



SHIP AHOY MARINA

Marine Assessment

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Introduction

Ship Ahoy Marina is a private property located on the North end of New Providence, Bahamas at latitude 25.0808418° and -77.3655771° longitude. Project activities include construction of a 46-slip floating dock marina (see Figure 1). The area will require dredging to allow for larger boats to dock within the marina. The area to be dredged is approximately one hundred and ninety-eight thousand, one hundred and twenty-four square feet (198,124sq. ft) and approximately forty thousand, three hundred and seventy-three cubic yard (40,373 CY) of material will be removed. See Appendix A for the outline of the conceptual plan.

An assessment was conducted to examine the benthic environment of this area and identify potential impacts of proposed works. The assessment was completed on the 7th of June 2022. Also included are the environmental management actions associated with the project works.



Figure 1: Showing area for proposed works.

Methodology

Line transects perpendicular to the property were performed in the proposed work area (See figure 2). Smaller transects perpendicular to the property were done in the channel area (depicted by the horizontal line). These smaller transects will be combined into one transect due to the small area and the similar benthic profile. The substrate type, fauna, and flora species were identified and recorded during this assessment. General observations were also made for the surveyed area. A record was taken of all flora, fauna and substrate types encountered during the survey. Species abundance was recorded as Single (1), Few (2-9) and Many (10+).

