ENVIRONMENTAL ASSESSMENT REPORT FOR
THE CONSTRUCTION OF A DOCK OFF OF
THE KING CHRISTIAN HOTEL
ST. CROIX, U. S. VIRGIN ISLANDS

SUBMITTED TO

THE OFFICE OF COASTAL ZONE MANAGEMENT DEPARTMENT OF
PLANNING AND NATURAL RESOURCES GOVERNMENT OF THE VIRGIN
ISLANDS

AND

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
ANTILLES OFFICE

SUBMITTED BY

USVI OPPORTUNITY FUND, LLC

REVISED MAY 2019
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Appendix A

Qualification Statement – Bioimpact, Inc.

Appendix B

Surrender of Submerged Lands Associated with CXX-21-91W
1.00 NAME AND ADDRESS OF APPLICANT

USVI Opportunity Fund, LLC
2006 Eastern Suburb, Suite 5
Christiansted, St. Croix, U.S. Virgin Islands 00820

2.00 LOCATION OF PROJECT

The dock will be constructed to the north of the King Christian Hotel off Plot No. 59 Kings Wharf, Christiansted, St. Croix, U.S. Virgin Islands.

The dock will be located at Latitude 17° 44.851’N and Longitude 64° 42.221’W.

The following location map and agency review map depicts the project in reference to adjacent properties and island features as well as the jurisdiction line of the Department of Planning and Natural Resources, Division of Coastal Zone Management. The vicinity map is also attached showing the regional context and vicinity in the U.S. Virgin Islands.

Figure 2.00.1 Location King Christian Dock
Figure 2.00.2 Location of project within the Coastal Zone Management Jurisdiction which is shown in color on this map.

Figure 2.00.3 Vicinity Map
3.00 ABSTRACT

The dock off the King Christian Hotel was destroyed by the passage of hurricanes Irma and Maria in September of 2017. USVI Opportunity Fund, LLC proposes to build a new dock expending from the same location as the previous structure. The dock will have grated decking and will extend 90’6” offshore. The dock will be 10’ in width with a 66’8” by 6’ “T” at the end and four finger piers; the two furthest seaward 24’ long and 3’ wide and the two closest to shore 24’ long and 4’ wide. The existing concrete pile caps will be reutilized, and a total of 16 concrete piles will be re-used. A total of 64 new Pearson piles (50-12” diameter and 14-16” diameter) will be installed using a vibratory hammer. The new dock will be 1608sf.

4.00 STATEMENT OF OBJECTIVES SOUGHT BY THE PROPOSED PROJECT

The objective of the application is to allow for the construction of a new dock off the King Christian Hotel, replacing the dock which was destroyed by the hurricanes. The dock is intended to be used by charter boats and by transient boaters so that they may access downtown restaurants and shops.

5.0 DESCRIPTION OF PROJECT
5.1 Summary of Proposed Activity

A new 1608sf dock will be constructed off the Christiansted Boardwalk north of the King Christian Hotel. The dock will have grated decking and will re-utilize 7 concrete pile caps and 16 concrete pilings which remain structurally sound from the old dock which was destroyed by hurricanes Irma and Maria in September of 2017. The new dock will require the installation of 64 new pearson piles and these piles will be installed by a vibratory hammer from a small barge.

5.01a Purpose of Project

The purpose of the project is to construct a new dock off the King Christian Hotel, replacing the dock which was destroyed by the hurricanes. The dock will provide dockage to charter vessels as well as transient boaters wishing to visit downtown Christiansted.

5.01b Presence and Location of Any Critical Areas and Possible Trouble Spots

The proposed dock is in the historically developed town of Christiansted and includes the footprint of the dock which was destroyed by hurricanes Irma and Maria. Despite the heavy long-term use of the area there are seagrass beds and corals within the harbor. To the north and east of the dock there are patches of Thalassia testudinum intermixed with Halophila stipulacea, and there is also some sparse T. testudinum scattered along the edge of the boardwalk. The remaining pier pilings are colonized by Porites porites, and P. astreoides. There are a few Siderastrea radians and S. siderea on the pilings and surrounding scattered debris. There are roofs and a variety of debris scattered around the dock.

The debris in and around the footprint of the dock will need to be picked up prior to construction to allow for pile placement and to prevent damage to vessels using the dock in the future. The
debris that will need to be removed is recent debris and is not yet colonized. The older debris which has some colonized is beyond the footprint. The pilings are coral colonized, and care will need to be taken during the reconstruction of the dock to prevent impact to these corals. The dock has been designed to avoid the scattered seagrass resources within the area.

