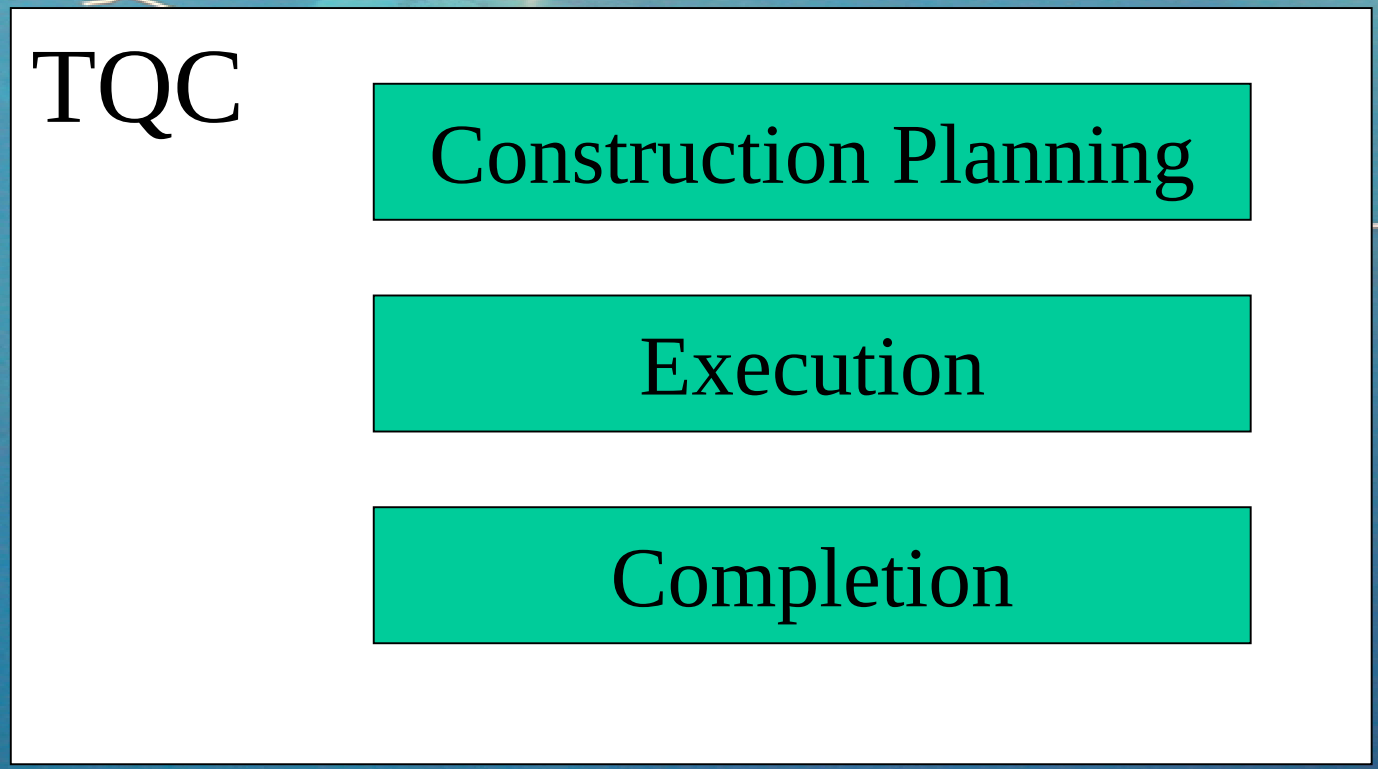
7.1 INTRODUCTION (cont.)

Recommendations contains;

- **regard to Nature**
- **disturbance should be avoided**
- **sustainable use of natural resources**
- **low energy consumption, and**
- **Material should be re-used**

7.2 GUIDING PRINCIPLES

7.2.1 Construction planning for total quality control



7.2 GUIDING PRINCIPLES

7.2.2 Minimizing environmental impacts during construction

For scheduling;

- Limit the size
- Alternate the existing natural systems.
- Consider environmental windows
- Handle material smartly
- Take post-treatment into account
- Consider its timing and way of site opening to public

7.2 GUIDING PRINCIPLES

7.2.2 Minimizing environmental impacts during construction

For techniques selection;

- Limit the disturbed area
- Avoid of the effect on existing systems.
- Protect erosion
- Take into account material characteristics
- Safety of operation

7.2 GUIDING PRINCIPLES

7.2.2 Minimizing environmental impacts during construction

Material Selection

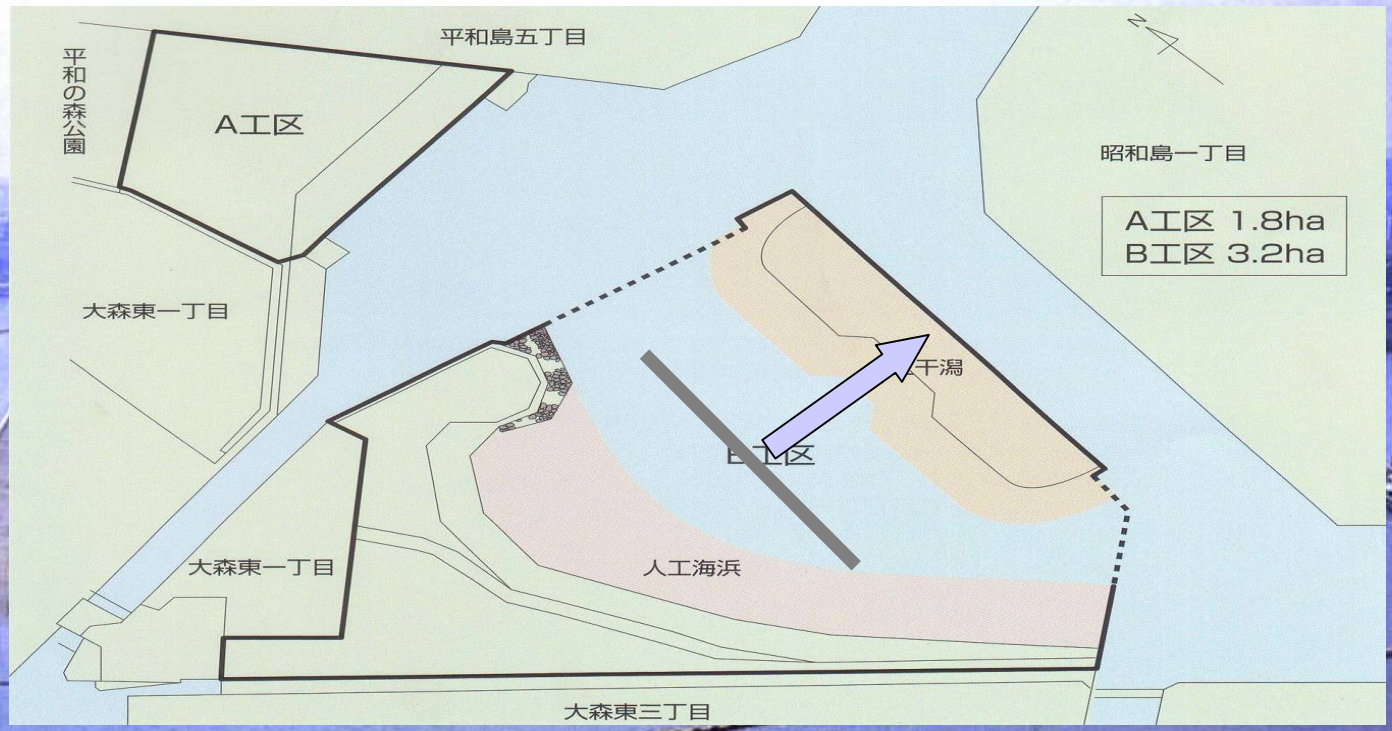
- Size selection for stability
- Size selection by habitat preference
- Safety issues (analysis, guidelines)