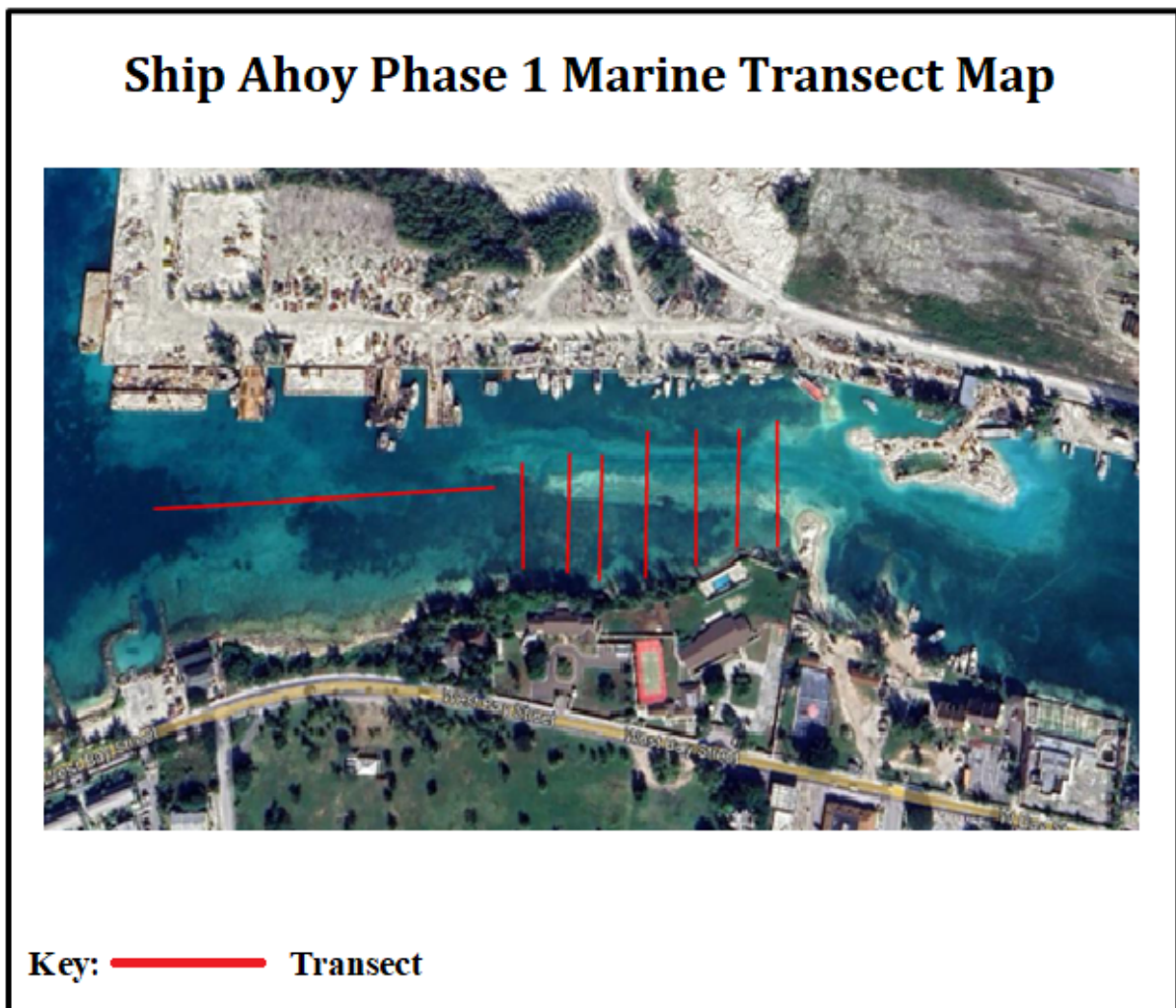


Figure 2: Marine Transect Map of Project Area

Results

General Observation

The weather conditions during this assessment were mostly cloudy with little wind. High tide was observed, as the assessment began at 4:00 pm. Water depth was measured to be zero to eight feet (0ft- 8ft). Water temperature was 80.2°F. Based on a range of one to ten (1-10) with one (1) being zero visibility and ten (10) being transparent, visibility was three (3).

Benthic Description

The benthic composition transitions between Manatee grass and Turtle grass, manatee grass, algae (Halimeda Sp. and Rhodophyta Sp.), and sand. Figure 3 & 4 illustrates the transition of the benthic substrate of the property. The predominant epifauna observed was Upside Down Jellyfish (*Cassiopea xamachana*).

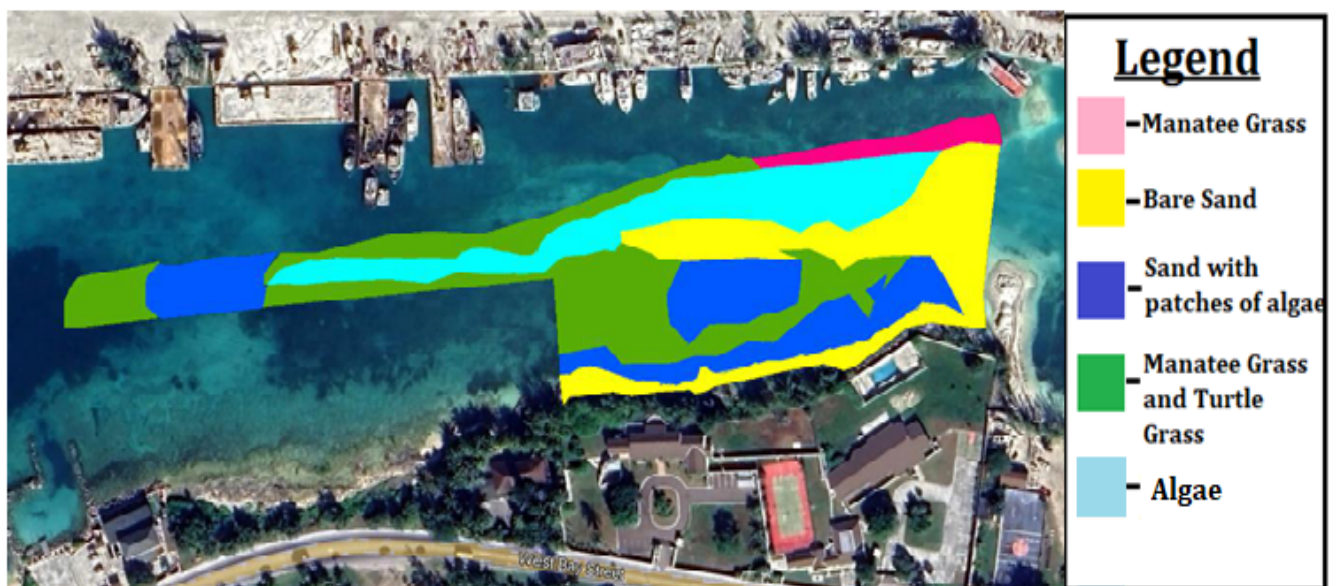


Figure 3: Habitat Map

Species List

The number of species varied per transect, please reference the following key to determine how many species were found in each transect. Transects started on the right of the property. Transects 1-7 were done in areas of the proposed docks and transect 8 was done in the center of the channel where dredging works were proposed.

Turtle Grass (*Thalassia testudinum*) and Manatee Grass

Benthic Profile
(Figure 4)

Manatee Grass



Sand with Patch of
Algae

Bare Sand

Fauna Species

Table 1-2 Key: x = Single, xx = Few (2-10), xxx = Many (10+)

Fish Species

Fish species were seen near the existing dock and close to the shoreline.

