



# SOUTH BAY GLAMPING

## Construction Environmental Management Plan

Prepared by: JSS Consulting Limited

Prepared for: South Bay Glamping

Date: November 3<sup>rd</sup>, 2022

## Table of Contents

<b>EXECUTIVE SUMMARY</b>	4
<b>1.0 INTRODUCTION</b>	4
1.1 Scope and Purpose of Document	4
1.2 Objective and Target	4
<b>2.0 PROJECT DESCRIPTION</b>	5
2.1 Project Location	5
2.1.1 National Park	6
2.2 Habitat Description	6
2.2.1 Coastal	7
2.2.2 Interior Upland	8
2.2.3 Invasive Species	9
2.2.4 Protected Species	10
2.2.5 Vascular Plant Diversity	12
2.2.6 Vegetation Map	17
2.2.7 Avian Survey	17
<b>3.0 LAWS REGULATIONS AND REQUIREMENTS</b>	22
3.1. National Environmental codes and Regulations Applicable to The Bahamas	22
3.2 Occupational Safety and Health Administration (OSHA)	25
3.3 ISO 1400	26
<b>4.0 ENVIRONMENTAL MANAGEMENT FRAMEWORK</b>	26
4.1 Scope of Responsibilities	26
4.1.1 Role and responsibilities	26
<b>5.0 SUMMARY OF ENVIRONMENTAL MANAGEMENT PROGRAM</b>	26
5.1 Environmental Management Plan	26
5.1.1 Site Management	26
5.1.2 Environmental and Safety Training	27
5.1.3 Incident Procedures	27
5.1.4 Reports and Documentation	27
5.1.5 Monitoring	27
<b>6.0 POTENTIAL ENVIRONMENTAL IMPACTS</b>	28

7.0 REGISTER OF SIGNIFICANT IMPACTS	29
8.0 ENVIRONMENTAL IMPACTS AND MITIGATIONS	33
8.1 Construction Management Plans	33
8.1.1 WASTE MANAGEMENT PLAN	33
8.1.1.1 Waste Handling Guideline	33
8.1.1.2 Solid Waste Management	33
8.1.1.3 Hazardous Waste Management	34
8.1.2 Erosion and Sediment Control	34
8.1.3 Traffic Management	35
8.1.4 Light, Noise and Dust Abatement	36
8.1.5 Sewage Management Plan	37
8.1.6 Biodiversity Management Plan	37
9.0 EMERGENCY RESPONSE PLAN	39
9.1 Fire Management Plan	39
9.2 Hurricane Preparedness Plan	42
9.4 Spill Prevention and Management Plan	46
9.5 Site Health and Safety	47
9.6 Site Emergency Response Plan	48
9.7 Emergency and Utility Service Contact	50
<b>10.0 APPENDICES</b>	<b>50</b>
<b>Appendix A: Project Conceptual Plan</b>	

# EXECUTIVE SUMMARY

## 1.0 INTRODUCTION

### 1.1 Scope and Purpose of Document

This document is the Environmental Management Plan (EMP) for the construction of the South Bay Glamping Site. It describes the project site, key environmental impacts as well as the requisite mitigation measures.

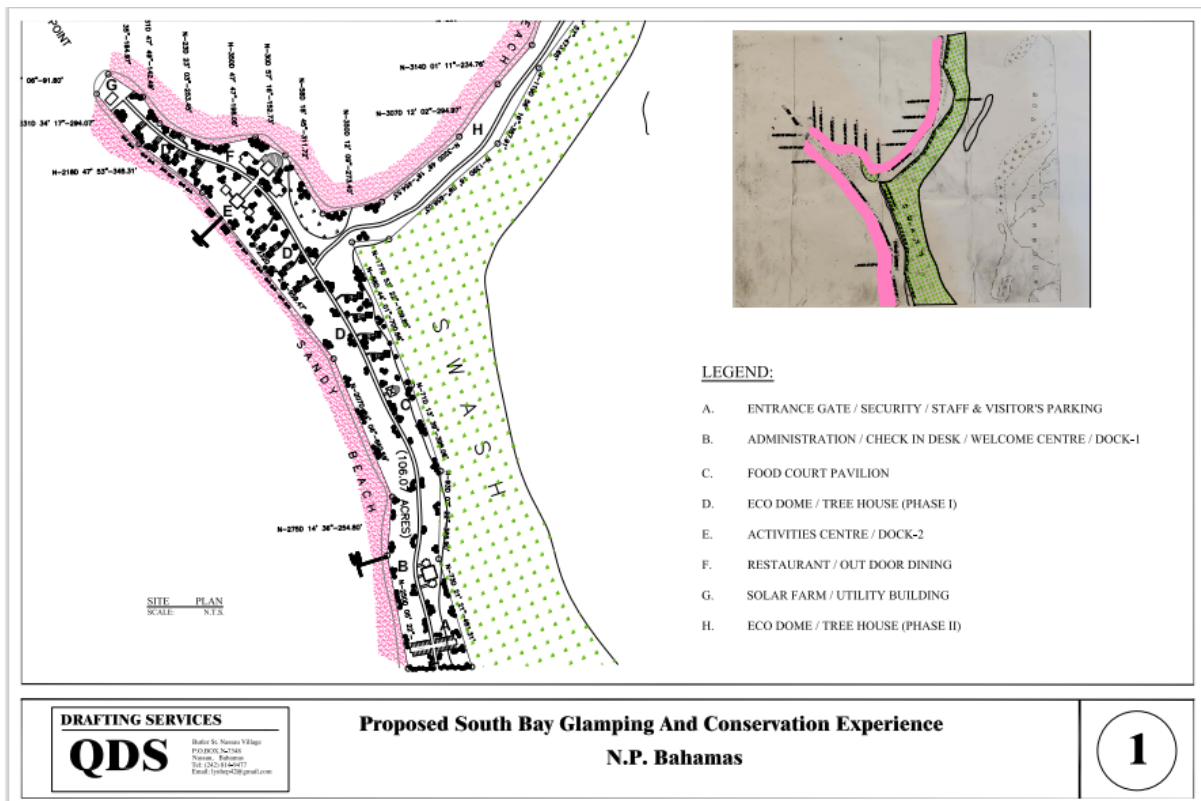
### 1.2 Objective and Target

This Environmental Management Plan (EMP) is a project specific document developed to ensure that appropriate environmental management measures are followed during the construction of the South Bay Glamping Site, and to eliminate or minimize environmental impacts. This EMP is a living document that is constantly updated and improved as the project progresses. The following document was prepared for assistance in fulfilling the requirements of an application for a Certificate of Environmental Compliance approval.

The basic objective of this EMP is to manage, prevent, and mitigate potentially adverse impacts of the project interventions in a way that minimizes the adverse impact on the environment.

The specific and broad objectives of this EMP are to:

1. Identify environmental impacts and risks.
2. Effectively implement and manage the identified environmental impacts and risk.
3. Ensure compliance with national regulatory authority stipulations and guidelines, as well as ensuring compliance.
4. Define a monitoring mechanism and identify monitoring parameters to ensure effective implementation of the mitigation measures.
5. Realizing the agreed environmental and social objectives for the Project and verifying environmental and social performance through information on impacts as they occur.
6. To provide a plan which describes the actions that will be taken by the Contractor to enhance positive impacts and to avoid, minimize, mitigate, compensate / offset negative impacts of the following construction activities:
  - a. Land clearing for construction activities, buildings and access road
  - b. excavation of the foundation of the buildings
  - c. Construction of the Administration/ welcome building, a food court Pavilion, an entrance/ security gate, a parking lot, an ecodome/tree house, a activity enter, a restaurant, a solar farm/utility building, and placement of utilities (See Figure 1: Site Plan).



**Figure 1:** Site plan for South Bay Glamping Site

To achieve the outlined purpose, the following subjects are detailed:

- Applicable legislative requirements
- Environmental impacts
- Specific mitigation measures
- Management plans
- Environmental management framework
- Site-specific method statements
- Training requirements

## 2.0 PROJECT DESCRIPTION

### 2.1 Project Location

South Bay Glamping site is located on the Southern end of New Providence, Bahamas (See Figure 1). New Providence is 7 miles long and 21 miles wide; and approximately 315 miles from Florida, USA. The solar powered site is located on a long, small, and secluded beach on the Southern coast of the island off of Marshal Road.



**Figure 2:** South Bay Glamping Site Project Location

### 2.1.1 National Park

South Bay Glamping site is not designated as a National Park but the site is located less than a mile from Bonefish National Park. Bonefish National Park was established in 2002 and consists of 1,235 acres of important coastal wetlands. The National Park houses a wide diversity of birds and is an important nursery for many marine species that are important to the country. Special efforts will be made to ensure that construction will not negatively impact the park.

### 2.2 Habitat Description

The project site spans 106 acres, and contains two (2) major terrestrial ecosystems, Coastal and Interior Upland. There are three (3) vegetation classes on the site, Rocky Shoreline, Sandy Shoreline, and Dry Broadleaf Evergreen Formation-Shrubland. The access road that connects to the site roadway is low lying, cuts through the mangrove wetland and floods during high tide. The site roadway runs parallel to the coastline, with various beach access points, and one incomplete structure on the site. These disturbed areas more than likely would have been a part of the Interior Upland ecosystem and contained vegetation indicative of Dry Broadleaf Evergreen Formation-Shrubland. The prior disturbances allowed for the inundation of invasive species like *Casuarina equisetifolia* (Australian Pine) into all the vegetation classes on the site. This observation along with the presence of clusters of vines from various key species

indicate that the vegetation is in an intermediate growth phase. Therefore, the vegetation growth on the site can be described as secondary growth.

### 2.2.1 Coastal

Coastal vegetation types present on the site are Rocky Shoreline and Sandy Shoreline.

#### Rocky Shoreline

Rocky Shoreline is present along the southern perimeter of the site. It is mainly dominated by *Rachicallis americana* (Wild Thyme), *Strumpfia maritima* (Sandfly Bush), and *Conocarpus erectus* (Buttonwood). This vegetation class extends westward and is buffered by small pockets of Sandy Shoreline along the entire way and capped at the northwestern boundary of the site.



