

Interagency Engagement Appendix A



Guam Watershed Plan



**US Army Corps
of Engineers** ®
Honolulu District

July 2022



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Attachment 1 – Cooperation Letters

Attachment 2 – Letters of Support



Interagency Engagement Appendix

The team held multiple stakeholder meetings throughout the course of the project. Input was sought during the scoping, problem identification, shared vision creation, risk assessment, and implementation phases. The following pages summarize the attendees, information covered, and the input from the stakeholders. If stakeholder were asked to provide input in the form of an annotated slide, the slides have been included.

To ensure meetings were inclusive and accessible to stakeholders the PDT:

- Made materials available before the meeting (e.g., agenda and slides)
- Hosted online meetings to allow people to attend without needing to travel
- Held multiple meetings; at various times to maximize attendance
- Sent out multiple reminders via email
- Documented and dispersed meeting minutes



Stakeholder Meeting #1 – Interagency Meeting

1. Meeting Details

Date: July 13, 2020 (UTC)

2. Attendees:

U.S. Army Corps of Engineers (USACE)
Guam Bureau of Statistics and Plans (BSP)
Guam Legislature
Guam Department of Agriculture (Dept. of Ag.)
Guam Environmental Protection Agency (EPA)
Guam Homeland Security
Guam Department of Public Works
Guam Division of Aquatic and Wildlife Resources (DAWR)
National Oceanic and Atmospheric Administration (NOAA)

3. Meeting Purpose

The purpose of this meeting was to have stakeholders provide input on the scope of the watershed assessment and to provide agency points of contact.

4. Presentation Overview

USACE presented an overview of the planning process used in watershed assessments. USACE then discussed the current resources in use by the planning team, the Guam Hazard Mitigation Plan, Typhoon Chata'an and Pongsona post storm assessments, and the Forest Health Highlights report. Lastly the draft schedule was shared.

5. Summary of Feedback

- Additional resources and references were provided by the stakeholders. Products included Hydrology of Guam by UoG; Habitat Blueprint by NOAA; Coastal Change Analysis Program by NOAA; Piti-Asan Watershed Management Plan; Guam Stormwater management Manual; and Wildfire Mapping.
- Public Works – Flood and storm risk to bridges and roads. USACE responded these concerns can be addressed through the Flood Plain Management Services.
- Stormwater Plan and FEMA risk maps are under development.
- Future Projects – Interested in near-shore coral projects



Stakeholder Meeting #2 – Interagency Meeting

1. Meeting Details

Date: December 15, 2020 (UTC)

2. Attendees:

U.S. Army Corps of Engineers (USACE)
Guam Bureau of Statistics and Plans (BSP)
Guam Legislature
Guam Department of Agriculture (Dept. of Ag.)
JG Preservation
Guam Homeland Security
Guam Department of Public Works
Guam Division of Aquatic and Wildlife Resources (DAWR)

3. Meeting Purpose

The purpose of this meeting was to provide a status update, deliver the proposed outline and schedule, review identified problems, and present the draft Shared Vision Statement.

4. Presentation Overview

USACE personnel reviewed the purpose of creating a shared vision statement and the draft statement created. The team summarized the priorities found in the Guam Hazard Mitigation Plan and ecological problems found throughout the island. After, USACE presented the initial list of problems and stressors, followed by initial sets of measures for stakeholder concurrence.

5. Summary of Feedback

- Stakeholders concurred regarding shared vision statement and initial stressors and measures.



Stakeholder Meeting #3 – Interagency Meeting

1. Meeting Details

Date: February 25, 2021 (UTC)

2. Attendees:

U.S. Army Corps of Engineers (USACE)
Guam Bureau of Statistics and Plans (BSP)
Guam Department of Agriculture (Dept. of Ag.)
Guam Homeland Security
Guam Soil and Water Conservation (USDA)
University of Guam – WERI
Guam Department of Public Works (GDPW)
National Oceanic and Atmospheric Administration (NOAA)

3. Meeting Purpose

The purpose of this meeting was to review the problems, opportunities, shared vision statements, initial array of strategies, and to discuss usage of LifeSim.

4. Presentation Overview

USACE presented the current list of identified stressors. USACE then presented the stakeholders with a list of questions regarding hydrologic, hydraulic, environmental, and roadmap strategies.

5. Summary of Feedback

- Additional Resources – Hydrology of Guam by UoG; Habitat Blueprint by NOAA; Coastal Change Analysis Program by NOAA.
- Public Works – Flood and storm risk to bridges and roads. USACE responded these concerns can be addressed through the Flood Plain Management Services.
- Stormwater Plan and FEMA risk maps are under development.
- Future Projects – Interested in near-shore coral projects

Recommendations

- a. Coral – There is certainty regarding the solutions, but questions about feasibility and implementation. There is not a lot of local funding, reliance on federal grants. Another issue is that funding can't be requested for an event that hasn't happened yet (e.g., bleaching).
- b. General – Recommendations that are nature based are preferred.