5.01c Proposed Methods of Construction

The construction and removal of debris will be done from a small barge. Debris will first be picked up from the seafloor which is in within the footprint of the pilings and footprint of the docks and berths. The broken pile cap will also be removed. The submerged pile cap has not been colonized yet by corals.

New piles will be driving by vibrahammer and then beam joist, lateral bracing and grated decking will be placed. This will all be down by small barge.

5.01d Provisions to Limit Site Disturbance

Detailed environmental surveys were conducted during the design of the project locating the limited resources within the area. The dock has been designed to avoid the seagrasses within the area and will be keeping the existing concrete pilings thereby not impacting the existing corals. Turbidity barriers will be installed during construction to prevent sediment impacts during pile driving. Debris will be picked up from within the project area allowing the colonization of the cleared areas.

5.01e Sediment Control Methods to be Implemented

Turbidity barriers will be placed around areas of in-water work prior to any pile driving or construction.

5.01f Schedule for Construction Activities and Implementation of Sediment Control Measures

Turbidity barriers will be placed before any in-water work occurs. Debris will be removed from the project footprint and docking locations and disposed of at the Anguilla Landfill. Broken pilings and pile caps will then be removed, and then new piles will be driven, beam joist and lateral bracing placed and finally new grated deck sections will be placed.

5.1 g Maintenance of Sediment and Siltation Control Measures

The turbidity control measures will be maintained throughout the construction as necessary to contain turbidity. If deficiencies or damage is noted, they will be repaired immediately.

5.2 Exhibits and Drawings

<table>
<thead>
<tr>
<th>Drawing</th>
<th>Page</th>
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<tbody>
<tr>
<td>Site Plan Survey</td>
<td>5</td>
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<td>Existing and Proposed Dock Plan</td>
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<tr>
<td>Section</td>
<td>Page</td>
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<td>----------------------------</td>
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<tr>
<td>Pearson Piling Layout Plan</td>
<td>6</td>
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<tr>
<td>Structural Framing Plan</td>
<td>7</td>
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<tr>
<td>Bracing Plan</td>
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<td>Framing Plan</td>
<td>8</td>
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<td>Decking Plan</td>
<td>8</td>
</tr>
<tr>
<td>Elevations</td>
<td>9</td>
</tr>
<tr>
<td>Bracing and Decking Details</td>
<td>9</td>
</tr>
<tr>
<td>Turbidity Barriers</td>
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</table>
NOTE:
ATTACH ALL EXTRUDED BEAM JOINTS TO C-CHANNEL.
CROSS BEAMS W/ 5.5 BOLTS PER MANUFACTURER SPEC.
USE TEE ANGLE PLATES AS NEEDED FOR ATTACHING 45 & 90
DEGREE CORNERS. SEE DETAIL 1.2, PAGE A-4.
ALIGN JOINTS END TO END OVER BEAMS, ATTACH TOGETHER W/ DRILLED PLATES & 5.5 BOLTS.
5.3 Project Workplan

- Turbidity barriers will be installed around work areas
- Debris will be picked up from the project footprint and disposed of at the Anguilla Landfill
- New pilings will be driving with a vibra-hammer
- Joist Beams and Bracing will be placed
- New Grated Decking will be placed

6.0 ENVIRONMENTAL SETTING AND PROBABLE PROJECT MODIFICATIONS

6.1 Climate and Weather

Prevailing Winds

The Virgin Islands lie in the "Easterlies" or "Trade Winds" which traverse the southern part of the "Bermuda High" pressure area, thus the predominant winds are usually from the east northeast and east (IRF, 1977). These trade winds vary seasonally (Figure 6.01.1) and are broadly divided into 4 seasonal modes: 1) December to February; 2) March to May; 3) June to August; and 4) September to November. Below are the characteristics of these modes as taken from Marine Environments of the Virgin Islands Technical Supplement No. 1 (IRF, 1977).

December - February

During the winter the trade winds reach a maximum and blow with great regularity from the east northeast. Wind speeds range from eleven to twenty-one knots about sixty percent of the time in January. This is a period when the Bermuda High is intensified with only nominal compensation pressure changes in the Equatorial Trough. The trade winds during this period are
interrupted by "Northerners" or "Christmas Winds" which blow more than twenty knots from a northerly direction in gust from one to three days. Such outbreaks average about thirty each year. They are created by strengthening of high-pressure cells over the North American continent, which, in turn, allows weak cold fronts to move, southeastward over the entire Caribbean region. These storms are accompanied by intermittent rains and by clouds and low visibility for mariners.