**Photo 1:** Rocky Shoreline on southern perimeter of the site, dominated by *Rachicallis americana* (Wild Thyme).

#### Sandy Shoreline

Sandy Shoreline is present along the site's western perimeter and in small pockets along the southern perimeter of the site. On the western perimeter, *Rhizophora mangle* (Red Mangrove), *Avicennia germinans* (Black Mangrove) and *Languncularia racemosa* (White

Mangrove) are between the dune and the waterline. Plant species present on the dune are, *Borrchia aborescens* (Sea Ox-eye), *Scaevola plumieri* (Black Ink Berry) and *Sporobolus virginicus* (Seashore Rush Grass). This vegetation class extends northwest to the southeastern boundary of Bonefish Pond National Park (BPNP).



**Photo 2:** Sandy Shoreline on the site's western perimeter.

### 2.2.2 Interior Upland

Dry Broadleaf Evergreen Formation-Shrubland (DBEF) is the only Interior Upland vegetation type present on the site.

#### Dry Broadleaf Evergreen Formation-Shrubland

Dry Broadleaf Evergreen Formation-Shrubland is present throughout the interior of the site, on sandy and limestone substrate behind the coastal ecosystem. *Guapira discolor* (Small Leaved Blolly), *Erithalis fruticosa* (Black Torch), *Coccothrinax argentata* (Silver Top Palm) and *Echites umbellata* (Devil's Potato) are some of the species present within this vegetation class on the site.





**Photo 3:** Dry Broadleaf Evergreen Formation-Shrubland in the interior of the site.

### 2.2.3 Invasive Species

Three (3) invasive species were observed on the site. The species are outlined below along with their occurrence, abundance on the site, and recommendations for control.

**Table 1:** Invasive species recorded on the South Bay Glamping Site, Marshall Road, New Providence, The Bahamas

Species	Abundance and Occurrence	*Recommendations
<i>Casuarina equisetifolia</i> , Australian Pine	20-25 trees, ranging from 6-30ft tall bordering the dunes and the edges of the DBEF of the site.	Control
<i>Casuarina glauca</i> , Suckering Australian Pine	6-8 trees, ranging from 12-20ft tall on the northern perimeter of the site between the mangrove wetland and DBEF.	Eradication

<i>Scaevola taccada</i> , White Ink Berry	3-5 small patches, 3-4ft tall spread along the sandy shoreline of the site.	Eradication
---	---	-------------

\*Recommendations as per the National Invasive Species Strategy for the Bahamas, 2013



**Photo 4:** Large cluster of *Scaevola taccada* (White Ink Berry) on the site’s Sandy Shoreline.

#### 2.2.4 Protected Species

The Forestry Act Declaration of Protected Trees Order 2021 lists one hundred and twenty-seven (127) vascular plant species as protected. Eighty-six (86) species are listed as Endemic or Endangered or Threatened and forty-one (41) are listed as Cultural or Historical and Economic. Twelve (12) species listed on the Forestry Act Declaration of Protected Trees Order 2021 were recorded on the site (see Table 2). All twelve (12) species, *Avicennia germinans* (Black Mangrove), *Bursera simarouba* (Gum Elemi), *Coccothrinax argentata* (Silver Top Palm), *Conocarpus erectus* (Buttonwood), *Galactia spiciformis* (Spiciform Milk Pea), *Guapira discolor* (Small Leaved Blolly), *Leucothrinax morrisii* (Thatch Palm) *Jacquinia keyensis* (Joe Wood), *Laguncularia racemosa* (White Mangrove), *Pseudophoenix sargentii* (Buccaneer Palm), *Scaevola plumieri* (Black Ink Berry), and *Rhizophora mangle* (Red Mangrove) are listed under the subsection Cultural or Historical and Economic in the Act. None of the species found on

the site is listed under the subsection of Endemic or Endangered or Threatened Species in the Act.

**Table 2:** Protected Species recorded on the South Bay Glamping Site, Marshall Road, New Providence, The Bahamas

#	Species Recorded	Location
1	<i>Avicennia germinans</i> , Black Mangrove	Numerous trees, ranging from 1-12ft tall in the Rocky Shoreline, bordering the Sandy Shoreline (western perimeter), and the swash (northern perimeter) on the site.
2	<i>Bursera simarouba</i> , Gum Elemi	Approximately 10-15 trees, ranging in height of 6-8ft tall throughout the interior of the site in the DBEF-Shrubland.
3	<i>Coccothrinax argentata</i> , Silver Top Palm	Dominant species in the DBEF-Shrubland of the site, ranging from 6-8ft in height, an abundance of clusters, sometimes forming a Palm Shrubland in the interior of the site on sandy substrate.
4	<i>Conocarpus erectus</i> , Buttonwood	Numerous trees, ranging from 1-10ft tall in the Rocky Shoreline but also as a buffer between the wetland ecosystem and the hard land surrounding the site.
5	<i>Galactia spiciformis</i> , Spiciform Milk Pea	In small patches in the understory of the DBEF-Shrubland in the interior of the site.
6	<i>Guapira discolor</i> , Small Leaved Bolly	Dominant species in the DBEF-Shrubland of the site on both the edges and the interior of the site.
7	<i>Jacquinia keyensis</i> , Joe Wood	Approximately 15-30 trees, ranging from 4-8ft, distributed throughout the DBEF-Shrubland in the interior of the site.
8	<i>Laguncularia racemosa</i> , White Mangrove	Numerous trees, ranging from 1-8ft tall bordering the Sandy Shoreline (western perimeter), and the swash (northern perimeter) on the site.
9	<i>Leucothrinax morissii</i> , Thatch Palm	Semi-dominant species in the DBEF-Shrubland of the site, ranging from 6-8ft in height, sometimes forming a Palm Shrubland in the interior of the site on limestone substrate.

10	<i>Pseudophoenix sargentii</i> , Buccaneer Palm	8-12 trees, approximately 6-8ft tall, spread sporadically throughout the DBEF-Shrubland on the site.
11	<i>Rhizophora mangle</i> , Red Mangrove	Numerous trees, ranging from 1-12ft tall bordering the Sandy Shoreline (western perimeter), and the swash (northern perimeter) on the site.
12	<i>Scaevola plumieri</i> , Black Ink Berry	2-4 clusters, ranging from 2-3ft tall and sporadic seedlings/saplings on the Sandy Shoreline on both the southern and western perimeter of the site.



**Photo 5:** *Scaevola plumieri* (Black Ink Berry) on Sandy Shoreline of the site.

#### 2.2.5 Vascular Plant Diversity

Species diversity and richness on the site was relatively high and is in line with what is expected of native terrestrial ecosystems in The Bahamas. This was due to the site being largely undisturbed because of its proximity to the Bonefish Pond National Park. A total of 59 species were recorded on site, including the twelve (12) protected species, which is expected of a blended ecosystem of Dry Broadleaf Evergreen Formation, Sandy Shoreline, and Rocky Shoreline.

**Table 3:** Vascular plant species recorded on the South Bay Glamping Site, Marshall Road, New Providence, The Bahamas

**Table Key:** DBEF = Dry Broadleaf Evergreen Formation, RS = Rocky Shoreline, SS = Sandy Shoreline

Botanical Name	Common Name	Location		
		DBEF	RS	SS
1. <i>Acacia choriophylla</i>	Cinnecord	•		
2. <i>Avicennia germinans</i>	Black Mangrove		•	•
3. <i>Borrchia aborescens</i>	Sea Oxeye			•
4. <i>Bourreria succulenta</i>	Strong Back	•		
5. <i>Bursera simarouba</i>	Gum Elemi	•		
6. <i>Cassytha filiformis</i>	Love Vine	•		
7. <i>Casuarina equisetifolia</i>	Australian Pine	•	•	•
8. <i>Casuarina glauca</i>	Suckering Australian Pine	•		
9. <i>Chamaecrista lineata</i>	No Common Name	•		
10. <i>Coccoloba diversifolia</i>	Pigeon Plum	•		
11. <i>Coccoloba uvifera</i>	Sea Grape	•	•	•

12. <i>Coccothrinax argentata</i>	Silver Top Palm	•		
13. <i>Conocarpus erectus</i>	Buttonwood		•	•
14. <i>Drypetes diversifolia</i>	Whitewood	•		
15. <i>Echites umbellatus</i>	Devil's Potato	•		
16. <i>Encyclia altissima</i>	Christmas Orchid	•		
17. <i>Encyclia rufa</i>	Butterfly Orchid	•		
18. <i>Erithalis fruticosa</i>	Black Torch	•		
19. <i>Eugenia axillaris</i>	White Stopper	•		
20. <i>Euphorbia mesembryanthemifolia</i>	Coast Spurge			•
21. <i>Genipa clusiifolia</i>	Seven Year Apple	•		
22. <i>Guapira discolor</i>	Small Leaved Blolly	•		
23. <i>Guapira obtusata</i>	Beefwood	•		
24. <i>Gundlachia corymbosa</i>	Horse Bush	•		
25. <i>Gymnanthes lucida</i>	Crabwood	•		
26. <i>Iva frutescens</i>	Bush Iva	•		

27. <i>Jacquemontia havanensis</i>	Havanna Cluster Vine	•		
28. <i>Jacquinia keyensis</i>	Joe Wood	•		
29. <i>Lasiacis divaricata</i>	Bamboo Grass	•		
30. <i>Laguncularia racemosa</i>	White Mangrove			•
31. <i>Lantana involucrata</i>	Wild Sage	•		
32. <i>Malpighia polytricha</i>	Touch Me Not	•		
33. <i>Manilkara bahamensis</i>	Wild Dilly	•		
34. <i>Metopium toxiferum</i>	Poisonwood	•		
35. <i>Mosiera longipes</i>	Wild Guava	•		
36. <i>Oeceoclades maculata</i>	African Spotted Orchid	•		
37. <i>Oplonia spinosa</i>	Prickly Bush	•		
38. <i>Pithecellobium keyense</i>	Ram's Horn	•		
39. <i>Plumeria obtusa</i>	Frangipani	•		
40. <i>Rachicallis americana</i>	Wild Thyme		•	•
41. <i>Randia aculeata</i>	Box Briar	•		
42. <i>Reynosia septentrionalis</i>	Darling Plum	•		

43. <i>Rhizophora mangle</i>	Red Mangrove			•
44. <i>Salicornia virginica</i>	Wild Coral		•	•
45. <i>Salmea petrobioides</i>	Shanks			•
46. <i>Scaevola plumieri</i>	Black Ink Berry			•
47. <i>Scaevola taccada</i>	White Ink Berry			•
48. <i>Scleria lithosperma</i>	Slender Nut Rush			
49. <i>Sesuvium portulacastrum</i>	Sea Purslane			•
50. <i>Sideroxylon americanum</i>	Milk Berry	•		
51. <i>Sideroxylon foetidissimum</i>	Mastic	•		
52. <i>Smilax havanensis</i>	Chaney Briar	•		
53. <i>Solanum bahamense</i>	Canker Berry	•		
54. <i>Sophora tomentosa</i>	Necklace Pod			•
55. <i>Sporobolus virginicus</i>	Seashore Dropseed			•
56. <i>Strumpfia maritima</i>	Sandfly Bush		•	•
57. <i>Suriana maritima</i>	Bay Cedar			•
58. <i>Uniola virgata</i>	Spike Grass			•



59. <i>Urechites luteus</i>	Wild allamanda	•		
-----------------------------	----------------	---	--	--

### 2.2.6 Vegetation Map



 Dry Broadleaf Evergreen Formation-Shrubland

 Mangrove Wetland

### 2.2.7 Avian Survey

An avian survey was conducted to identify the presence, abundance, and habitat utilization of avian species within the boundaries of the site.