Stakeholder Meeting #4a – Focus: Habitat Loss

1. Meeting Details

Date: July 07, 2021 (UTC)

2. Attendees

U.S. Army Corps of Engineers (USACE)
Guam Bureau of Statistics and Plans (BSP)
University of Guam (UoG)
Guam Environmental Protection Agency (EPA)
National Oceanic and Atmospheric Administration (NOAA)
Guam Department of Agriculture (Dept. of Ag.)

3. Meeting Purpose

The purpose of this meeting was to have stakeholders provide input on the current and future risks associated with the identified problems, and to provide input on the scope and scale (natural, non-structural, structural), data gaps, and potential roadblocks for recommendations.

4. Presentation Overview

USACE presented an overview of the problems that relate to terrestrial and marine habitat loss. The main driver of terrestrial habitat loss was wildfires. The main drivers of marine habitat loss were nutrient loading, sedimentation, and loss of corals. The participants were then asked to place an 'X' on a linear scale of risk ratings (low to high) and to say if the risk was increasing in the future.

Next, the participants were asked to place an 'X' on a linear scale (low to high) for the questions:

“How much do we know about the problem?” and “How much do we know about the solutions?” to guide efforts for recommendation.

5. Summary of Feedback

Risks

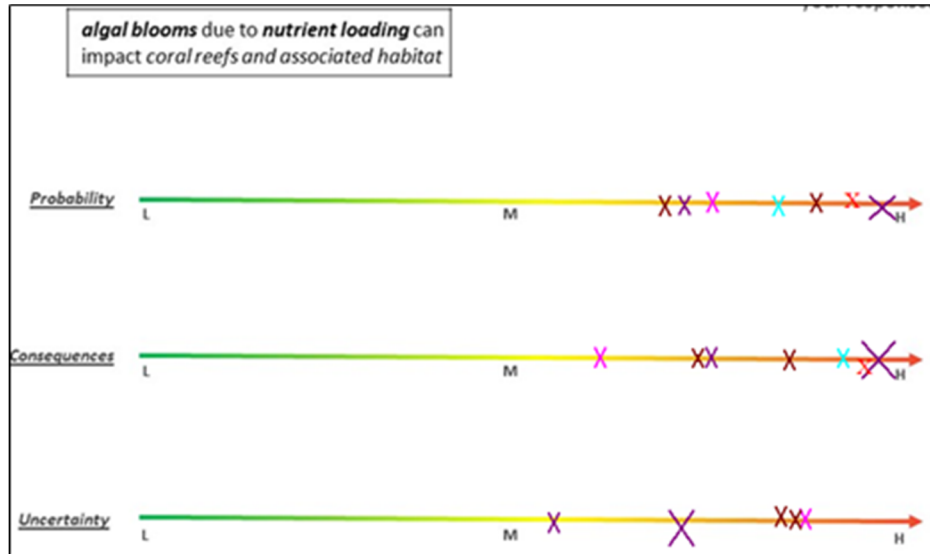
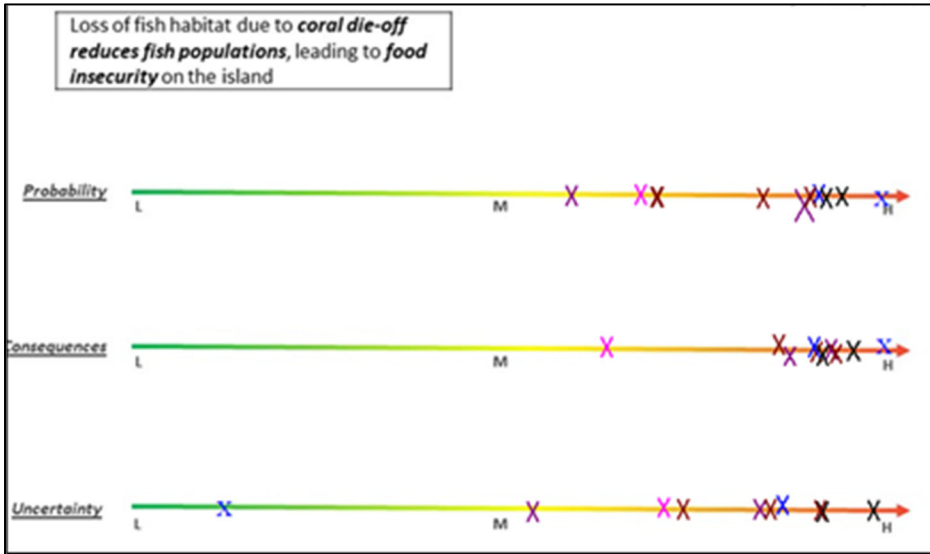
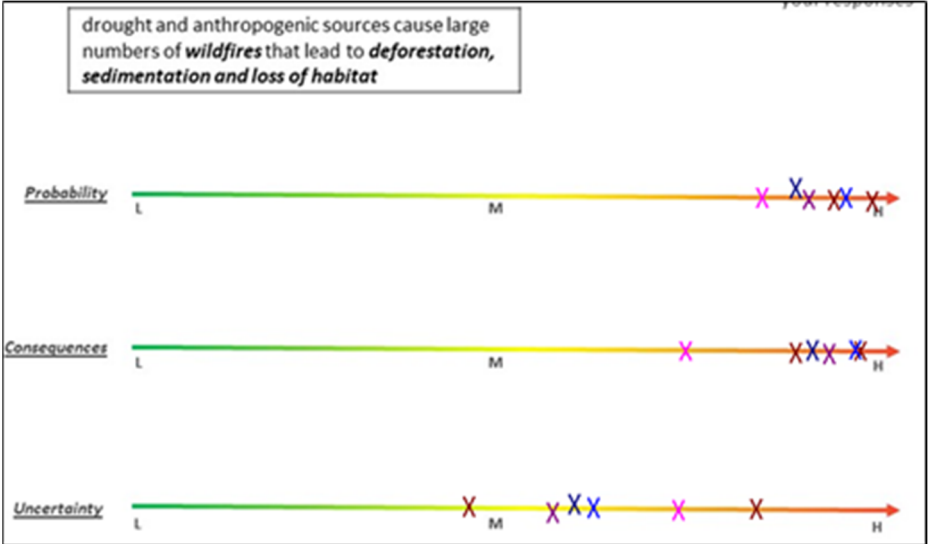
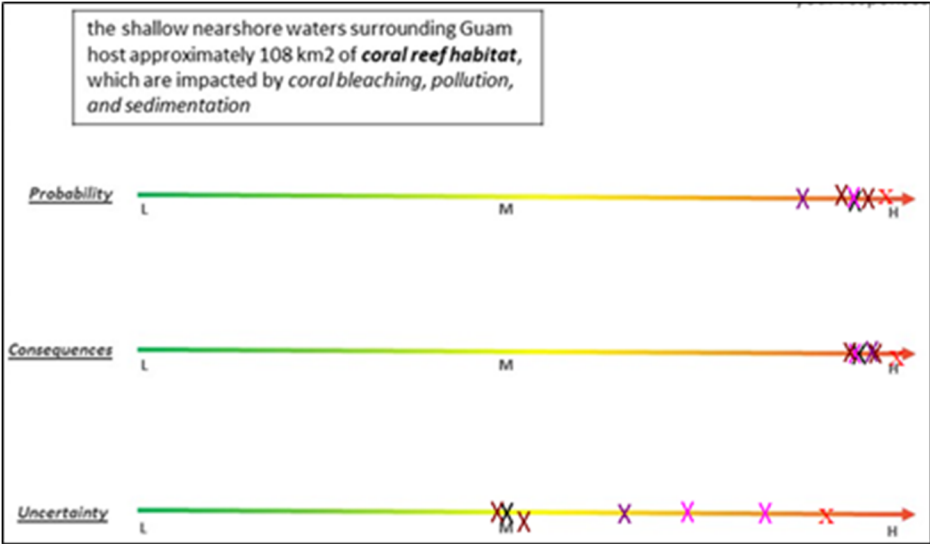
- a. Corals – Consequences of coral loss include loss of habitat for marine animals and a loss of tourism. There is a high certainty about the effect of the loss of coral, but uncertainty on the timelines.
- b. Algal Blooms – Both chronic and acute algal blooms are of concern.