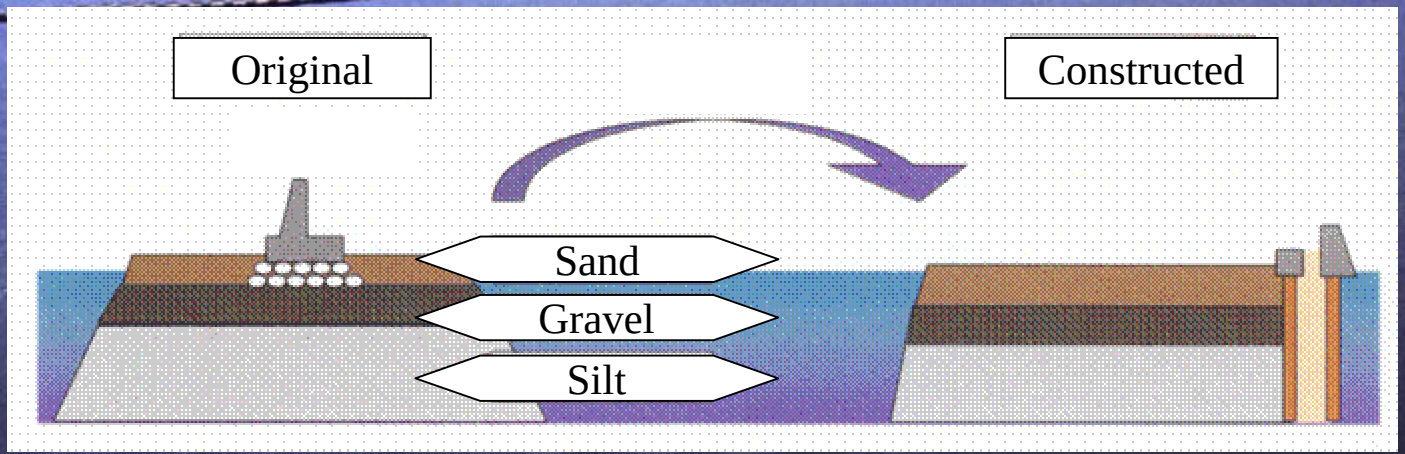
7.2 GUIDING PRINCIPLES

7.2.3 Socio-economic impacts

Working efficiency, cost of execution, and social impacts are must considered in site construction phase.

- low emission from the site operation
- proper maintenance of machines,
- selection of machines with low energy consumption, and
- recycling the materials, and
- reducing construction noise





Example of Material Selection and Recycling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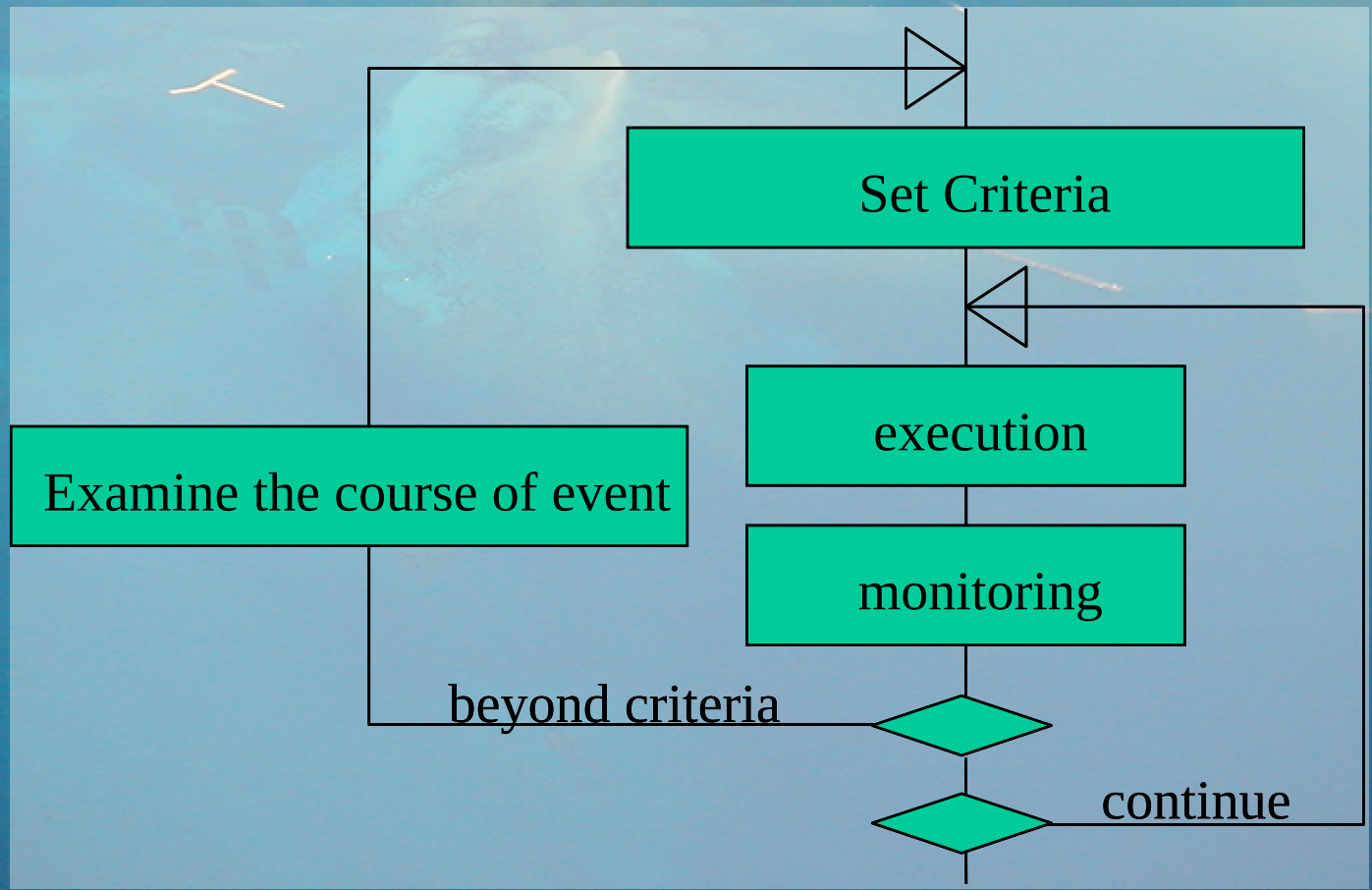
7.2 GUIDING PRINCIPLES