#### Methodology

The assessment comprised 4 hours of active avian and ecological observations. Field studies were conducted on 18 October 2022 between the hours of 1:00 PM and 3:00 PM and the 3 November 2022 between 7:00am and 9:00am. The avifauna of the area was assessed and recorded by walking along the coastline and through the site along the beach, an established footpath and access road. Species numbers were recorded in the abundance categories, Single, Few (2-10), and Many (11-100). Species recorded were compiled for final abundance estimates. Status is based on the International Union for Conservation of Nature (IUCN).

#### Findings

##### **Species Diversity**

A total of fourteen (14) species were recorded during the investigation (See Table 4).

**Table 4:** Avifauna observed on the proposed South Bay Glamping Site, Marshall Road, New Providence, The Bahamas

**TABLE KEY:**

**Range**

**Status**

**PRB** = Permanent Resident Breeding

**LC** = Least Concern (Conservation-IUCN)

**WRB** = Winter Resident Breeding

**IUCN** = International Union of Conservation of Nature

**WRN** = Winter Resident Non- Breeding

**e** = endemic subspecies

Scientific Name	Common Name	Master Observation	Range/Conservation Status
<i>Agelaius phoeniceus bryanti</i>	Red-winged Blackbird	Few	PRB/e/LC
<i>Butorides virescens bahamensis</i>	Green Heron	Single	PRB/e/LC
<i>Coccyzus minor</i>	Mangrove Cuckoo	Single	PRB/LC
<i>Coereba flaveola bahamensis</i>	Bananaquit	Single	PRB/e/LC
<i>Columbina passerine bahamensis</i>	Common Ground Dove	Few	PRB/e/LC

<i>Falco sparverius sparveroides</i>	American Kestrel	Few	PRB/LC
<i>Geothlypis trichas</i>	Common Yellowthroat	Single	WRN/LC
<i>Limnodromus griseus</i>	Short-billed Dowitcher	Single	WRN/LC
<i>Megaceryle alcyon</i>	Belted Kingfisher	Single	WRN/LC
<i>Mimus polyglottos polyglottos</i>	Northern Mockingbird	Many	PRB/LC
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	Single	PRB/LC
<i>Steophaga discolor</i>	Prairie Warbler	Single	WRN/LC
<i>Steophaga palmarum</i>	Palm Warbler	Many	WRN/LC
<i>Vireo crassirostris crassirostris</i>	Thick-billed Vireo	Few	PRB/e/LC

### Range

The range of a species is the geographic areas where the birds can be consistently found e.g., migrant birds have seasonal ranges while restricted range species remain on the same island or in the same region year-round.

### Permanent Resident Breeding

Permanent Resident breeding (PRB) species refers to the resident species that live and breed year-round throughout the Bahama Islands. There were nine (9) PRB species (approximately 64%) of the species recorded during the survey.

## **ENDEMIC SPECIES**

Endemic species are birds that exist only in The Bahamas. Five (5) PRB species recorded are endemic subspecies that are found in The Bahamas.

## **Winter Resident Non-Breeding**

Winter Resident Non-breeding (WRN) species refers to the winter migrants to the Bahama Islands from North America. Approximately 36% of the species recorded were WRN.

## **Conservation Status Protected Species**

All the species observed are protected under the Wild Birds Protection Act Chapter 249 (Statute Law of The Bahamas).

## **Endangered Species**

None of the species recorded are classed as endangered.

## **Habitat Utilization**

Ten (10) species recorded were land birds and Four (4) species recorded were a wetland bird. All land birds were observed in the Dry Broadleaf Evergreen Formation-Shrubland, and all wetland birds were observed in the mangrove wetland ecosystem. *Nyctanassa violacea* (Yellow-crowned Night-Heron) was observed feeding on the site and nesting activity was also observed on the site. The Dry Broadleaf Evergreen Formation was dominated by *Coccothrinax argentata* (Silver Top Palm), *Coccoloba diversifolia* (Pigeon Plum), and *Jacquinia keyensis* (Joe Wood) with fruits, flowers, or buds that would provide food for avian species. There were two (2) shorebirds recorded along the mangrove wetland ecosystem and the site does provide habitats utilized by wading birds (ponds, wetlands) or sea birds (isolated rocks). The descriptions of vegetation types and plant species observed are a fair representation of the botanical features on the site. While it is likely that additional species would be recorded with further field studies, the numbers and species are not likely to impact the results of this study for the purposes it is intended. Additional avian field studies repeated over a period are likely to record other species on the site, these species would likely utilize the site for perching, feeding, and nesting.



**Photo 6:** *Nyctanassa violacea* (Yellow-crowned Night-Heron) feeding in the Mangrove Wetland on the site.



**Photo 7:** Bird nest observed in *Conocarpus erectus* (Buttonwood) on the edge of the Sandy Shoreline on the site.

### 3.0 LAWS REGULATIONS AND REQUIREMENTS

The Owner and Contractor will utilize accepted regulatory standards as a minimum to protect the environment as well as the health and safety of all personnel (contractor, subcontractors and third parties) working on the project, and any others who may be affected by the project activities.

Throughout the performance of the activities, the contractor will comply and ensure compliance of its subcontractors to these requirements as indicated in the following:

- Environmental Codes and regulations applicable to The Bahamas.
- Contract environmental requirements.
- Contractor internal environmental requirements.
- Other industry standards such ISO, OSHA, and good practices where appropriate.

#### 3.1. National Environmental codes and Regulations Applicable to The Bahamas

Construction of the Project must comply with a range of national legislation, strategies, policies as well as national and international regulations and standards in order to provide for the management of environmental effects. The following list identifies the Acts and all associated regulations that apply to the project activities where relevant.

**Table 5: Acts and Associated Regulations**

Act Title	Year Enacted	Comments
Water & Sewerage Corporation Act	1976	Provides regulatory framework for the management of water resources in The Bahamas
Environmental Health Act (amended 2004)	1987	Provides the framework for environmental regulations that will ensure compliance for the Project. The Act authorized the DEHS to develop regulations that prevent and control air pollution, soil contamination and preserve water quality.
Wild Animals Protection Act (Amended 1974)	1968	Prohibits the taking, capturing, or hunting of any animal without a permit.

Wild Birds Protection Act (Amended 1994)	1952	Prohibits the taking, capturing, or hunting of any animal without a permit. Protects birds and eggs during the closed season.
Plant Protection Act	1916	Relates to plant disease and controls importation of plants to prevent outbreaks of exotic disease and establishment of unwanted species
Conservation and Protection of the Physical Landscape of The Bahamas Act (Amended 2000)	1997	Protects physical landscape from environmental degradation, flooding, and removal of hills; regulates filling of wetlands, drainage basins or ponds; prohibits digging or removing sand from beaches and sand dunes; prevents harvesting or removing protected trees. In order to perform activities that may affect the physical landscape of The Bahamas, permits must be obtained for these activities. The Department of Physical Planning issues the permits and enforces the regulations.
Fisheries Resources (Jurisdiction and Conservation) Act and regulations	2006	This Act makes provision with respect to the conservation and management of the fishery resources of The Bahamas.
Planning and Subdivision Act	2010	<p>This Act provides for:</p> <ul style="list-style-type: none"> <li>A land use planning-based development control system led by policy, land use designations and zoning</li> <li>Prevention of indiscriminate division and development of land</li> <li>Promotion of sustainable development in a healthy natural environment</li> <li>Maintenance and improvement of the quality of the physical and natural environment</li> <li>Protection and conservation of the natural and cultural heritage of The Bahamas</li> <li>Planning for the development and maintenance of safe and viable communities</li> </ul>

The Merchant Shipping (Oil Pollution) Act	1976	The Act provides for the proper registration of ships, the control, regulation, and orderly development of merchant shipping in The Bahamas, proper qualification of seamen and regulation of employment conditions for seamen. These provisions Advocate ship safety and competency which prevent shipping accidents that can be detrimental to the marine environment as well as human casualties.
Disaster Preparedness Response Act	2006	This Act provides for a more effective organization of the mitigation of, preparedness for, response to and recovery from emergencies and disasters
Coast Protection Act	1968	This Act makes provision for the protection of the coast against erosion and encroachment by the sea and for purposes connected therewith.
The Environmental Planning and Protection Act	2019	The Act provides for the prevention or control of pollution, the regulation of activities and the administration, conservation and sustainable use of the environment and for connected purposes.
The Environmental Protection (control of plastic pollution) Act	2019	This Act prohibits single use plastic food ware and non-biodegradable and biodegradable single use plastic bags.  prohibit the release of balloons; regulate the use of compostable single use plastic bags and for connected matters.
The Ministry of the Environment Act	2019	This Act establishes the Ministry of the Environment to oversee the integrity of the environment of The Bahamas, to make the minister responsible therefore a corporation sole, to establish the environmental administration fund and the environmental trust fund and for matters connected thereto.