Recommendations

- a. Coral – There is certainty regarding the solutions, but questions about feasibility and implementation. There is not a lot of local funding and a reliance on federal grants. Another issue is that funding can't be requested for an event that hasn't happened yet (e.g., bleaching).
- b. General – Recommendations that are nature based are preferred.



6. Slides of Stakeholder Feedback



Stakeholder Meeting #4b – Focus: Coastal Hazards

1. Meeting Details

Date: July 12, 2021 (UTC)

2. Attendees

U.S. Army Corps of Engineers (USACE)
Guam Bureau of Statistics and Planning (BSP)
Guam National Weather Service (NWS Guam)
Guam Homeland Security
Guam Department of Education

3. Meeting Purpose

The purpose of this meeting was to have stakeholders provide input on the current and future risks associated with the identified problems, and to provide input on the scope and scale (natural, non-structural, structural), data gaps, and potential roadblocks for recommendations.

4. Presentation Overview

USACE presented an overview of the problems that relate to coastal hazards. The participants were then asked to place an 'X' on a linear scale of risk ratings (low to high) and to say if the risk was increasing in the future.

Next, the participants were asked to place an 'X' on a linear scale (low to high) for the questions:

“How much do we know about the problem?” and “How much do we know about the solutions?” to guide efforts for recommendation.

5. Summary of Feedback

Risks

- a. Tsunami Warning – A tsunami originating from the Marianas trench will only have a 10–15-minute warning lead time.
- b. General Coastal – All problem categories will impact commerce and jobs. The detrimental result from a loss of natural coastal storm reduction features (e.g., corals, mangroves) cannot be known until an adverse event occurs and the consequences are realized.