7.2.4 Adaptive approach for site construction



Monitoring procedure

- downstream of the cause
- resolution
- reference site

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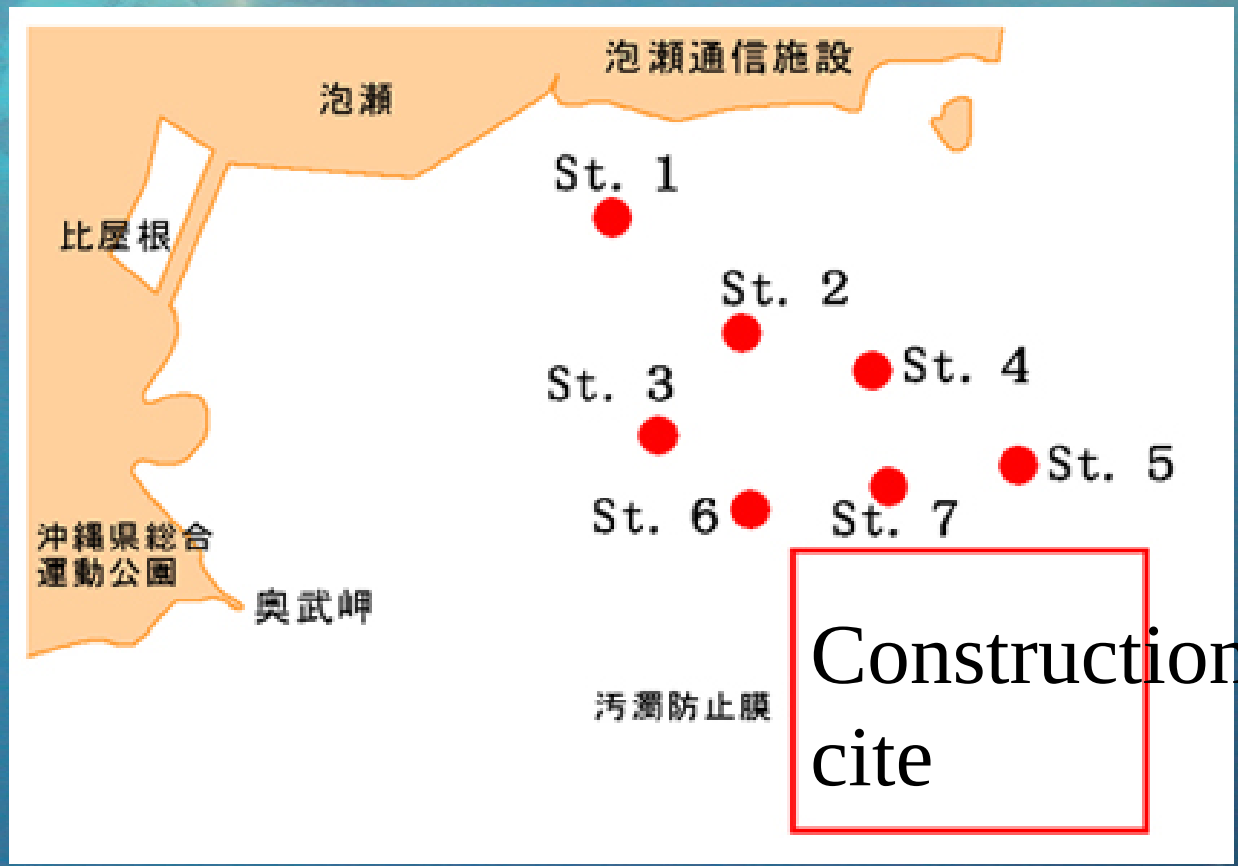
- resolution
- reference site