The Forestry Act	2010	Protects wetlands, water reserves, endemic flora and fauna and protected trees. It establishes a legal framework for the long-term sustainable management of forests, a governmental forestry agency and a permanent forest estate. It requires a license for timber cutting and other activities in the Forest Reserves. The Act mandates that a National Forest Plan be developed every five years to govern management activities, such as harvesting and reforestation measures, prescriptions for fire prevention, wildfire suppression and prescribed burning and soil and water conservation.
Health and Safety at Work Act	2002	This Act makes provisions relating to health and safety at work and for connected purposes. It details the general duties of employers and employees at work.
Environmental Impact Assessment Regulations,	2020	To provide procedures for a Certificate of Environmental Clearance (CEC). The Regulations provide procedures for the review proposed projects inclusive of monitoring and compliance requirements. The Regulations dictate the requirements for a Certificate of Environmental Compliance (CEC).
Emergency Powers (COVID-19) Regulations	2020	This is a national response to the global threat of COVID-19.

### 3.2 Occupational Safety and Health Administration (OSHA)

In the absence of specific health and safety construction regulations, contractors should adhere to the Occupational Safety and Health Administration (OSHA) regulations. OSHA is an agency of the United States Department of Labor. OSHA's mission is to "assure safe and healthy working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance". The agency is also charged with enforcing a variety of whistleblower statutes and regulations. OSHA's workplace safety inspections have been shown to reduce injury rates and injury costs without adverse effects to employment, sales, credit ratings, or firm survival. Regulations such as the use of Personal Protective Equipment, housekeeping, safety training and education, fall protection and working in confined space etc.

### 3.3 ISO 1400

The ISO 14000 is a set of industry standards that provide practical tools for companies and organizations of all kinds looking to manage their environmental responsibilities.

ISO 14001:2015 and its supporting standards such as ISO 14006:2011 focus on environmental systems to achieve this. The other standards in the family focus on specific approaches such as audits, communications, labeling and life cycle analysis, as well as environmental challenges such as climate change.

## 4.0 ENVIRONMENTAL MANAGEMENT FRAMEWORK

This EMP and associated environmental documentation will be maintained throughout the duration of the project. Revisions to this document will be performed if:

- New project design parameters or construction methodologies are introduced that could change the environmental impact or mitigation measures; and,
- Changing Environmental requirements, commitments or conditions by local authorities as a result of incidents and deviations.

### 4.1 Scope of Responsibilities

#### 4.1.1 Role and responsibilities

The overall responsibility of environmental management will lie with the Contractor. The contractor will ensure that all environmental management requirements are brought to the attention of all personnel including subcontractors and ensure that the requirements are complied. Descriptions and titles may vary based on the Contractor's designations, but the overall roles and responsibilities should be similar.

## 5.0 SUMMARY OF ENVIRONMENTAL MANAGEMENT PROGRAM

The environmental management tools below will be used as a part of the overall environmental management system to avoid, reduce or mitigate environmental impacts associated with construction activities:

### 5.1 Environmental Management Plan

#### 5.1.1 Site Management

Site Inspections are a review of crucial parts of the Works ensuring that the works progress as intended, both in terms of quality and compliance. The inspections will be conducted by the Environmental Manager using the site monitoring checklist and in compliance with the monitoring plan. Site inspections will occur monthly or as needed for emergencies.

The site inspections may include the following:

- Site Safety and Health Materials

- Solid/Hazardous Waste Management
- Dust & Air pollution
- Noise
- Miscellaneous

Site Visits include visit in an official capacity, i.e. Engineer representative to examine the site and to determine construction conditions.

### 5.1.2 Environmental and Safety Training

Training of **ALL** site workers will include:

- Site Induction – prior to a crew member being allowed on site information regarding the Health, Safety and Environmental requirements are administered.
- Toolbox Talks – weekly meetings to reinforce the topics covered during the site induction.
- Site Signage – messages displayed on site to alert personnel and community of surrounding works and/or hazards

### 5.1.3 Incident Procedures

In the case of incidents, all aspects of the incident are to be addressed. The EM will be notified of any incident with actual or potential site impacts on the community or the biophysical environment immediately. The EM will make an assessment, determine any actions to be taken and notify The Department of Environmental Planning & Protection (DEPP) and any other relevant agency. The Contractor will also inform the Owner who will make an assessment and determine any actions to be taken.

Incidents may include but are not limited to major spills of fuel or other hazardous material, physical accidents, or the over clearing of vegetation.

### 5.1.5 Monitoring

The Contractor will liaise with the Environmental Manager (EM) and ensure physical implementation of this EMP. The implementation will be supported by the Project Manager (PM), the Senior Surveyor (SS), and Foreman through the performance of periodical inspections and HSE meetings. Environmental formal inspections will occur monthly. This inspection will also be done after intense or prolonged inclement weather.

Any issues identified during the regular monitoring are to be addressed by the SE and PM if needed. Issues are to be addressed with staff immediately or at daily toolbox talks. There is to be continued monitoring of the implementation of action items.

The Client and DEPP (Department of Environmental Planning and Protection) will be notified and invited to attend inspections. Records of inspections will be available to all parties.

## 6.0 POTENTIAL ENVIRONMENTAL IMPACTS

Long-term negative impacts to the natural resources in the area are not expected to occur as a result of the proposed construction work. Construction will be closely monitored to prevent destabilization of adjacent slopes or contamination of the adjacent marine and terrestrial habitats. Restoration of the construction site areas by the Contractor must be completed to ensure impacts to the environment are short term in nature. The Contractor is also required to adhere to the guidelines established in this document, as listed in the sections of the EMP below.

Generally, the potential environmental issues associated with the Project include the following:

### **Physical Impacts**

- Air, dust and Noise Pollution
- Fuel, oil, or chemical spills.
- Waste management.
- Sewage and refuse disposal.
- Loss or degradation of the Terrestrial ecosystem.
- Water quality

### **Socio-Economic Impacts**

- Positive Income
- Safety for workers
- Impacts to neighboring communities due to vehicular movement or other disruptions.

The Contractor will take particular care to avoid unnecessary disturbance or damage to the environment and will correct any condition which has resulted from the Contractor's operations, and which constitutes, or which could result in, unnecessary damage or disturbance to property and the environment.

## 7.0 REGISTER OF SIGNIFICANT IMPACTS

Environmental impacts of the project are impacts to the natural communities and wildlife in the area that can be reasonably inferred, considering the footprint of impacts and known habitats on-site. Other expected impacts are those related to normal construction and operation such as waste generation and disposal, fueling, use of potentially hazardous materials as well as other accidents or malfunctions, which may entail an environmental component. The Register of Significant Impacts considers potential impacts that may be due to construction activities. The Register will be used in the development of method statements to proactively manage and mitigate potential impacts pertaining to the project. The Register of Significant Aspects and Impacts evaluates the potential impacts and assigns risk and magnitude scores. Risk Scores are measuring the likelihood of the impact occurring and is measured on a scale of 1-10 with 1 being unlikely to occur and 10 being highly likely to occur. Magnitude scores measure the scale of the impact if it occurs. Magnitude ranges are Low, Medium and High.

**Table 3: Register Significant Impacts**

Significant Aspect and Impact	Activities	Potential Impact(s)	Mitigation	Risk Score	Magnitude Score
Water quality	Construction	Introduction of hazardous substances into open water and groundwater. Hazardous substances may include sediment, wastewater, concrete wash waters, lubricants, fuels, drilling spoils and hydraulic fluids.	<ul style="list-style-type: none"> <li>❖ Sediment and erosion control methods will be in place prior to and during construction.</li> <li>❖ No hazardous substances will be permitted to escape into the open water at the work site.</li> <li>❖ Use biodegradable (non-mineral) drilling fluids and hydraulic oils when working over water.</li> <li>❖ Wash water from the concrete trucks will be contained to a designated wash station</li> </ul>	3	High
Air Quality	Construction	Dust	<ul style="list-style-type: none"> <li>❖ Spraying water on the construction site and excavated areas as needed</li> <li>❖ Fencing/installing barriers to shield from dust and aggregates</li> </ul>	5	Medium

			<ul style="list-style-type: none"> <li>❖ Do not accumulate and burn waste at the site</li> </ul>		
Noise Pollution	Construction of Building, pool and installation of tanks		<ul style="list-style-type: none"> <li>❖ Avoid usage of machines/equipment with extra noise</li> <li>❖ To reduce potential for noise impacts to local area residents, work will be conducted during reasonable hours.</li> </ul>	5	Low
Vibration Impact	Construction	Noise Pollution	<ul style="list-style-type: none"> <li>❖ Precaution will be taken while using the machines and equipment, during construction</li> <li>❖ All safety precautions adhered to for careful handling of machines and equipment and heavy vehicles like excavators during construction</li> </ul>	5	Low
Traffic	Construction	Increased Traffic	<ul style="list-style-type: none"> <li>❖ Signage erected to inform traffic and pedestrians about the activities</li> <li>❖ Flagmen to manage the movement of traffic to and from site as needed</li> </ul>	5	Medium
Waste Management	Construction	Increase of solid waste and waste accumulation	<ul style="list-style-type: none"> <li>❖ Refuse and wastes should be removed from the site regularly and disposed of at the New Providence Ecological Park</li> <li>❖ In case of hazardous waste store in safe place and make the provision for management</li> <li>❖ Excavated material will be reused in construction and made available for community projects</li> </ul>	10	High

			<ul style="list-style-type: none"> <li>❖ All dump trucks will require tarpaulins when transporting material</li> </ul>		
Sewage and refuse disposal	Installation of Sewage tanks	Water quality	<ul style="list-style-type: none"> <li>❖ Sewage tanks will be placed away from water's edge and more than 6 ft away from any buildings</li> <li>❖ Any portable toilet(s) that are on-site should be secured to avoid vandalism. Toilets must be located more than 150ft from the edge of the open water.</li> </ul>	5	Medium
Fuel handling and oil/fuel filled equipment	Construction	Spills and/or leaks of: Fuel, lubricating oil, and coolants associated with the operation of heavy machinery and drilling equipment during project work. Equipment oil and hazardous materials, which can result in soil and water contamination and impact the receiving environment.	<ul style="list-style-type: none"> <li>❖ Spills will immediately be contained, and the EM contacted for major incidents.</li> <li>❖ A Spill Kit will be placed site.</li> <li>❖ There will be no fuel stored on site.</li> <li>❖ All vehicles and equipment used on-site must be well maintained.</li> <li>❖ Idling must be kept to a minimum. Any equipment not in use for extended periods of time must be switched off.</li> <li>❖ Fuel containers should be adequately contained.</li> <li>❖ Equipment deemed to be unacceptable by the Environmental Manager will be sent off-site.</li> <li>❖ Equipment shall be inspected, and repaired, if necessary, by the contractor prior to mobilizing to site.</li> <li>❖ All fuel transfers should be done as far away as practical from drainage and</li> </ul>	10	High