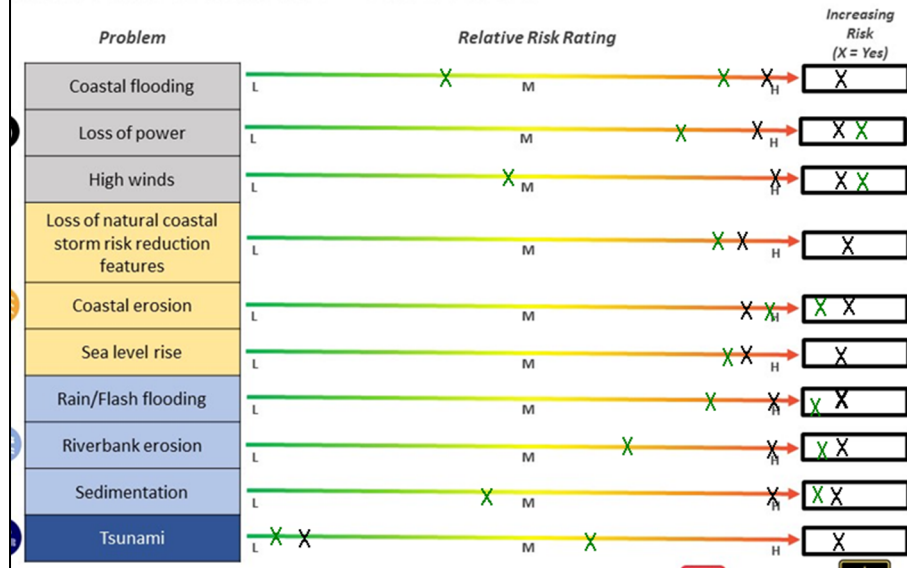
Recommendations

- a. Funding is an issue when policy barriers are identified: anything by a river or ocean needs approval from USACE and the local government.
- b. There is a lack of physical property available at the coast for mitigation.
- c. Reforestation is completed annually by the Agriculture Forestry division.
- d. Future development can be flood proofed and relocation of current infrastructure is needed.