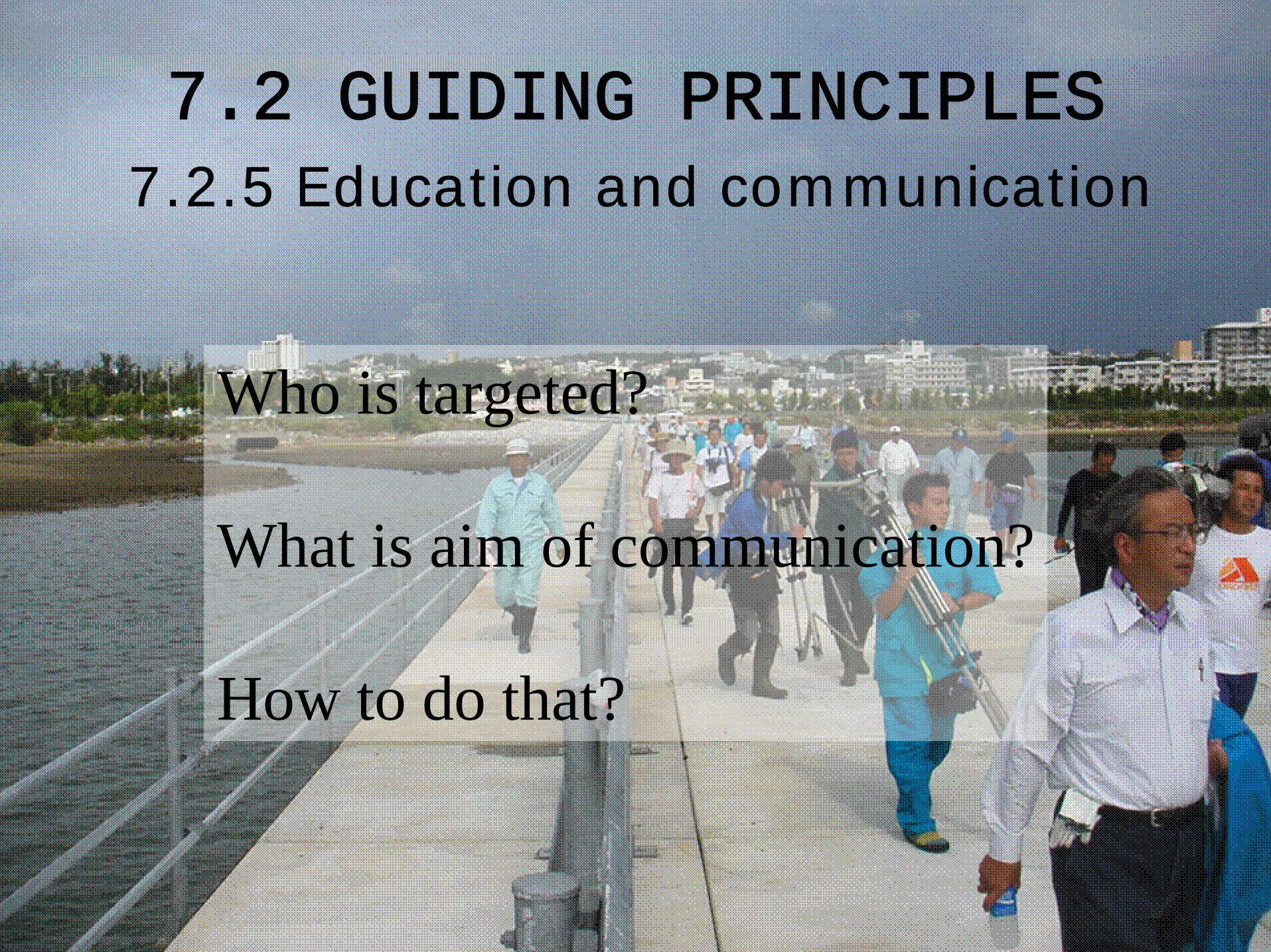


Monitoring procedure

- downstream of the cause
- resolution
- reference site

7.2 GUIDING PRINCIPLES

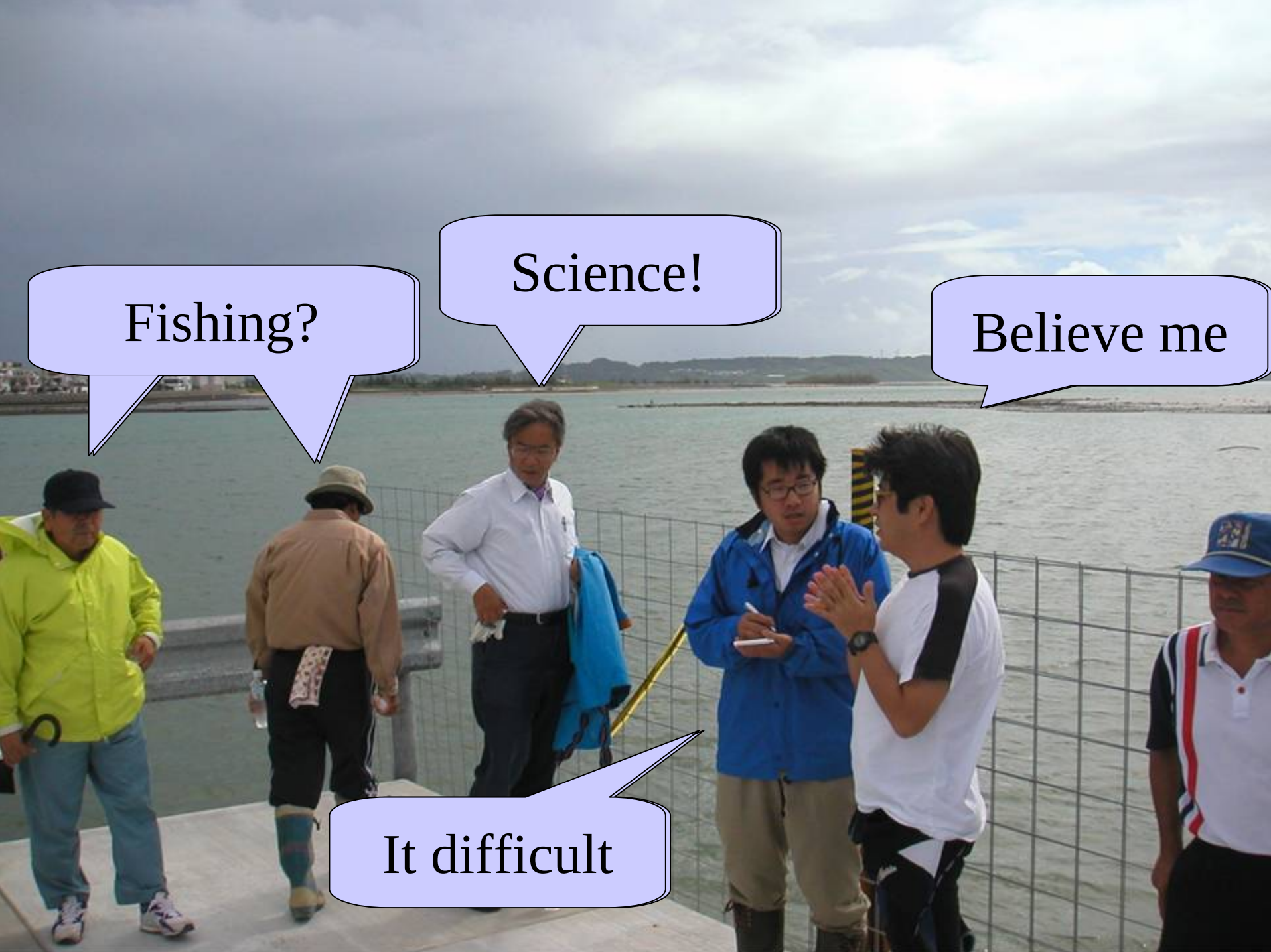
7.2.5 Education and communication



Who is targeted?

What is aim of communication?

How to do that?


Fishing?
Science!
Believe me
It difficult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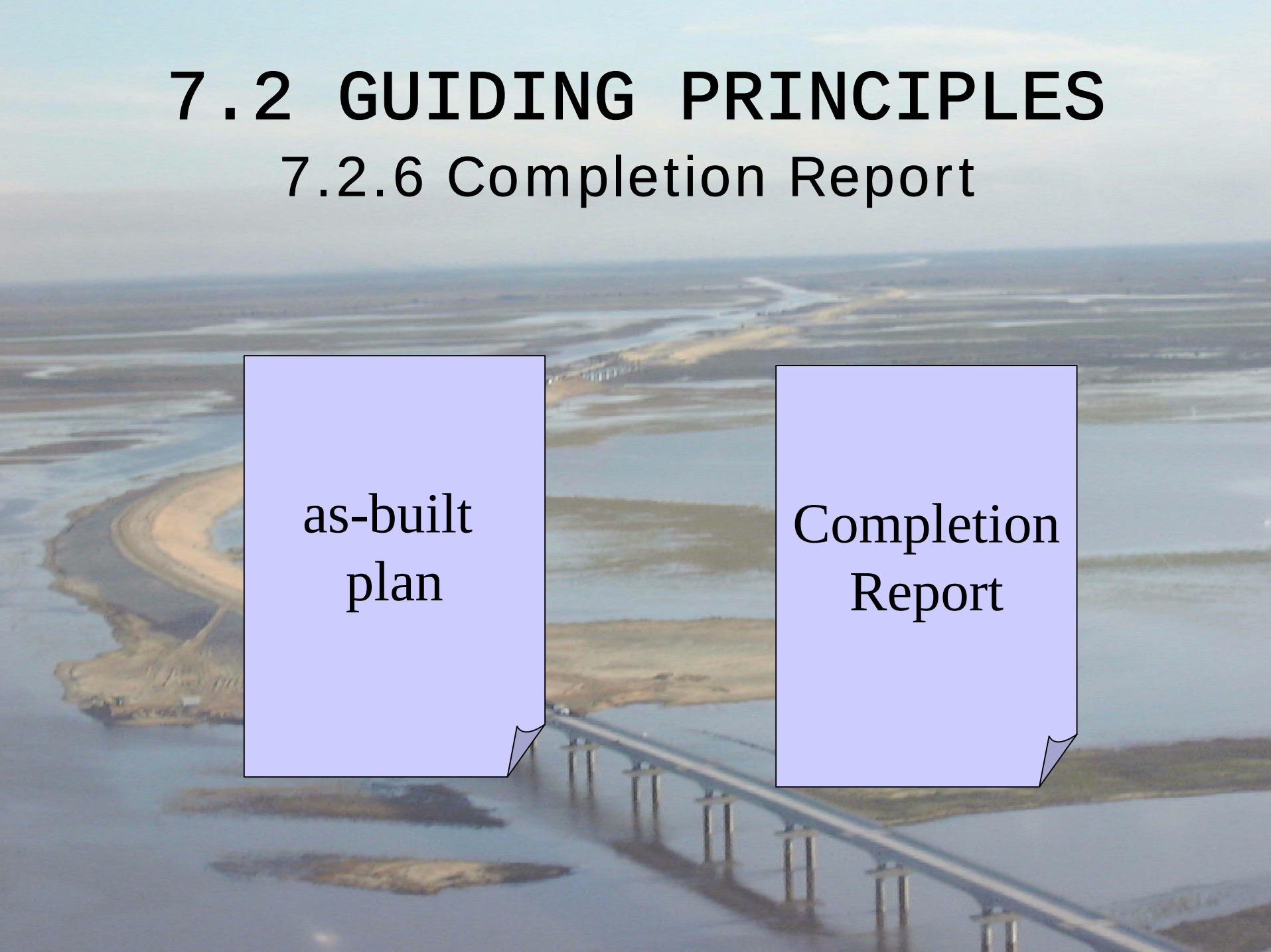
7'11'98

Table 7.1 Education and Communication Targets and Aims		
Target	**Aims of Communication**	**Method of Communication**
Policy maker	Decision making	Meeting, hearing
Designer	Verify that the design function is realized	Meeting, hearing
Contractor	Safety for work Motivation to keep high quality of work	Enquiry, daily training, daily meeting Briefing of the project aims Meeting with other party
Stakeholder	Consent building	Dialogue
General public	Safety of use Education Consent building	Briefing of the project outline Open day Symposium or lecture about project Dialogue
Student	Safety Education	Symposium or lecture about project Working experience School project

Public relations

7.2 GUIDING PRINCIPLES

7.2.6 Completion Report



<as-built plan>

“as-built plans” should be produced for;

- internal control,
- project records, and
- basis for the evaluation of the project.

<as-built plan>

“as-built plans” consist of;

- drawings,
- monitoring data,
- photographs and descriptions of the work and activities carried out,
- the results obtained, and
- the situation that existed.