			<p>water bodies (use 100ft distance from water as a guideline).</p> <ul style="list-style-type: none"> <li>❖ Individuals fueling equipment must ensure that fuel containers are properly sealed when they are transported.</li> <li>❖ There will be no laydown area on site.</li> <li>❖ There is to be no smoking on site.</li> </ul>		
Accident for transportation of dispose materials	Transportation and Disposal	Traffic Accidents	<ul style="list-style-type: none"> <li>❖ The transportation of the waste and other materials should be in safe manner considering road traffic regulations.</li> </ul>	3	Low
Ecosystem and Biodiversity	Clearing	Habitat and wildlife destruction	<ul style="list-style-type: none"> <li>❖ Only vegetation around footprint will be removed</li> <li>❖ All invasive species will be removed, and the area immediately replanted as needed</li> <li>❖ Invasives will not be used for mulch</li> </ul>	6	High
Safety for Workers	Construction	Accidents and Injuries	<ul style="list-style-type: none"> <li>❖ The mandatory use of PPE (helmets, safety belts, masks, gloves, and boot) by workers depending on nature of work.</li> <li>❖ All workers familiar with site emergency response plan and safety procedures.</li> <li>❖ All workers familiar with material handling procedures.</li> <li>❖ First responders identified and present on site.</li> </ul>	5	Medium



## 8.0 ENVIRONMENTAL IMPACTS AND MITIGATIONS

The Contractor must ensure to avoid unnecessary disturbance or damage to the environment and noncompliance/disturbances must be corrected. Mitigation to reduce the risk of impacting the surrounding environment is as follows:

### 8.1 Construction Management Plans

#### 8.1.1 WASTE MANAGEMENT PLAN

It is not expected that the project will generate significant volumes of waste. The waste produced by the project will be handled using best management practices and should be disposed of at the New Providence Ecological Park (NPEP). The following objectives form the basis for the waste management plan.

- Progressive reduction of waste with the target to minimize overall emissions/discharges, which have adverse impact on the environment,
- Establishment, Implementation and maintenance of waste segregation aimed at enhancing recycling,
- Ensure effective waste handling and disposal processes will be managed by a local company approved by DEHS.

##### *8.1.1.1 Waste Handling Guideline*

The major categories of wastes envisaged are outlined as follows:

**Solid wastes:** These include felled vegetation/trunks, woods from crates, metals, papers, and domestic waste (waste generated from packing materials, boxes and plastics).

**Hazardous waste:** any gaseous, liquid or solid, which due to quantity, physical, chemical or infectious characteristics have the potential to harm human health, environment when improperly handled, stored, disposed, transported or treated e.g. paints, etc.

**Waste Minimization / Reduction:** Waste minimization implies reduction to the greatest extent possible of the volume or toxicity of waste materials. The four principles of waste minimization (reduce, reuse, recycle and recover) shall be adopted as applicable.

**Waste Segregation:** Waste segregation and characterization shall be carried out on wastes that are similar and shall be combined to simplify storage, treatment, recycling and effective implementation of appropriate waste disposal methods. Wastes shall be segregated at source into clearly designated bins at strategic locations. Particular attention shall be given to the work area where a variety of wastes shall be generated.

##### *8.1.1.2 Solid Waste Management*

Waste materials shall be removed and disposed of at the Department of Environmental Health Services Landfill. The following practices and procedures will be applied:

- Ensure that an adequate number of appropriate waste containers are available on site.
- All spill clean-up material (i.e., used sorbent pads) will be stored in lined containment drums and disposed of at an approved facility.
- Designate a safe area (away from open water bodies) for temporary waste storage with adequate containment, secure and protected from weather until removal and disposal can be arranged.
- Remove all waste materials from the site as soon as possible.

#### *8.1.1.3 Hazardous Waste Management*

All work must be completed in a manner that ensures water quality standards are maintained. Hazardous materials such as concrete, paint, solvents and other chemicals may be high in pH and are considered harmful; therefore, there shall be no contact with open water through spillage, hosing off surfaces, rain, cleaning of tools or concrete washout. Hazardous materials will be kept in a covered storage location to prevent the potential for mixing with water and substances being released into the environment.

South Bay Glamping will devise means of minimizing all potential for spills specifically, do not allow liquids, including (but not limited to) gasoline, diesel fuel and lubricating oil to enter the waterways, or the ground and use due caution when operating oil-bearing equipment by using absorbent materials to prevent leaks or spills.

A concrete washout station will be created on site by isolating and lining an area that the concrete trucks will wash any excess concrete. All accepted washing locations must be cleaned up prior to demobilization. Any excess material shall be removed upon project completion and disposed of at the appropriate facility. Solidified cement waste from truck chute cleaning is solid waste and shall be cleaned up and transported to the landfill.

All hazardous wastes produced by the Project shall be packaged, transported, and disposed of at the landfill by an approved waste management company. Such loads shall be manifested, and a copy of the manifest included in reporting. All hazardous materials will be properly labeled and stored until removed from the Project site. If necessary, they will be transported by barge in labeled containers to The New Providence Ecological Park or another approved waste handling facility. All accidental releases of hazardous material or hazardous waste will be reported promptly to the Project Manager. All spills, regardless of the volume, will be reported and recorded.

#### *8.1.2 Erosion and Sediment Control*

All erosion and sediment control measures shall be maintained throughout the course of the project and removed at the completion of the project, and appropriate measures shall be taken to return the area to its previous state.

All excavated soil and spoil materials will be managed in a manner protective of the environment and use due caution during excavation or any other soil management in the

vicinity. Construction activities and components that would require sediment control measures include land clearing, transport, and deposit of fill material to site, stockpile erosion, base formation, and dewatering.

Stormwater that has accumulated in excavated areas, chlorinated rinse water, and chlorinated water used to sterilize/flush pipelines shall not be directly discharged or otherwise allowed to enter waterways, vegetation, or drainage ditches without following due diligence.

Erosion control and construction impact minimization techniques to be implemented for specific tasks include:

#### Land Clearing

- Minimize disturbance of areas by delineating construction zones and retaining surrounding native vegetation.

#### Transport of Material to Site

- Haul truck to be fitted with tarpaulin.
- Speed control restrictions to be enforced especially since it is a small area.

#### Deposit of Material on site

- Speed control restrictions to be enforced.
- Water truck will be used if necessary.

#### Stockpile Erosion

- Stockpiles will be stored away from open water.
- Stockpiles will be contained with silt fencing and or covered with polyethylene sheeting.

#### Utility Installation

- Limit trench size to control the amount of water exposed at one time.
- Use of the existing drainage system for dewatering.

### 8.1.3 Traffic Management

Access to the site is through the existing access road. There will be an increase in traffic at the site and on the main thoroughfare.

To mitigate the traffic impact, notice should be given of the commencement of work and possible traffic inconveniences; signage will need to be placed along in appropriate areas to advise the local community of ongoing works. Flagmen will be placed at the entrance and exit sites to direct activities especially during the hauling of fill material or during peak traffic times. The roadway will be kept free of debris. Haul trucks will require tarpaulins while carrying fill and/or debris.

#### 8.1.4 Light, Noise and Dust Abatement

Noise, light and dust disturbances due to construction activities need to be managed to reduce the impacts to the local community, particularly during the evening and overnight hours

##### Noise

The general rule shall be that construction operations shall be restricted to daylight hours between 0700 hrs. and 1900 hrs. Where there is a reason to work outside these hours to speed up the progress of works, local communities will be given advance notice and specific requests will be reasonably accommodated. Any complaints from local communities concerning noise shall be reported to the Client and steps taken wherever possible to conform to local wishes, for instance in relation to the specific timing of activity.

##### Light

If construction is to occur during hours when enough daylight is not available and lighting of the work area is required, the Contractor is expected to manage excess lighting and glare by:

- Strategic placement of lights away from residential areas
- Tilting lights downwards, and
- Using shielding to restrict the glare of lights

##### Dust Abatement

During construction, air quality impacts shall be minimized using proper air quality control measures. Air quality controls measure that will be implemented include:

- All equipment used and all facilities erected on site are to be designed and operated to control the excessive emission of dust, fumes, and any other air impurity into the atmosphere.
- Spray earthworks, roads, and other surfaces as necessary with water to reduce dust generation.
- A water truck will be employed, as required, to dampen work areas, excavated areas, and stockpiles to prevent the emission of excessive dust from the site.
- All access roads shall be periodically maintained to ensure they are free of debris.
- Contractor/Subcontractors will maintain all construction equipment to reduce exhaust emissions.

#### 8.1.5 Sewage Management Plan

There will be no drainage of sewage or wastewater to the sea, the wetlands or any natural water bodies on or near the project site at any time. During, the construction phase, portable potties will be distributed throughout the site and will require weekly maintenance. A licensed contractor will be responsible for the servicing the porta potties and collection of human waste. Portable toilets will be removed from site during hurricanes or threatening bad weather events.

Septic tanks or other wastewater systems will be used during the operational phase and will be maintained and disposed of separately as directed by the Department of Environmental Health Services. Sewage tanks should be installed away from open water bodies and at least 6ft from any buildings.

The Bio Rock System will be installed to along with additional septic tanks. The Primary Tank will clarify the raw sewage by dividing fats, oils, greases and organic solids. The sewage then passes through an effluent filter, before discharging into the BIOROCK reactor. The Bioreactor purifies further the pretreated wastewater with a biological process. A BIOROCK Media, an exclusive and very efficient carrier material for bacteria will naturally treat the wastewater. Depending on the ground type, effluent will be discharged by gravity, or by a pump into a secondary septic tank.

#### 8.1.6 Biodiversity Management Plan

Potential impacts to the natural environment include habitat loss as a result of land clearing, the introduction of invasive species through imported flora species and loss of biodiversity due to hunting and human fires.