March - May

During the spring, the trade winds are reduced in speed and blow mainly from the east. Winds exceed twenty knots only thirteen percent of the time in April. The change in speed and direction is the result of a decrease of the Equatorial Trough.

June - August

Trade winds reach a secondary maximum during this period and blow predominantly from the east to east southeast. Speeds exceed twenty knots twenty-three percent of the time during July. The trend for increasing winds results from the strengthening of the Bermuda High and a concurrent lowering of the pressure in the Equatorial Trough. Trade winds during this period are interrupted by occasional hurricanes.

September - November

During the fall, winds blow mainly from the east or southeast and speeds reach an annual minimum. Only seven percent of the winds exceed twenty knots in October. The low speeds result from a decrease in the Equatorial Trough. During this period, especially during late August through mid-October, the normal trade wind regime is often broken down by easterly waves, tropical storms, and hurricanes.

Storm and Hurricanes

There are numerous disturbances during the year, especially squalls and thunderstorms. These occur most frequently during the summer, lasting only a few hours and causing no pronounced change in the trade winds.

A tropical cyclone whose winds exceed 74 miles per hour is termed a hurricane in the northern hemisphere, and significantly affects the area. These hurricanes occur most frequently between August and mid-October (Figure 6.01.2) with their peak activity occurring in September. The annual probability of a cyclone is one in sixteen years (Bowden, 1974). Hurricane Irma caused minor damage to the dock off the King Christian Hotel on September 6th of 2017, and two weeks later hurricane Maria destroyed the dock on September 19th-20th, 2017.

Climate

The average annual rainfall on St. Croix is approximately 40 inches, ranging from 30 inches toward the eastern end of the islands to more than 50 inches at the higher elevations to the west.
The Limetree Bay Terminal area receives less than 40 inches of rainfall per year on average. Rainfall usually occurs in brief, intense showers of less than a few tenths of an inch and major rainfall events are associated with weather systems (USGS 1998). The Virgin Islands have no sharply defined wet season. The wettest period generally is from September to November, and the driest period is from January to June (USGS 1998).

Annual temperatures average 79 degrees Fahrenheit (F), with the winter low averaging 76 degrees F. and the summer high reaching an average of 84 degrees F. Occasionally, maximum daily temperatures will exceed 90 degrees F. and minimum temperatures will drop below 70 degrees F. (Jordan, 1975).

Table Error! No text of specified style in document.01.1 Monthly Climate Summary from 1972 to 2012

<table>
<thead>
<tr>
<th>CHRISTIANSTED FORT, VIRGIN ISLANDS (671740)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual</th>
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<tr>
<td>Period of Record Monthly Climate Summary</td>
<td></td>
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<td></td>
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<tr>
<td>Period of Record: 1/1/1972 to 4/30/2012</td>
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<tr>
<td>Average Max. Temperature (F)</td>
<td>82.8</td>
<td>83.1</td>
<td>83.2</td>
<td>84.4</td>
<td>86.1</td>
<td>87.0</td>
<td>87.4</td>
<td>87.8</td>
<td>87.5</td>
<td>85.7</td>
<td>83.5</td>
<td>85.5</td>
<td></td>
</tr>
<tr>
<td>Average Min. Temperature (F)</td>
<td>71.7</td>
<td>71.7</td>
<td>72.7</td>
<td>74.2</td>
<td>75.8</td>
<td>77.1</td>
<td>77.3</td>
<td>77.3</td>
<td>76.6</td>
<td>76.3</td>
<td>75.1</td>
<td>73.2</td>
<td>74.9</td>
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<tr>
<td>Average Total Precipitation (in.)</td>
<td>1.93</td>
<td>1.42</td>
<td>1.81</td>
<td>2.41</td>
<td>4.38</td>
<td>2.70</td>
<td>3.32</td>
<td>3.82</td>
<td>5.43</td>
<td>5.50</td>
<td>6.28</td>
<td>3.07</td>
<td>42.07</td>
</tr>
</tbody>
</table>

Percent of possible observations for period of record.
Max. Temp.: 80.9% Min. Temp.: 82.9% Precipitation: 93.2%
Figure 6.01.1 A wind rose from station ST61022 showing the frequency of occurrence of wind speed and direction in 2014. (ERDC, USACE Research and Development Center wis.usace.army.mil/hindcasts.html?dmn=atlantic)

Figure 6.01.2 Tropical Cyclone Frequencies in the Atlantic (National Weather Service).
6.01.3 Tropical Storm and Hurricane Occurrences in the Atlantic (National Weather Service).