<Completion Report>

"Completion Report" should include;

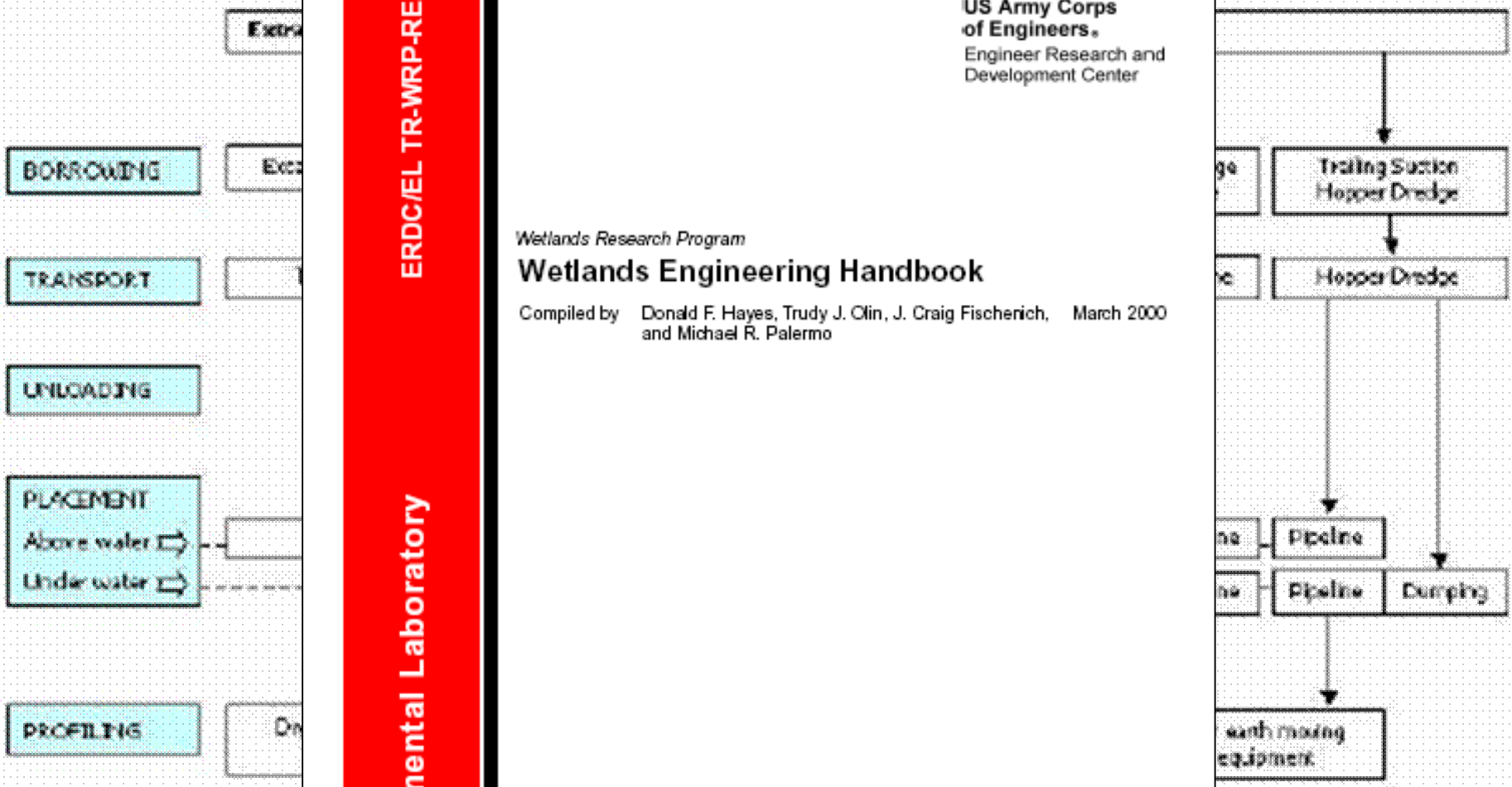
- As-built documents.
- Objectives and goals of the project.
- Records of internal discussions.
- Environment status.
- Environmental Impact Assessment results for the project.
- Site construction procedures (logistics).
- Countermeasures to compensate for the impacts.
- Data monitoring during construction.
- Lessons learned.

7.3 TECHNIQUES AVAILABLE

7.3.1 Reshaping the physical features

Material Handling Consist with;

- Extracting,
- Transporting,
- Stockpiling,
- Spreading,
- Soil stabilization, and
- Excavation.



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Environmental Laboratory

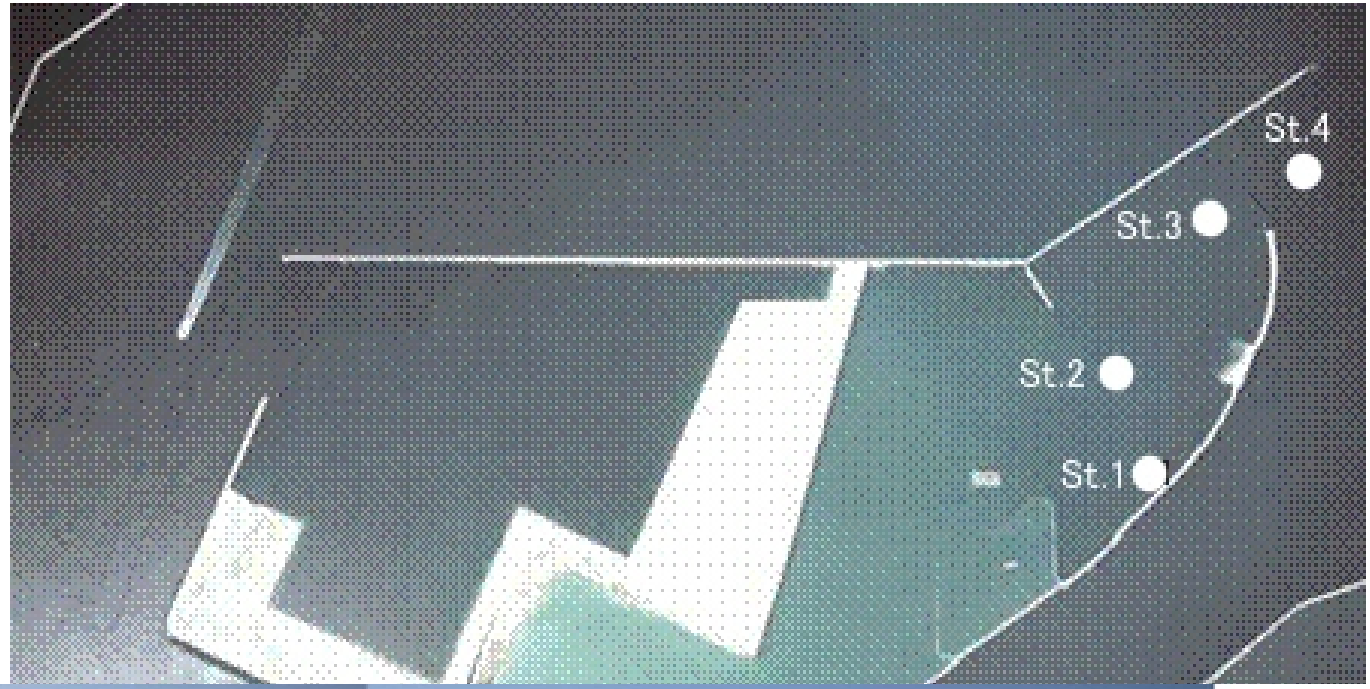
US Army Corps of Engineers.
Engineer Research and Development Center