##### Native Vegetation

There are two (2) terrestrial ecosystems identified, Coastal and Interior Upland. Steps should be taken to retain the native vegetation that occurs in these ecosystems. There will be no additional clearing of vegetation on site. Land clearing should be limited to the building footprint.

There are three (3) orchids on the site, *Encyclia altissima* (Christmas Orchid), *Encyclia rufa* (Rufous Orchid), and *Oeceoclades maculata* (African Spotted Orchid). Steps should be taken to transplant any orchid that's in the construction area to an area that is outside of said area. The plants should be carefully uprooted (using a shovel) if in soil or cut from a tree by removing the tree's branch and then placed in an upright position in DBEF-Shrubland outside of the construction zone.

##### Invasive Species Removal

The efficient management of invasive species found around the site is paramount. These plants should be completely removed, including the root system, and incinerated when appropriate. The invasive species should not be reused as mulch to reduce the spread of seeds

and potential regrowth. The landscape palette should not include the use of any invasive species.

### Wildlife Management

Prior to clearing or excavating any areas a preclearing inspection will be carried out to determine if any wildlife is present. If wildlife is found to be present, work will be paused in that area until relocation can be arranged for wildlife found. The proper management of wildlife, specifically nesting birds is extremely important. Construction should be halted immediately when a nest is discovered, and that information should be passed on to the Environmental Monitor. The EM should then consult with the Project Manager and Owner to decide on a course of action as it relates to either halting construction activities until after the nesting period or transferring the nests outside of the construction area. It is advised that the EM consult with the Bahamas National Trust and Ardastra Gardens & Wildlife Conservation Centre for assistance with transferring nests.

During the Operational Phase there should be clear signage discourage the feeding of wildlife.

### Revegetation

Land clearing places strenuous pressures on the environment and can result in habitat loss and habitat fragmentation of native vegetation. Removal of vegetation along the ridgeline and slope may result in flooding and erosion during heavy rains and extreme storm events. To reduce the effects of terrestrial habitat loss, habitat restoration is proposed. Various flora removed for construction will be replanted in the areas selected for restoration. Plants selected for restoration will include species endemic to the island and protected species.

### Wetlands

Due to the project being close to natural wetlands and the Bonefish National Pond, special attention should be placed on protecting this environment. Wetlands provide a habitat for ecologically and economically important juvenile reef fish, provide protection to the coastline from storm surges and flooding, improves water quality, provide income through ecotourism, and protects the shore from erosion. All efforts should be made to keep these wetlands intact.

It should also be noted that the dirt road leading to the project site floods during high tide. Care should be taken when building up the roadway or placing structures on the property to ensure that tidal flow in the area does not substantially change. If human-related structures such as a roadway were to impede tidal flow, then it can cause impacts such as flooding on the coastal side of the property and poor water quality and nutrient circulation on the mangrove/sandy shore of the property. In areas where the road passes through wetlands culverts should be installed to insure there is continuous flow and one area is not isolated from water access.

## 9.0 EMERGENCY RESPONSE PLAN

### 9.1 Fire Management Plan

#### **POLICY**

To ensure proper safe work practices and procedures are followed for the protection of our employees against fire/explosion hazards, the following work practices, procedures, and engineering controls will be enforced.

#### **RESPONSIBILITIES**

Site supervision is designated by the supervisor to manage the Fire Prevention Program. The Site supervision will ensure that all employees are informed and trained in the following minimum elements for Emergency Action Plans:

- Site supervision will ensure all employees are trained in the proper operation of all types of fire extinguishers provided by the company.
- Procedures for reporting a fire or other emergency.
- Procedures for emergency evacuation for all areas of work, including type of evacuation and exit route assignments.
- Safe assembly areas designated for all work areas in the event of evacuation.
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate.
- Procedures to account for all employees after evacuation.
- Procedures to be followed by employees performing rescue or medical duties.
- The members in the chain of command who may be contacted by employees who need more information about the Plan or for an explanation of their duties under the Plan.

All staff will undergo the initial site induction which will review the EMP and all mitigation. Toolbox talks will be conducted weekly, addressed to all the staff. Having workers in good health is one of the drivers of the construction project. A number of steps shall be taken to make sure that workers are kept in good health conditions.

South Bay Glamping will ensure all the Contractor's employees, all Subcontractors and any other Contractor's or Employer's personnel employees and all truck drivers and crew making deliveries to site for construction activities and to the immediate local communities, concerning the risks, dangers and impact and appropriate avoidance behavior with respect to, Covid 19 provide sanitizer, social distancing where possible and the use of masks. Staff will be encouraged to stay at home if exhibiting symptoms and testing required to return to work.

### 9.2 Hurricane Preparedness Plan

The Hurricane Preparedness Plan serves the purpose of a guideline for contactors before, during and after the hurricane, while providing background information, it is detailed to

ensure minimum damage and shutdown time. Hurricane season runs from June 1 to November 30 each year.

The following notifications determines the actions to be implemented:

- Hurricane/Tropical Storm watches mean that a hurricane or tropical storm is possible in the specified area.
- Hurricane/Tropical Storm warnings mean that a hurricane or tropical storm is expected to reach the area, typically within 24 hours.

The PM will stay tuned to weather alerts via radio, TV or social media and evacuate as soon as local authorities give the word. Before storm season the PM needs to learn your community's emergency plans and the location of nearby shelters so employees have a safe place to go if they cannot leave the island.

The contractor is required to prepare before a severe weather event. The PM and Health and Safety Officer will ensure all equipment is secure and cover incomplete structures before a storm.

Some or all the following hurricane preparation materials and equipment should be available:

- Concrete Anchors
- Duct Tape
- Garbage Bags
- Generators
- Ground Anchors
- Fuel
- Misc. Hardware and Fasteners
- Netting
- Plastic Sheeting
- Plywood
- Pumps
- Rope
- Sandbags
- Shoring and Bracing
- Water
- Wire

The Contractor is to monitor the weather closely once a Tropical Storm Watch is issued. Both local and international weather services should be monitored for accurate information and provide updates to staff.

Once the National Weather Service issues a Hurricane Watch, it is time to secure structures and equipment on the job site for the storm by implementing the following actions:



- Use rope, sandbags, ground anchors and other items to weigh down materials that could easily fly away.
- Cover materials with plastic sheeting, netting or garbage bags to prevent water damage.
- Stack loose materials together and secure them with rope or duct tape to keep them from dispersing.
- Complete work on partially completed structures to minimize damage if time allows.

After a Hurricane Warning is announced the following actions should be implemented:

- Loose materials or expensive equipment should be moved or secured.
- Construction dumpsters should be picked up or covered with tarp.
- Remove or tie down portable bathrooms.
- Remove hazardous chemicals to prevent them from being released into the environment.
- Remove materials, tools or equipment that can be damaged by rising water.
- Move heavy equipment and machinery to a garage or other covered structure.
- Tear down and store light-weight fence screens and job site signage.
- Move any portable electronics, job site plans and other important documents from the construction trailer to a safe location offsite.
- Turn off power to the site and make sure fuel is available for power generators.
- Board up door and window openings.
- Tarp or board up any other large openings.
- Place sandbags around the perimeter of structures as reinforcement.
- The site evacuation plan should be implemented once the site is secured.

Once 'the all' clear has been given after a storm the PM and SE may return to the site to assess damages and determine cleanup efforts. Upon returning to site the following steps are to be taken:

- Be careful when walking in standing water, which may contain sharp or jagged objects.
- Use caution when entering the building because structural elements may be weakened.
- Rent a dumpster to safely dispose of materials that were damaged by the storm. Waste should be removed from the site and disposed of at the New Providence Ecological Park (NPEP)
- Plan to Remove Water.
- During a hurricane, water will inevitably flood your work site. Removing it is important for the safety of your property and neighboring structures. Standing water can soften the ground, compromising structural stability.
- Place pumps in excavations or basements before the storm hits.
- Have dehumidifiers and fans available to dry out the space.
- Discharge water to the storm water system.

The construction hurricane plan should be communicated to staff prior to the start of hurricane season and a briefing held by the PM once it is determined that severe weather is imminent. Hurricane preparedness is essential for a safe construction site.

The weather will be monitored by the Contractor on a regular basis to determine site conditions. During heavy rain events site works will be stopped and commenced once weather conditions remain favorable. This includes the presence of lightning within 5 miles of the site.

### 9.3 Spill Prevention and Management Plan

Spills and leaks of oils and fuels can adversely affect terrestrial and aquatic environments if not managed properly. The Spill Response Plan was developed for the use of all contractors and subcontractors, to prevent and control any spillage associated with the project in accordance with Environmental, Health and Safety regulations.

#### Potential Impacts

The presence of fuel and other hazardous material and the handling on site has the potential to have the following negative impacts:

- Groundwater contamination may occur from fuel and hazardous material being spilled onsite. Due to the porous geological makeup of The Bahamas spills have the potential to permeate the limestone rock and travel into the groundwater system.
- Spills into the waterways can adversely impact marine life and ecosystems. This may occur during refueling, concrete works and the storage of fuel and other materials near the coast.
- Fires may occur as fuels and other materials are highly flammable. Fires may be ignited by smoking and other flames.
- Spills also pose a risk to site health and safety and may cause slips and falls resulting in injuries and other medical issues such as eye, nose and throat irritation, headaches, dizziness, nausea, vomiting, confusion, and respiratory problems.

#### Spill Prevention Methods

The best way to avoid spills is to recognize all potential environmental exposures and correct potential problems before an accident occurs. All spills including small leaks should be reported to the Environmental Manager. The following proactive measures will be adopted to prevent the likelihood of spill event:

- All machinery and equipment should be inspected for any leaks before entering the project site. Equipment will be kept clean (i.e. free of spilled fuel, oil, grease, and debris) and leak free.