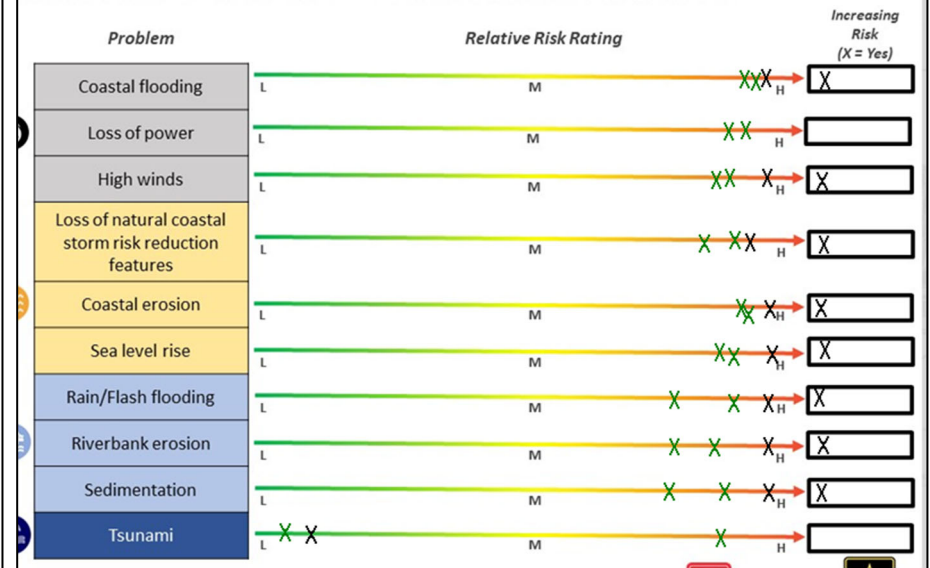


6. Stakeholder Input Slides

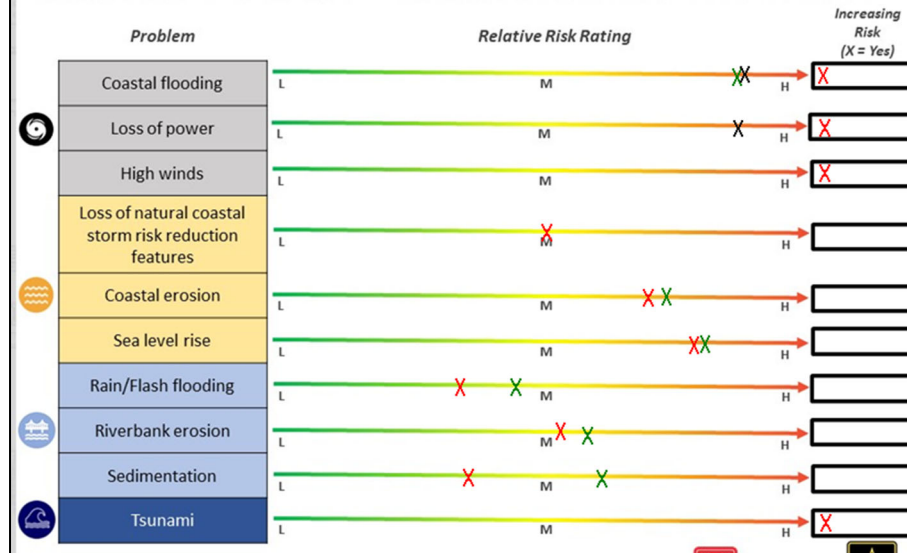
RISK ASSESSMENT – LIFE LOSS



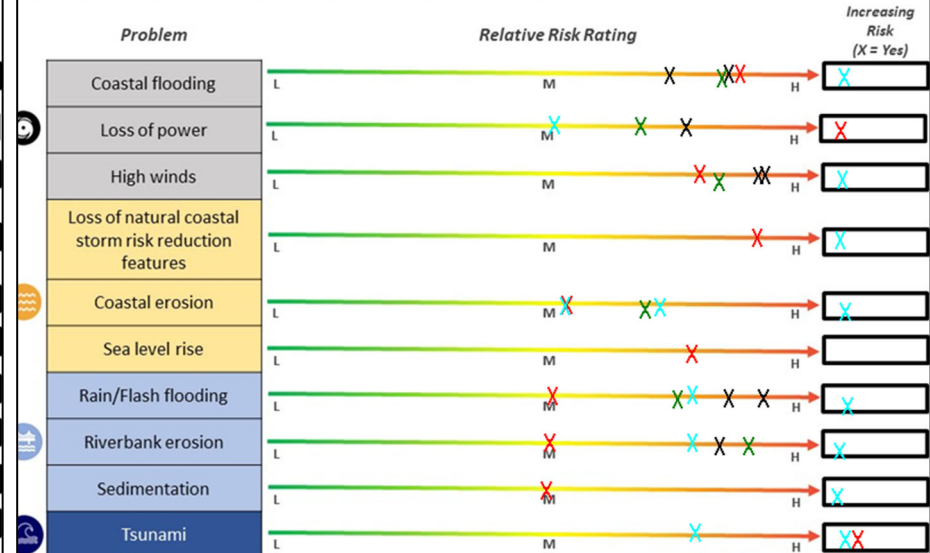
RISK ASSESSMENT – ECONOMIC DAMAGE

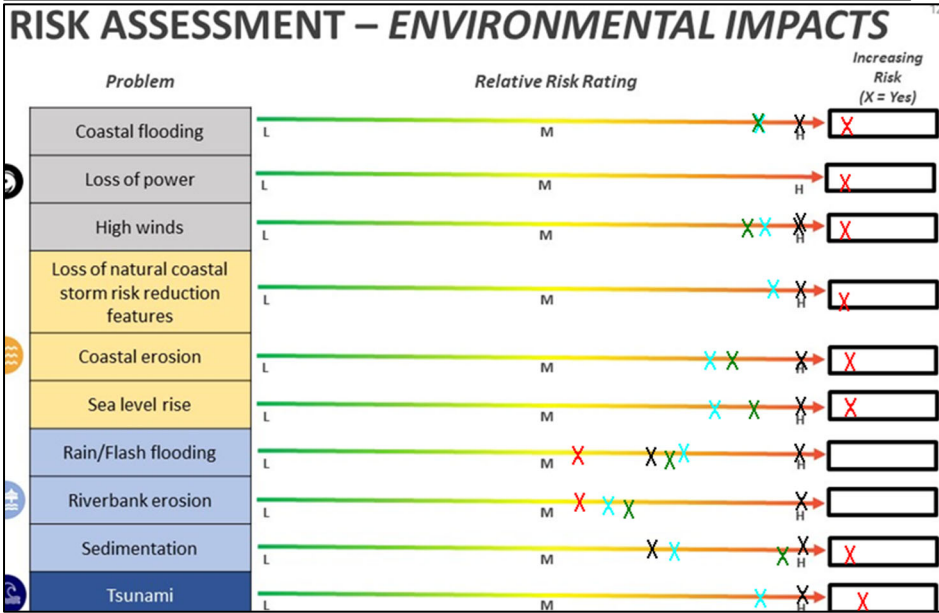
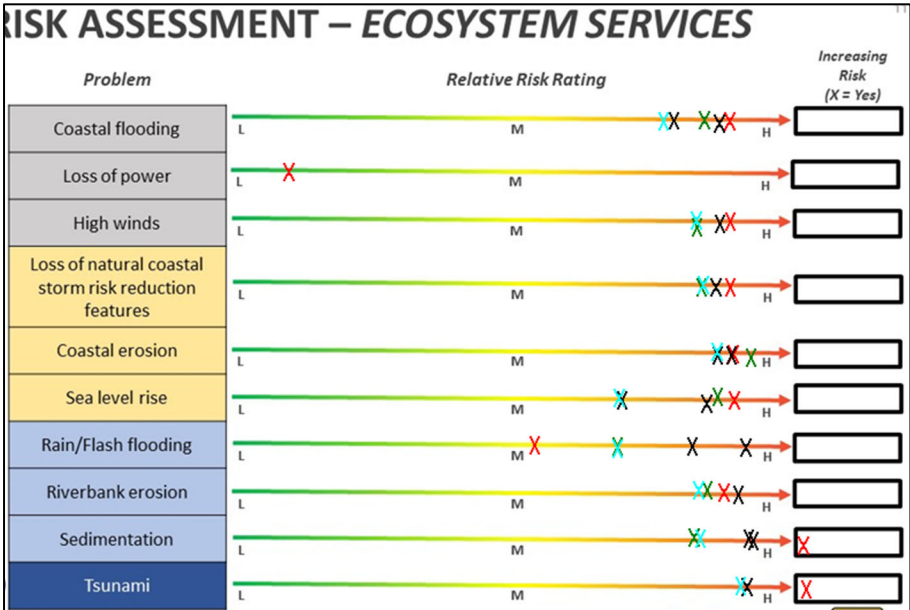