Wetlands Research Program

Wetlands Engineering Handbook

Compiled by Donald F. Hayes, Trudy J. Olin, J. Craig Fischenich, and Michael R. Palermo

March 2000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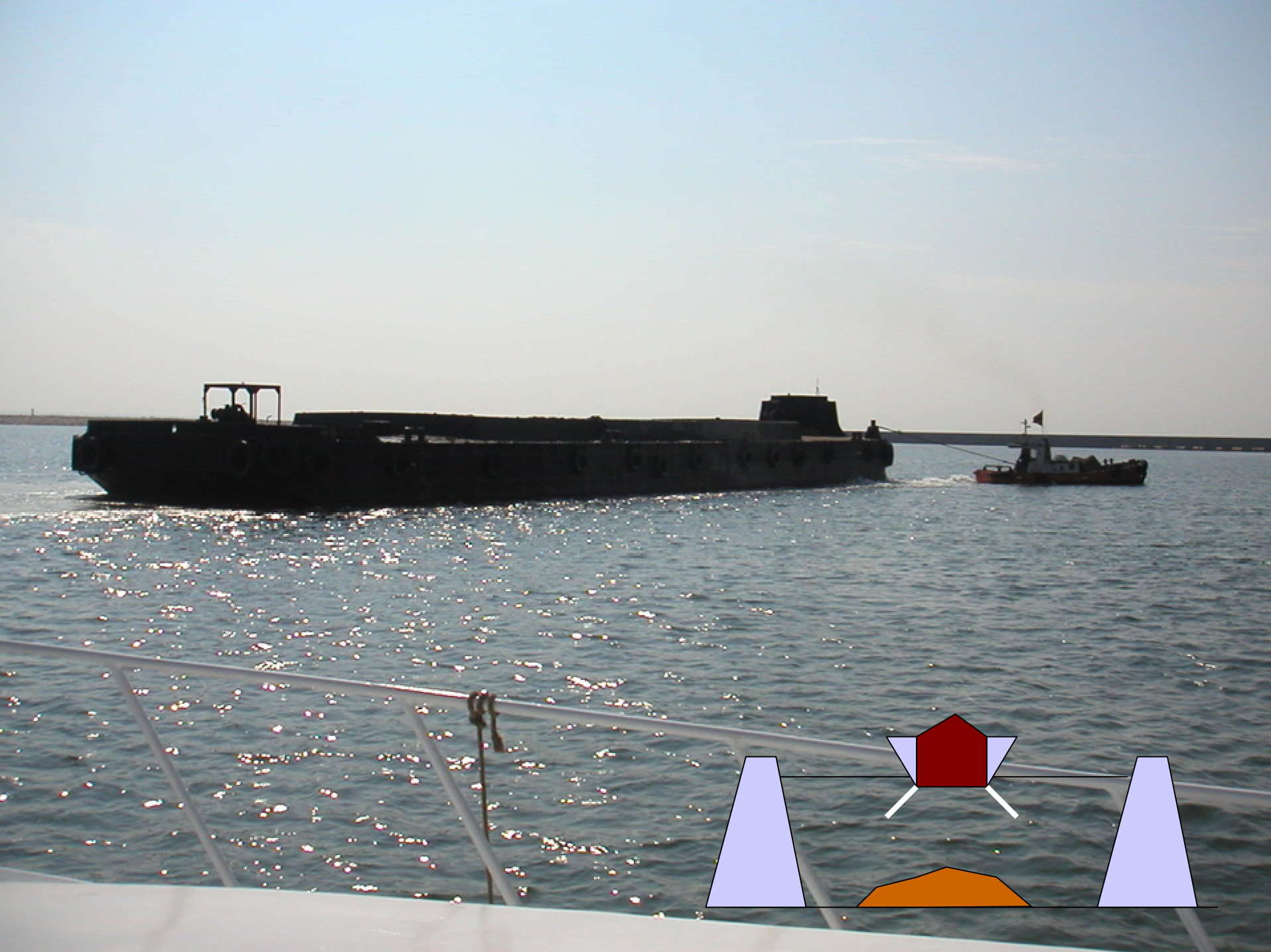

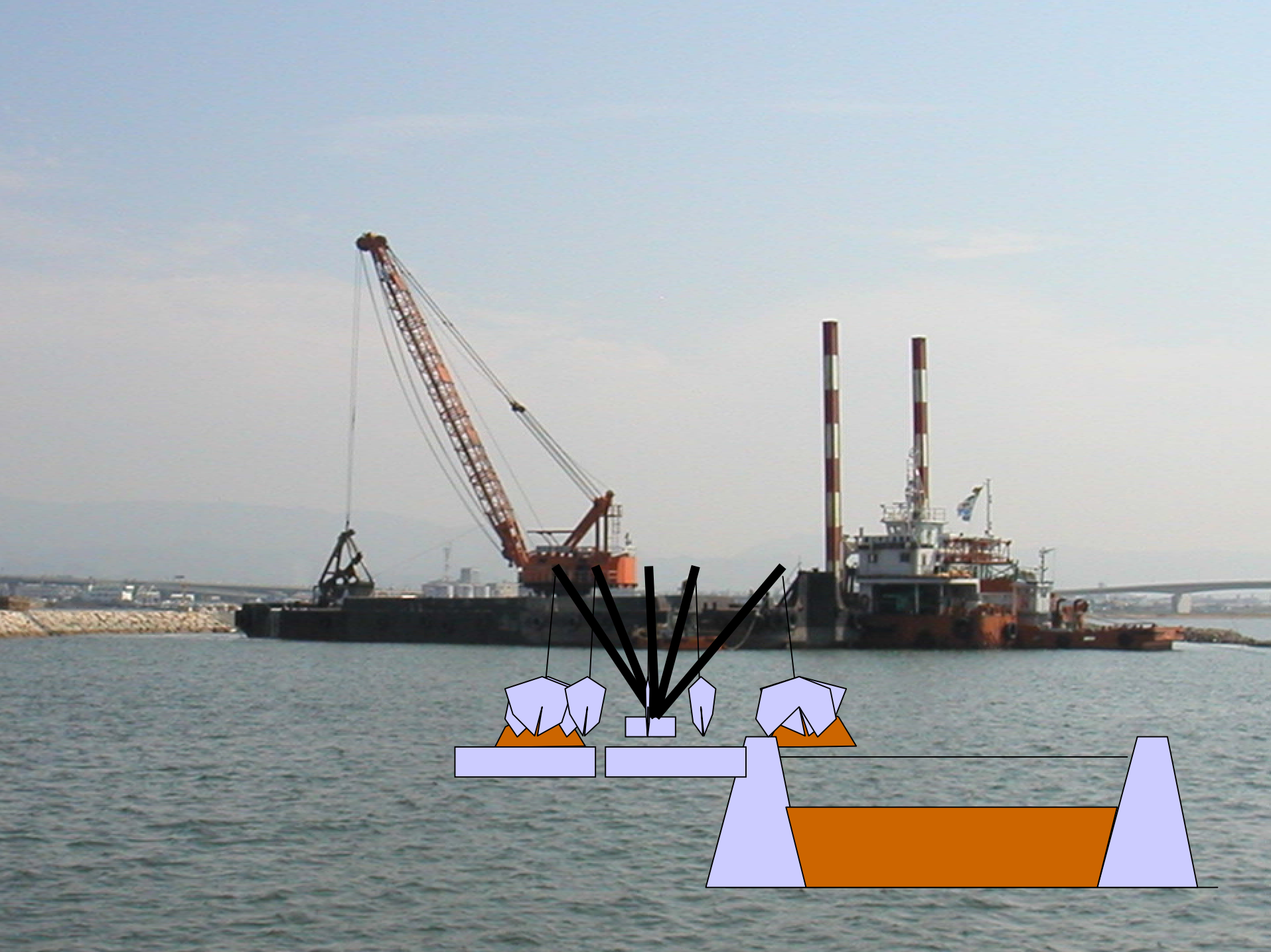


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7.3 TECHNIQUES AVAILABLE

7.3.2 Improving water and soil quality

If you find contaminant in the material

Please do Cleanup first.