- Equipment and Machinery will be inspected daily prior to use and any leaks found will need to be repaired at that time. Equipment not repaired immediately, will not be in operation until repairs can be made.
- Absorbent sheets and/or containers will be placed under vehicles and equipment parked in high-risk areas (i.e. adjacent to open water or drains or immediately under any vehicle or equipment that is leaking).
- All lubricants, fuel containers and oil containers will be properly stored and capped to prevent any leakage. Lubricants, fuel containers and oil containers should be stored in a suitable container on a concrete pad and properly marked to prevent accidental use of the wrong lubricant. Lubricants will not be transferred to other containers for convenience.
- Fuel will be purchased locally and immediately transferred to vehicles on site using a fuel pump. No fuel will be stored on site. Refueling will be done on a concrete pad and a drip tray will be used to prevent spill. Fuel vehicles are parked only in designated areas on site with brakes applied.
- Topping off practices when fueling will be discouraged. Tanks should not be filled beyond 95%. Impervious fire-proof containment trays should be used when filling small cans to contain any possible spills.
- Only authorized personnel shall fuel the equipment. Personnel performing these operations will have all appropriate safety and environmental measures in place before filling operations begin (this includes spill response measures, a spill kit on hand and appropriate training). These individuals must ensure all fueling equipment is in good working order and that fuel cans are properly sealed when transporting.
- All hose connections should be wrapped with oil/fuel absorbent pads during fuel transfers. All fittings will be periodically inspected for leaks by looking at the filling for cracks, leaks, dry rot, looseness, etc.
- All fuel transfers should be done as far away as practical from drainage and open water (use 100 ft distance from water as a guideline). All fueling of pick-up trucks and other vehicles will be done off-site.
- Emergency spill response kits should be located in areas where oil and fuel-filled equipment will be working. Additional spill response materials in sufficient quantities should be on site to catch drips, minor leaks, and spills.
- All fuel trucks, and oil storage tanks must be inspected to ensure there are no potential leaks prior to, during and after filling.

- The EM will provide training to Construction Staff and contractors regarding proper methods for transporting, transferring, and handling substances that have the potential impact to human health or the environment Personnel must be adequately always trained and present and fully alert during any fluid transfers.
- Material Safety Data Sheets (MSDS) for all contaminants on-site will be readily available. These will include human health effects of chemicals handled and will be included in the required chemical environmental and safety training for all employees handling or otherwise exposed to the contaminants. All appropriate personal protective equipment, handling and response procedures will also be identified in the MSDS or otherwise recommended by the suppliers/manufacturers and will be followed by the Project staff.
- Schedule and conduct spill prevention briefing for operating personnel at intervals frequent enough to assure adequate understanding of spill prevention. Such briefing should highlight and describe known spill events precautionary measures.

#### Emergency Spill Response Equipment

Spill kits are to be kept on site, made accessible and restocked as needed. The Contractor should have additional 'universal' absorbent pads on site.

In the unlikely eventuality there is a spill, on the site there will be Environmental Emergency Response kits. These spill kits will consist of the following listed materials (or similar):

- Absorption pads (43 x 48 cm)
- Absorption rolls (96 cm x 40 m)
- Spill drum for contaminated materials
- Absorption socks (7.6 cm x 1.2 m)
- Sack of absorption grit
- Plastic foil

Once an eventual spill has been cleaned-up all contaminated materials will be packed in plastic sacks and / or foil and placed in the hazardous material bin. This bin should be clearly labeled. All contaminated waste should not be burned and isolated from other waste when transported to the New Providence Ecological Park.

#### Spill Response Procedure and Communication

The Spill Response Procedure describes what to do when you see a spillage occur. When a spill occurs, the following actions should be taken:

1. Immediately determine if the spill can be stopped or contained. If it can, then take action to do so.
2. Classify the spill by determining
  - a. The type of spill (fuel, oil, lubricant, solid)

- b. Estimate the quantity of the spill
  - c. The source of the spill
3. If there is a risk of an explosion or fire, seek assistance
4. Once the spill has been classified, contact the supervisor immediately

Minor spills pose little or no hazard to person or property and are small enough to clean up using the Emergency Spill kit.

The Contractor is responsible for:

- Notifying the Environmental Manager immediately on the discovery or notification of a spill over a gallon.
- Ensuring that Emergency arrangements are made (if necessary)
- Ensuring communication lines are established with relevant agencies and authorities when a spill occurs.
- Ensuring that employees on the project are aware of the emergency telephone numbers, addresses, and response procedures.

#### **Where to report**

- **ALL** spills (both major and minor spills) are to be reported to the EM.
  - The Environmental Manager will notify The Department of Environmental Planning and Protection, The Department of Environmental Health Services, The Port Department, and local authorities as necessary.

#### **What to Report**

When reporting the incident provide following information (See Spill reporting Form in Appendix:

- Caller name and phone number
- Location of Spill
- Source of Spill
- Time of Spill
- Volume of Spill
- Potential Hazard of Spill
- Has the spill been contained?
- Has the spill material reached a body of water?
- Responsible party's name, address, telephone official to contact, etc.
- Weather conditions at the spill site

#### **How to Clean up**

- Upon discovering a spill, every effort will be made to contain the spill and stop it at its source (when this can be done without danger to the health and safety of those involved).
- Containment may involve:
  - blocking storm water drains
  - building berms/dikes

- deploying booms/absorbent materials
- deploying other barriers to prevent the spread of the pollutant, and other measures to minimize health and environmental damage.
- Once the spill has been contained, a clean-up and decontamination plan should be established. Those steps should include but not limited to:
  - Wearing PPE to clean-up
  - Use spill kit equipment as needed including absorbent material, pads, or booms
  - Use a pump when necessary, for large amounts of fluid to pump materials into a sealable container
  - Used clean-up material should be placed in a designated hazardous material bin
  - Contaminated soil should be excavated to a depth where the soil has no visible signs of a spill and then are backfilled with clean material. The contaminated soils should be placed in a secured and labeled container.
  - Photographs of the spill and clean-up should be taken for reporting
  - Proof of disposal from the waste handling facility is to be provided for reporting.
- The spill of the incident report template should be completed with all the details and photographs of the event.
- An analysis should be completed to determine the cause of the spill and the necessary adjustments are to be made and may include additional training, storage or handling methods etc.
- All clean-up supplies are to be replenished.

#### 9.4 Site Health and Safety

There will be a fully equipped First Aid Box at the work site and a list of local emergency telephone numbers in case of accident. Minor and major accidents shall be recorded in an accident logbook.

The Contractor shall ensure that all staff, including sub-contractors, undergo safety training and inductions. These training events will educate workers on the best practices for working (to include but not limited to):

- With hazardous materials
- In confined spaces
- With heavy equipment

Basic personal protective equipment (PPE) such as boots, hard hat and vest should be worn. Specialized equipment shall be worn in areas designated for their use for example when working alongside or over water, where there is a risk of drowning, the Contractor shall take appropriate measures to prevent falling (e.g. use of harnesses) and rescue equipment shall be readily on hand (e.g. use of life jackets, life lines/rings and a safety boat). At all times work

sites shall be maintained in an orderly, safe, and tidy state. Precautions against fire accidents shall be taken and appropriate fire safety equipment supplied and clearly indicated at work sites.

The Bahamas labour laws, and occupational health and safety policies will be always applied.

### 9.5 Site Emergency Response Plan

In the event of any emergency the Site Manager must be contacted to ensure the appropriate action is taken. A list of potential emergencies and responses are outlined in table 7 below.

**Table 7: Summary of potential emergencies and responses**

POTENTIAL EMERGENCY	WHAT TO DO?
Fire Explosion Machinery accidents	<ul style="list-style-type: none"> <li>● Call for the fire truck.</li> <li>● For serious injuries call the local Medical Clinic, nurse or doctor.</li> <li>● Immediately inform the Contractor.</li> <li>● For serious injuries call the local Medical Clinic, nurse or doctor.</li> <li>● Evacuate all personnel to a safe area immediately.</li> <li>● If the fire is likely to damage neighboring property, inform the adjacent residents.</li> <li>● Fire extinguishers are to be made available on site.</li> <li>● Evacuate all personnel to a safe area immediately.</li> <li>● If utilities related, call the relevant service provider (e.g. BPL)</li> </ul>

<p>Spills Management, Contaminated Soils &amp; Major Spills: Spill or release of diesel fuel or oil Spill or release of other hazardous chemicals or material</p>	<ul style="list-style-type: none"> <li>● For major spills, (defined as a spill that is likely to have direct environmental consequences.) refer to Spill Plan in section 9.4.</li> <li>● Immediately call the Fire Department and notify the Contractor.</li> <li>● Identify the source of the spill and contain.</li> <li>● If the material is dangerous or unknown, evacuate the site immediately and notify all neighbors.</li> <li>● If it is safe, stop the source of the spill immediately.</li> <li>● Contain the spill and control its flow.</li> <li>● DEHS must be notified about any spills that are likely to threaten the environment.</li> <li>● The Department of Environmental Planning and Protection must be notified about any spills that are likely to threaten the environment as required by Part V of the DEPP Act.</li> <li>● For minor spills use the spill kits and dispose of them properly.</li> </ul>
<p>Heavy rainstorm, flood or and hurricane</p>	<ul style="list-style-type: none"> <li>● Refer to the hurricane policy.</li> </ul>
<p>Rupture of Utilities (water pipes, electrical lines, sewerage).</p>	<ul style="list-style-type: none"> <li>● Notify the relevant utility agency and avoid any contact.</li> </ul>
<p>Site security breach or public safety issue</p>	<ul style="list-style-type: none"> <li>● Notify the police immediately.</li> <li>● Where public safety issues exist, barricade to restrict egress and address issues immediately.</li> </ul>

## 9.6 Emergency and Utility Service Contact

### Medical Support, Accident and Emergency

Princess Margaret Hospital (PMH)

Tel. (242) 326-7014

Doctors Hospital

Tel. (242) 302-4747

National emergency medical and protection services

Tel. 911, 919, (242) 323-2586

### Protection

Police or Fire



Telephone: 911, 919, (242) 322-4444

The following workers may be contacted by the corresponding organization in case of damages or when necessary for coordination of related works:

Bahamas Power and Light (BPL) Power Outage  
Tel. (242) 325-0505 or (242) 325-4504 (24 hours)

Bahamas Telecommunications Company (BTC)  
Mr. Benjamin Smith - 302-7000, Ext 7080, 424-0487  
Mr. Kenyin Basden - 350-7703 or 424-4285  
Mr. Kyle Dorsette - 302-7496 or 424-0006  
Mr. Dino Rolle - 376-5830

BTC Telephone Repairs  
(242) 225-5282

Cable Bahamas  
Mr. Pedro Munroe - 376-4063  
Mr. Swithen Burrows - 677-8504, 422-6020  
Mr. Rob List - 502-8623, 376-0403