6.2 Landforms, Geology, Soils, and Historic Use

GEOLOGY OF ST. CROIX

The Virgin Islands are near the northeastern corner of the present Caribbean Plate, a relatively small trapezoidal-shaped plate which is moving eastward relative to the North and South American continents carried on the American plate. The arc of the Lesser Antilles is an active volcanic arc above a subduction zone in which the Atlantic oceanic crust of the American Plate is carried downward under the Caribbean Plate. The closest volcano to the Virgin Islands, which is still active, is Saba, about 160 km to the east.

The island of St. Croix consists geologically of two predominant mountainous areas (the North side and the East End ranges), with a central sediment filled valley in between. The oldest rock underlying both ranges, and probably in the valley as well, is from the Cretaceous period, 80 million years ago. These sedimentary rocks which were formed from the erosion of volcanic ash and debris, and are beset with igneous intrusions, underwent a period of orogeny lifting them up from the ocean floor and forming two islands with a channel in between. Oligocene clay and mud was deposited in this channel forming what is known as the Jealousy formation. Next, tertiary limestone was deposited when this channel area became a lagoon encircled by coral reef. The limestone and marls that overlay the Jealousy formation are known as the Kingshill formation. After these formations were deposited, the area underwent another period of uplifting, the two islands became connected by the newly emergent filled-in area, and the island of St. Croix was formed. Since that time, geologic activity has been limited primarily to the erosion of sediments and the formation of ponds, beaches, reefs, and beach rock coast.
Two large basins, the Virgin Islands Basin and the St. Croix Basin, separate St. Croix from the other Virgin Islands. Within the distance between St. Croix and St. Thomas, about 40 nautical miles, hydrographic charts show that the ascent from the sea floor north of St. Croix is as much as 70°. Frasetto and Northrop (1057) indicate that this northern topographic slope extends downward to the Virgin Islands Basin at a gradient up to 43°. There is an ascent of 13,656 feet within a horizontal distance of 25,800 feet, terminating with the steep north coast in the vicinity of Hams Bluff. The area has been described as the south side of the Anegada Trough and its related fault scarp (Taber 1922). Meyerhoff (1927) suggested that this block faulting took place during the late Pliocene or early Pleistocene, prior to which St. Croix was physically attached to the northern Virgin Islands. The southern and eastern portions of the St. Croix Platform, differing greatly from the northern and western regions, have a gradient of much less amplitude and therefore, a wider shelf area.

The island of St. Croix has been subject to major periods of human disturbance. The introduction of intensive agriculture began during the early 18th century; the disturbance of the native flora and fauna was so severe that the biological communities present prior to 1700 cannot be specifically determined.

The town of Christiansted has been developed since the 18th century and it harbor used for marine commerce. The shoreline has been filled and altered over time.

**GEOLOGY OF THE KING CHRISTIAN AREA**

The proposed dock will extend from the Christiansted Boardwalk a piled structure which is extends along the entire waterfront. The offshore area is a sandy bottom with scattered coral rubble and debris. Numerous docks along the waterfront have had piles installed by pile driving and jetting.

**IMPACT ON PROPOSED PROJECT**

The composition of the seafloor will allow the installation for installation of the pilings through vibra-hammering.

**IMPACT OF THE PROPOSED PROJECT**

The construction of the dock will require neither dredging or filling and will not change the existing bathymetry of the area.

**6.3 Drainage, Flooding and Erosion Control**

6.03a Impacts of Terrestrial and Shoreline Erosion

The dock will be constructed offshore and will have no impact on drainage, flooding or erosion control. The entire shoreline of Christiansted Harbor has been altered and is not subject to shoreline erosion.
6.3 Relationship of the Project to the Coastal Flood Plain

The area offshore of the boardwalk in the dock locations has been designated Zone VE 19 where 100-year flooding with velocity has been determined to be 19’ (FEMA FIRM Map 72G of 94).

![FEMA FIRM Map 72G of 94](image)

Figure 6.03.1 FEMA FIRM Map 72G of 94.

6.4 Fresh Water Resources

The construction of the dock will have no impact on fresh water resources.