Clean material should be used as a first alternative in site construction for a wetland restoration project.

No way to cleanup?
then Settling basin and wastewater treatment facility can be used.

7.3 TECHNIQUES AVAILABLE

7.3.3 Management of vegetation and fauna

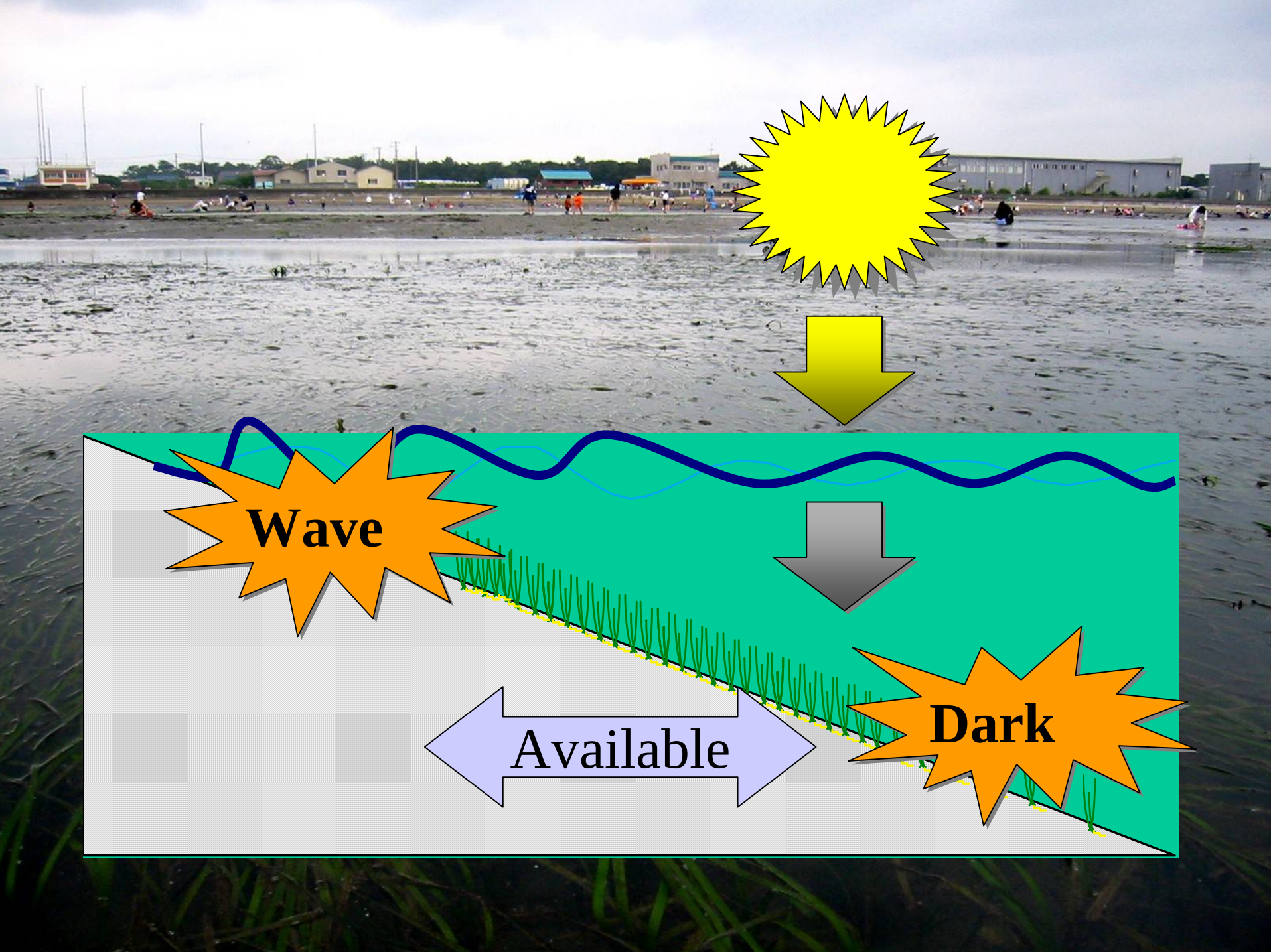
Biological concerns.

Vegetation Planting.

Planting of submerged vegetation.

Creation of Submerged habitats.

Creation of habitat.


Wave
Available
Dark

7.4 SUMMARY

- Site construction is a process that enables wetland functions to be realized.
- Selecting an execution method and the logistics of the site construction is a difficult task.
- One of the most important aspects is ‘total quality control.’
- The outcome of site construction should be summarized in a good completion report.

Section 8
Site management

8.1 INTRODUCTION

8.2 MANAGEMENT OBJECTIVES

8.3 MANAGEMENT PRINCIPLES

8.4 THE PROCESS OF MANAGEMENT PLANNING

Originated by **Tobias Salathe,** RAMSAR

Section 8
Site management (cont.)

8.5 ZONATION AND BUFFER ZONES

8.6 FORMAT OF THE MANAGEMENT PLAN

8.7 PREPARING A MANAGEMENT ACTION PLAN

8.8 SUMMARY

Originated by **Tobias Salathe,** RAMSAR

8.1 INTRODUCTION

How to assure the correct functioning and maintenance of restored wetlands?

How to care for restored sites?
How to intervene to maintain desired situations?
How to monitor indicators of such situations?
How to evaluate the success of interventions?

8.2 MANAGEMENT OBJECTIVES

Objectives must be specific

Objectives should be realistic and timed

Objectives must not be prescriptive

8.3 MANAGEMENT PRINCIPLES

- Wetland ecosystems are dynamic areas, open to influences from natural and human factors.

- Some kind of overall agreement is needed between the various owners, occupiers, and interested parties (stakeholders).

European Experience: Paralia Project

- Early consultation and integration of nature protection reduce risk for delays and increases social support for solutions

- Mitigation needs to be further explore as it can reduce compensation and save costs

European Experience: Public Involvement

Benefit of early involvement

-Identify and resolve issues during initial design; solutions can be incorporated
-Good communication; mutual understanding; common ‘ownership’ of the problems
-Any inquiry deals with acknowledged, clearly defined issues; limited costs