Water and Sewerage Corporation  
Mr. Robert Deal- 302-5511  
Mr. Thomas Desmangles- 525-1910  
Mr. Leslie Hutchinson- 302-5724  
Ms. Deidre Taylor- 302-554

## 10.0 APPENDICES

### Appendix A: Project Conceptual Plan



IMAGES OF YOUR ECO-TOURISM VACATION

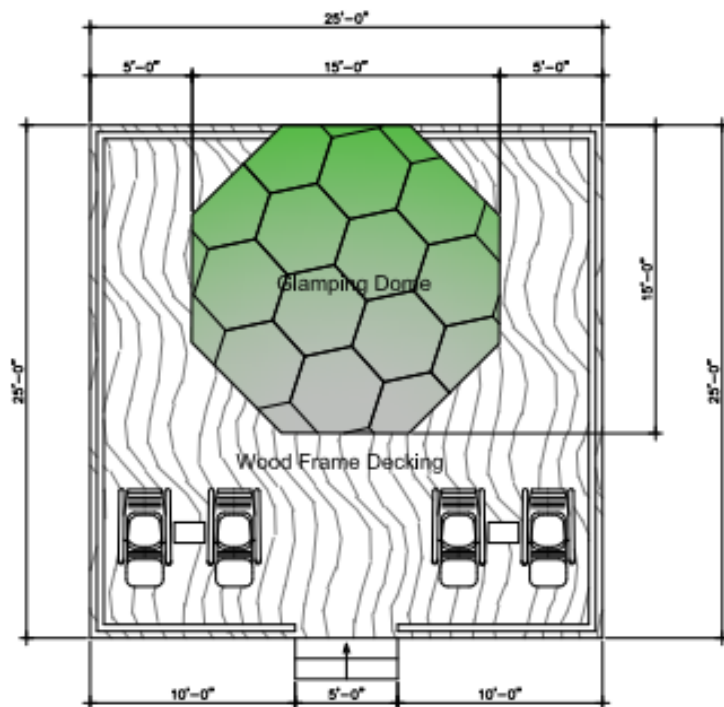
**DRAFTING SERVICES**

**QDS**

Order: S. Nassau Village  
P.O. Box: N-21345  
Nassau, Bahamas  
Tel: (242) 814-9477  
Email: [info@qds.com](mailto:info@qds.com)

**Proposed South Bay Glamping And Conservation Experience**

**N.P. Bahamas**



ECO-TOURISM GLAMPING DOME

SCALE: 1/8" = 1'-0" (SEE NOTES AND SHEET 10/20/16)



**DRAFTING SERVICES**

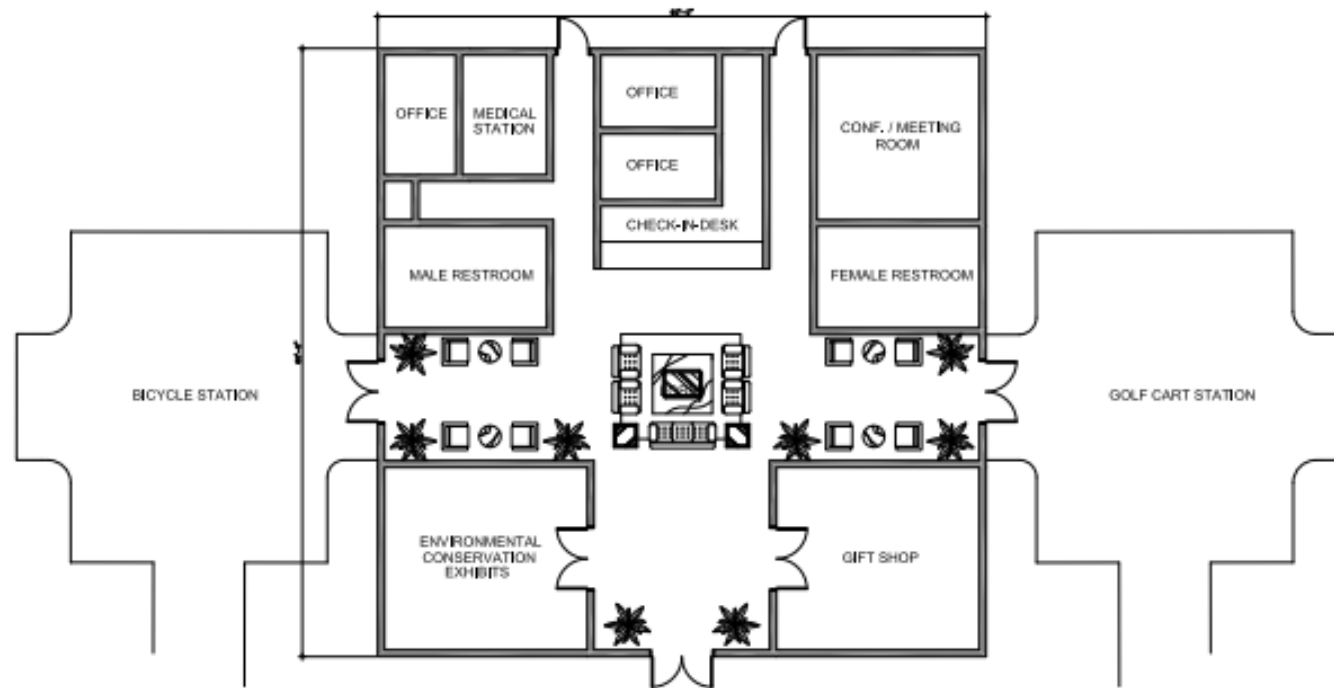
**QDS**

Daniel S. Nasson, Village  
 P.O. BOX 547148  
 Nassau, Bahamas  
 Tel: (242) 814-2477  
 Email: lytop93@gmail.com

**Proposed South Bay Glamping And Conservation Experience**

**N.P. Bahamas**

**3**



ECO-TOURISM ADMINISTRATION / CHECK-IN-DESK / WELCOME CENTRE

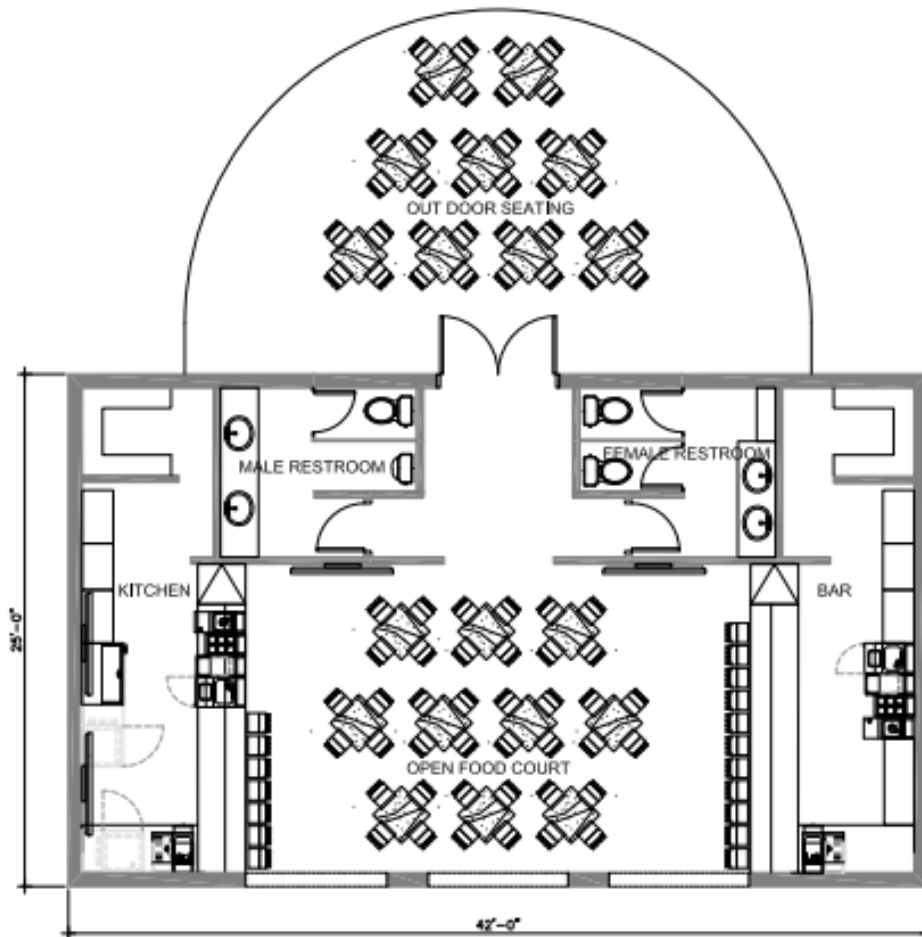


**DRAFTING SERVICES**

**QDS**

Boxer St. Nassau Village  
 P.O. BOX 7444  
 Nassau, Bahamas  
 Tel: (242) 394-4077  
 Email: [info@qds.com](mailto:info@qds.com)

**Proposed South Bay Glamping And Conservation Experience  
 N.P. Bahamas**



ECO-TOURISM ADMINISTRATION / CHECK-IN-DESK / WELCOME CENTRE

**DRAFTING SERVICES**

**QDS**

Box 51, Nassau Village  
 P.O. BOX 51-7348  
 Nassau, Bahamas  
 Tel: (242) 894-4417  
 Email: info@qds13@gmail.com

**Proposed South Bay Glamping And Conservation Experience**

**N.P. Bahamas**

## Appendix B: Spill Report Forms

<b>SPILL REPORT FORM</b>			
<b>Reporting Party's Name</b>			
Address/City/State:			
Phone:			
<b>Responsible Party's Name (If known)</b>			
Address/City/State:			
Phone:			
Date of Spill		Time:	
Location:		Product spilled:	
Estimated Quantity		Discharge stopped or contained?	
Source or cause of Spill (if known):			
Action Take			
Injuries/fatalities/evacuations?			
Environmental Damage			
List of equipment used: Disposal site/facility for used absorbents			
<b>Oil Spill Notifications</b>			
Organization	Phone	Time Contacted	Case Number
Fire Department			
Spill Response Contractor			
Department of Environmental Planning and Protection			
Department of Health Services			
<b>Preventative actions taken</b>			

**\*Note: Please attach a map of spill location**