RISK ASSESSMENT – CRITICAL INFRASTRUCTURE



RISK ASSESSMENT – IMPACTS TO LIVELIHOOD





Stakeholder Meeting 4c – Focus: Water Supply and Water Quality

1. Meeting Details

Date: July 21, 2021 (UTC)

2. Attendees

U.S. Army Corps of Engineers (USACE)
Guam Bureau of Statistics and Planning (BSP)

3. Meeting Purpose

The purpose of this meeting was to have stakeholders provide input on the current and future risks associated with the identified problems, and to provide input on the scope and scale (natural, non-structural, structural), data gaps, and potential roadblocks for recommendations.

4. Presentation Overview

USACE presented an overview of the problems that relate to water supply and water quality. The participants were then asked to place an 'X' on a linear scale of risk ratings (low to high) and another 'X' on a linear scale asking if the consequences of the problem were temporary or permanent.

Next, the participants were asked to place an 'X' on a linear scale asking if there are known solutions to the problem (e.g., conceptual solutions exist, solutions are already being implemented).

5. Summary of Feedback

Risks

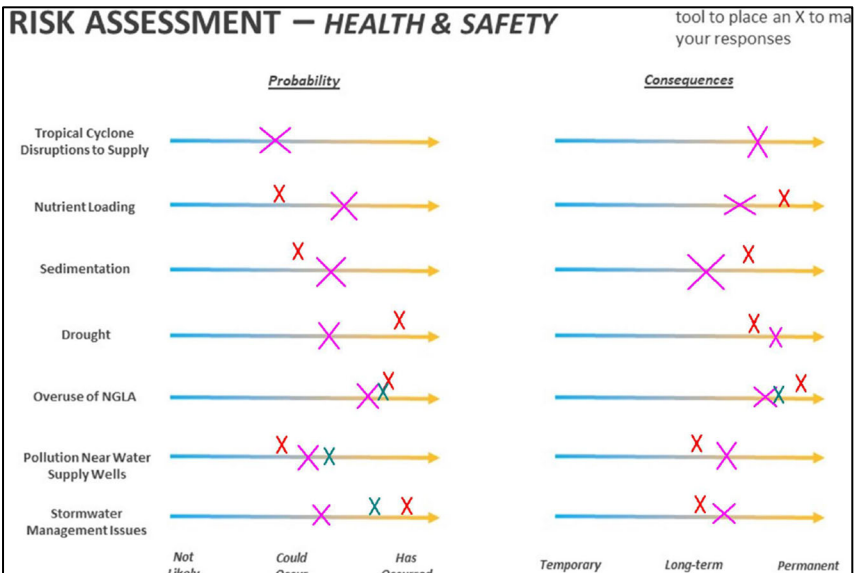
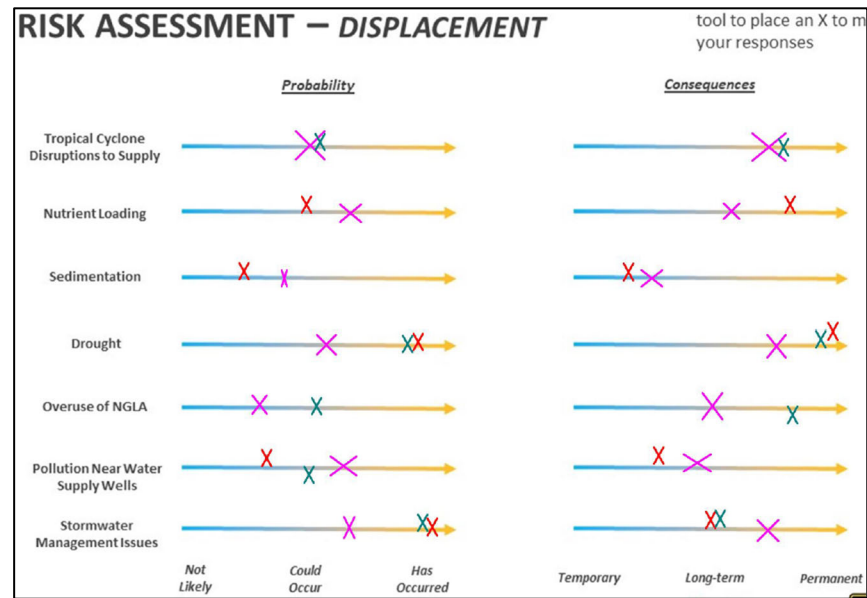
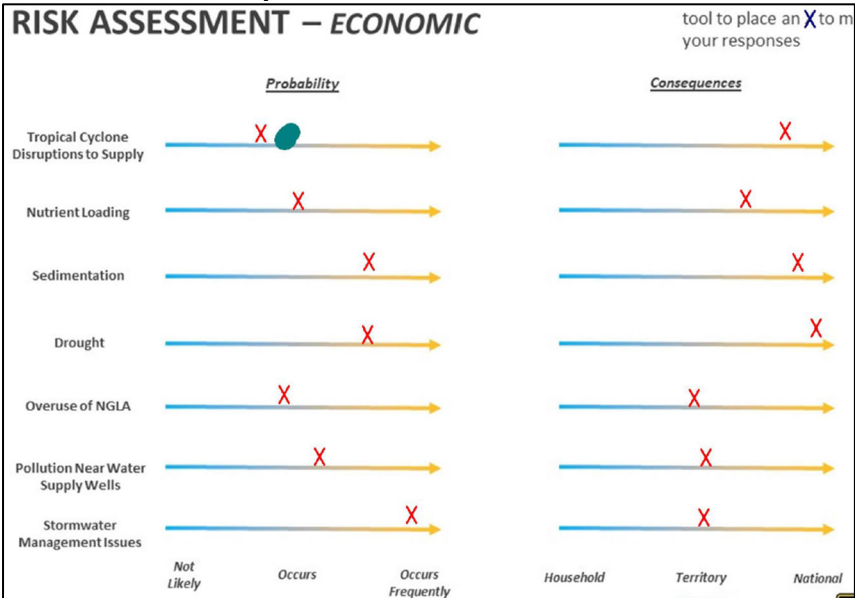
- a. Drought and overuse of the NGLA only have conceptual solutions.
- b. Many of the stressors have long term to permanent consequences.