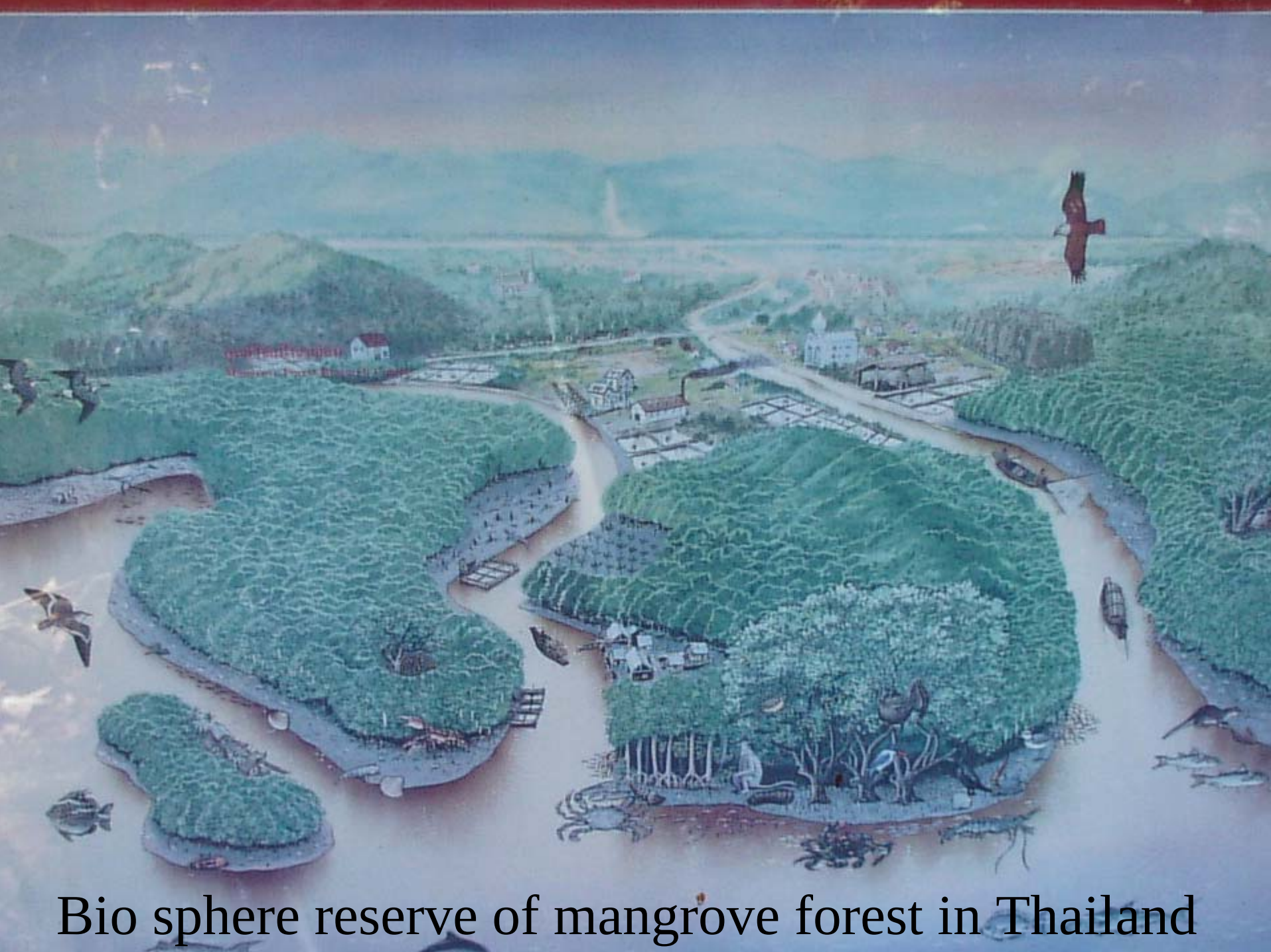
8.4 THE PROCESS OF MANAGEMENT PLANNING

- Management is long-term process.
- Planning should start with minimal management plan
- Any shortfall of relevant information must be recorded
- Correcting information throughout of the project
- The plan will grow, and may eventually meet all site management requirements.

8.5 ZONATION AND BUFFER ZONES

Basic rules for establishing zones:

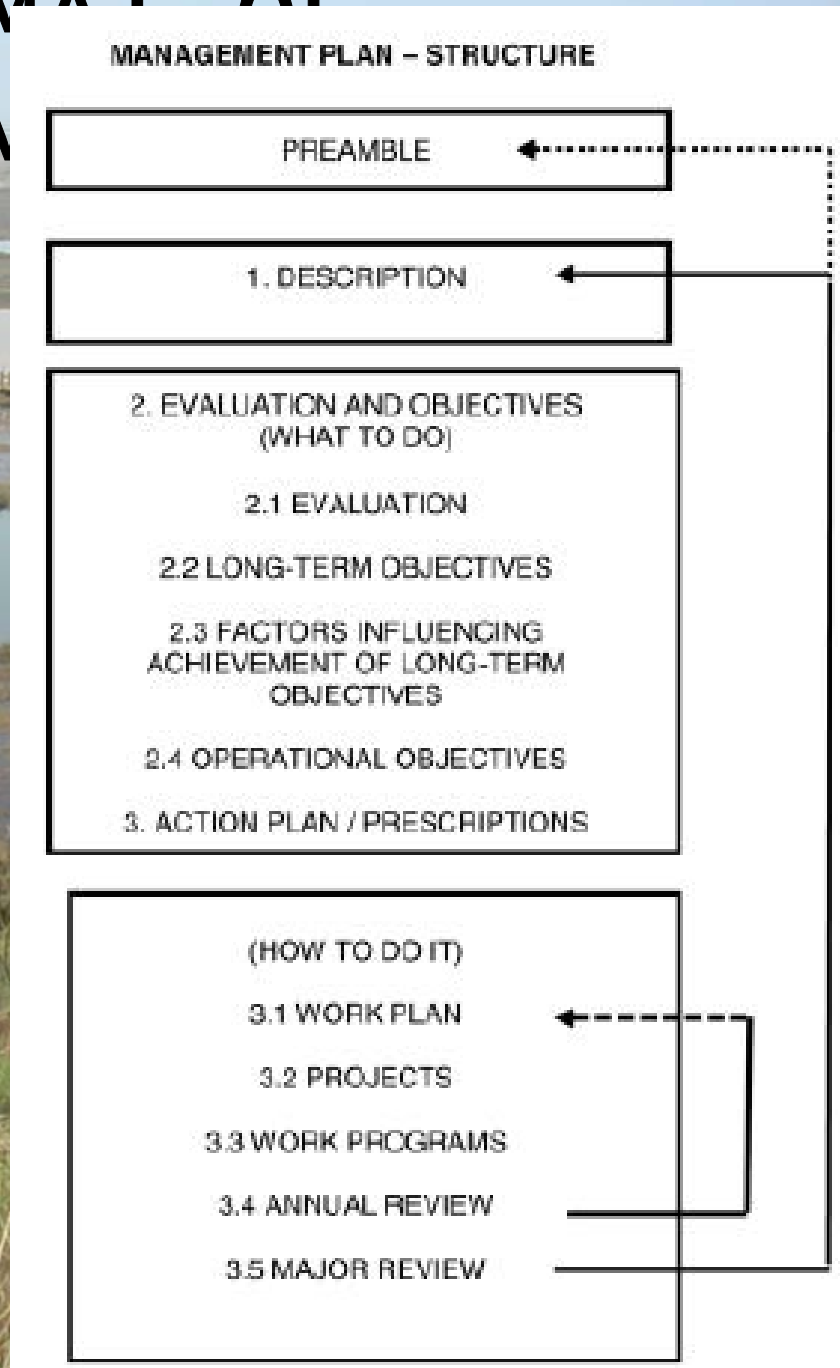
- A full and detailed rationale will be required to explain
- A concise description of the functions and/or restrictions
- A map
- A recognizable boundaries
- Physical features
- Zones should be identified with a unique



Bio sphere reserve of mangrove forest in Thailand

8.6 FORMAT OF THE MANAGEM

- **Preamble**
- **Description**
- **Evaluation**
- **Objectives**
- **Action Plan**



8.7 PREPARING A MANAGEMENT ACTION PLAN

Annual reports and short-term reviews

These reports fulfill the purpose of short-term reviews, to confirm that a restored wetland site is well managed .

Major review or audit

- Assess whether or not a site is being managed to at least the required standard.
- Confirm, as far as possible, that management is effective and efficient.
- Ensure that the status of the site features is being accurately assessed.

8.8 SUMMARY

After the successful physical restoration of a wetland ecosystem, a management plan should be established to assure its correct ecological functioning over a long-term basis.

It is important that all relevant stakeholders actively participate in this process.


Thank you for your attention