Table 1: Nine (9) fish Species observed during assessment

Common Name	Scientific Name	Transects							
		T1	T2	T3	T4	T5	T6	T7	T8
Slippery Dick	<i>Halichoeres bivittatus</i>						xx		
Parrotfish	Family: Scaridae						xx	xx	
French Grunt	<i>Haemulon flavolineatum</i>						xx	xx	
Schoolmaster Snapper	<i>Lutjanus apodus</i>				xx		xx	xx	
Beaugregory	<i>Stegastes leucostictus</i>		x	xx		x	xx	xx	
Dusky Damselfish	<i>Stegastes adustus</i>			x					
Silver sides	Atherinidae, Clupeidae, Engraulididae Family*				xx		xx		
Great Barracuda	<i>Sphyraena barracuda</i>					x			
Sergeant Major	<i>Abudefduf saxatilis</i>							xx	

*The common name Silverside refers to a group of fish from several different families that are usually found together. It is difficult to distinguish any one particular species when in a large group.

Coral Species

No Coral Species were observed during the assessment

Non- coral Invertebrate Species

Majority of the non-Coral invertebrate species were observed on the seafloor below the existing docks and near the shoreline.

Table 2: Six (6) non-coral Invertebrates observed during the assessment

Common Name	Scientific Name	Transects							
		T1	T2	T3	T4	T5	T6	T7	T8
Upside Down Jellyfish	<i>Cassiopea xamachana</i>	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx
Red Cushion Sea Star	<i>Oreaster reticulatus</i>						xx		
Donkey Dung Sea cucumber	<i>Holothuria mexicana</i>	x							
Giant Hermit Crab	<i>Petrochirus diogenes</i>				x			xx	
Giant Anemone	<i>Condylactis gigantea</i>			x				x	
Amber Penshell	<i>Pinna carnea</i>			x					

Flora Species

Table 3 Key: x = Single, xx = Few (2-10), xxx = Many (10+)

Majority of the Flora species were in the second bay, closer to the shoreline and in the channel.

Table 3: Twelve (12) flora Species observed during assessment

Common Name	Scientific Name	Transects							
		T1	T2	T3	T4	T5	T6	T7	T8
Green Algae	<i>Halimeda spp.</i>			xxx			xxx		xxx
Green Algae	<i>Cupulera sp.</i>			xx	xx				
Pinecone alga	<i>Rhipocephalus phoenix</i>			xx		xx	xx		
Dictyota	<i>Dictyota sp</i>								xx
Flat top bristle brush	<i>Penicillus Pyriformis</i>			xx			xx		xx
Mermaid wine glass	<i>Acetabularia crenulata</i>			xxx	xxx	xxx	xxx		xx
Manatee grass	<i>Syringodium filiforme</i>	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Turtle Grass	<i>Thalassia testudinum</i>		xx	xx	xx	xxx	xxx	xxx	xxx
Fuzzy tip algae	<i>Neomeris annulata</i>	xxx	xx	xxx	xxx	xxx	xxx	xxx	
Spiny seaweed	<i>Acanthophora spicifera</i>						xxx		
Mermaid Fan	<i>Udotea sp</i>		xx	xx	xx		xx		xx

Turf Algae							xx		
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Photo 1: Red Cushion Sea Star (*Oreaster reticulatus*)



Photo 2: Giant Sea Anemone (*Condylactis gigantea*)



Photo 3: Upside Down Jellyfish (*Cassiopea xamachana*)



Photo 4: Donkey Dung Sea Cucumber (*Holothuria mexicana*)



Photo 5: Amber Penshell (*Pinna carnea*)

Discussion

The project area consists of a rocky shoreline on the Northern end of New Providence, Bahamas. Overall, there was little activity throughout the assessment site. Fish diversity was moderate while abundance was low. Greatest abundance and diversity of fish were observed along the rocky shoreline.

There were no corals observed during the assessment. This could be due to the lack of hard substrate in the area. The area was previously dredged as seen from silt on the seafloor, the increased depth at the center of the channel and the heap of bare sand near the shore.

Non-coral Invertebrate diversity was moderate while the abundance was low across the entire site. Along the shoreline of Transect 7 a pile of Queen Conch shells (See photo 6) was observed suggesting this area may have previously been a dumping ground for Queen Conch shells. Algae diversity was moderate, but the abundance was high across the entire assessment site.

Overall, these findings were expected for the assessed ecosystem. The impact this project will incur is considered to be low risk to the surrounding environment. It is suggested that all environmental best practices be implemented throughout the project.



Photo 6: Pile of Conch shells

Appendix A: Project Conceptual Plan