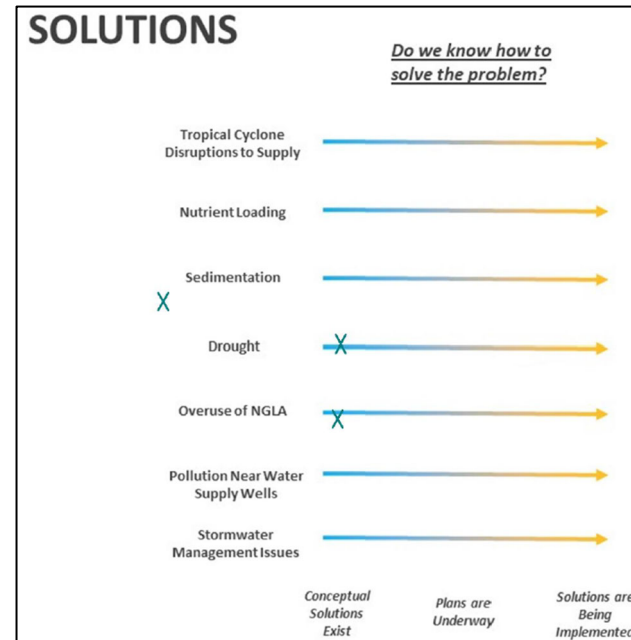
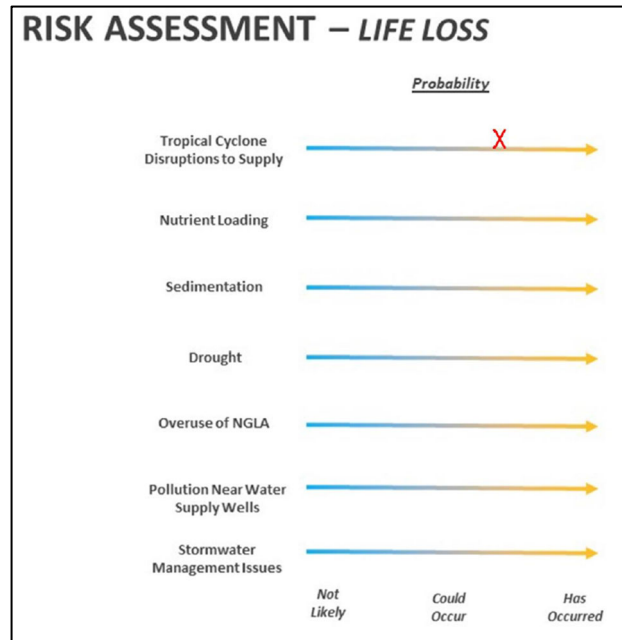
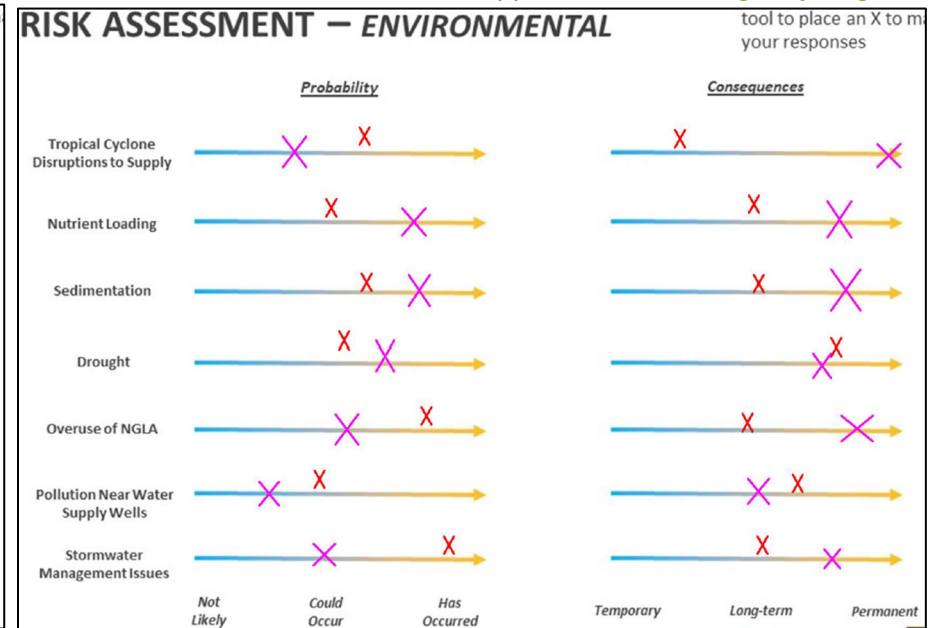
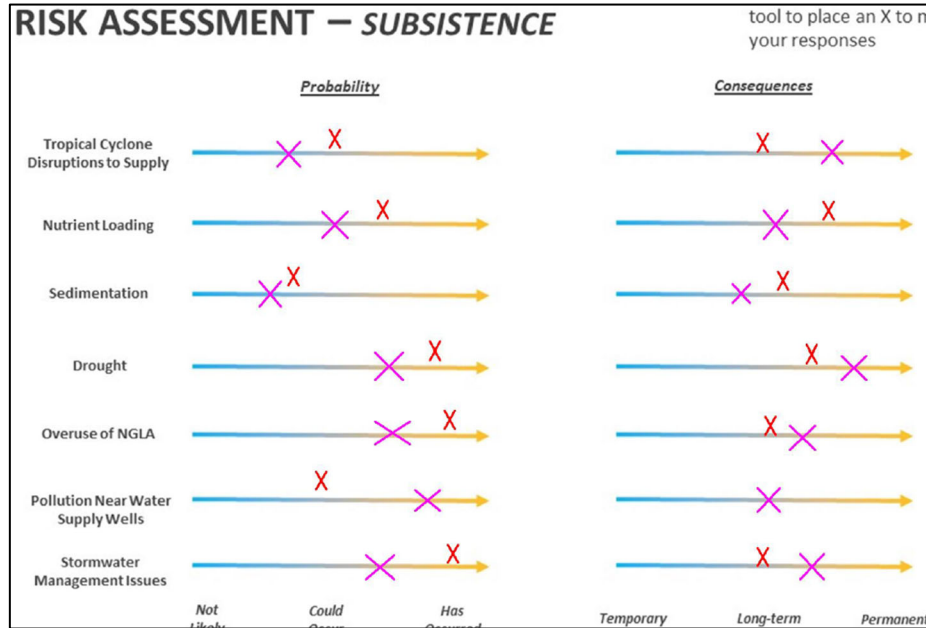
Recommendations

- a. Nature Based solutions are preferred.
- b. Rooftop rain catchment could aid in drought and overuse of the NGLA.



6. Stakeholder Input Slides





Stakeholder Meeting #5 Interagency Meeting

1. Meeting Details

Date: September 25, 2021 (UTC)

2. Attendees:

U.S. Army Corps of Engineers (USACE)
Guam Bureau of Statistics and Plans (BSP)
Guam Waterworks Authority (GWA)
University of Guam (UoG)
University of Guam, WERI
Department of Agriculture (DAWR)
Guam Homeland Security (GHS)

3. Meeting Purpose

The purpose of this meeting was to have stakeholders provide input on risk and uncertainty-based, near-term prioritization. Risk assessments examined life loss, economic, social, and environmental effects.

4. Presentation Overview

USACE presented the proposed the risk summary which classified stressors into 'catastrophic' and 'major'. Stressors were also classified based on uncertainty. The placed stressors into the bins of 'actionable – solutions have been identified with high level consensus', 'evaluate options – potential solutions could be defined with existing information', and 'fill data gaps – additional data would be required to identify potential solutions.

5. Summary of Feedback

Coral

- How to reduce degradation is known, though how to measure reduction of erosion on corals is difficult to measure. Thermal stress is also too much for corals.
- High priority areas for reefs are designated, as are priority watersheds.

Water Supply

- We have a lot of information and monitor the NGLA. We need more information on actions regarding sedimentation and surface waters. We cannot control what happens on private land which effects surface water and nutrient loading.

Structural Recommendations

- Could dynamic revetment be added? This could be a pilot project, though there is no source material offshore for it.

Nature Based Recommendations

- For erosion maybe some buffers. Erosion is linked to upland land use and seasonal fires.

Misc.

- Stressors 20, 22, 23 should move to actionable.
- Stressor 25 should move to evaluate options or fill data gaps.