6.5 Oceanography

6.05a Sea Bed Alteration

The project involves the construction of a new dock off of the Christiansted Boardwalk to the north of the King Christian Hotel. The dock will have grated decking and will extend 90’6” offshore. The dock will be 10’ in width with a 66’8” by 6’ “T” at the end and four finger piers; the two furthest seaward 24’ long and 3’ wide and the two closest to shore 24’ long and 4’ wide. The existing concrete pile caps will be reutilized, and a total of 16 concrete piles will be re-used.
A total of 64 new Pearson piles (50-12” diameter and 14-16” diameter) will be installed using a vibratory hammer. The new dock will be 1594sf.

6.05B TIDES AND CURRENTS

The Virgin Islands coastal areas are not subject to significant tidal ranges or tidal currents. Due to the small size of the islands, the sea flows around the island causing an average tidal height of only a few inches and a maximum change of only a little over one foot. Only very narrow intertidal zones are found because of this lack of tidal amplitude and the steepness of the island rising out of the sea. Normal tidal ranges may be greatly exceeded during storm conditions, when a combination of lower barometric pressure at the ocean surface and storm winds amplifies the tidal crest. The tides on the south coast of St. Croix are primarily diurnal in nature. There is a sight secondary cycle (semi-diurnal), but this is almost indistinguishable and is reduced to very small ebbs and floods. The mean tides range from 0.8 feet to feet and the spring tidal ranges reach up to 1.3 feet. The tidal zone is visible on exposed bulkhead to the east of the project site during low tides.

![Figure 6.05.1 Tide Predictions Christiansted Harbor](https://tidesandcurrents.noaa.gov/noaatidepredictions.html)

The surface currents throughout the Caribbean are driven by the North Equatorial Current which runs through the islands west northwest and then joins the Gulf Stream. These currents change very little from season to season with the currents originating more from the south during the summer months. Because of the shallowness of the Caribbean basin, it is less than 1000m, mainly surface water from the Atlantic flows through the islands.

The current movements in Christiansted Harbor have been well documented. Waves approaching from the northeast break on Long Reef and drive water into the harbor. The water mass then moves to the east and flows out of the harbor on either side of Round Reef. Out flow velocities have been measured between 5 and 18 cm/sec under normal conditions. Point Louise Augusta tends to protect the entrance channel into the harbor and allows for outward flow even
during periods of high wave action. Figure 6.05.2 indicates current movements recorded by Nichols, et. al, in 1972. This diagram shows the complexity of the currents within the harbor. Currents during field work on the facility in April of 2018 were to the east off the end of the pier ruin.

Figure 6.05.2 Complex currents within Christiansted Harbor, Nichols, et al, 1972.

6.05C WAVES

The deep-water waves off St. Croix are primarily driven by the northeast trade winds, which blow most of the year. Waves average from 1 to 3 feet from the east, 42% of the time throughout the year. For 0.6% of the time, easterly waves reach 12 feet in height. The southeasterly swells, with waves one to twelve feet high, become significant in late summer and fall when the trade winds blow from the east or when tropical storms and hurricanes pass the islands at a distance to the south. During the winter months, long length, long period, northern swells develop to a height of 1 to 5 feet. The roughest sea conditions prevail between June and August, and the second highest seas occur from December through February. September through November is the calmest period for waves.

Wave conditions are strongly affected by the shape of Scotch Bank located northeast of the harbor. The shelf orientation effectively precludes many wave conditions from affecting the harbor entrance and the harbor. Waves traveling through the Anegada Passage approach St. Croix at directions ranging from 020° to 060°, but only those waves approaching from north of 030° effect the harbor entrance. Due to the position of the proposed dock, the dock is protected by not only by Long Reef but also by Protestant Cay and is not affected by waves during normal sea condition but can been affected by wind chop approaching through the cut between Protestant Cay and island. The previous dock was destroyed the storm surge and waves associated by hurricane Maria in 2017.
Figure 6.05.3 Wave Rose for station 61022 which is most applicable for King Christian dock site. wis.usace.army.mil/hindcasts.html?dmn=atlantic)
6.05D MARINE WATER QUALITY

The VI Ambient Water Quality Monitoring Program (VIAWQMP) has an ambient monitoring station 390ft. to the east. The data for monitoring station 42 is summarized in Table 6.05.4. A map of the VIAWQMP water quality monitoring stations in Christiansted Harbor is provided (Figure 6.05.5) showing its relationship with the project site.

<table>
<thead>
<tr>
<th>Station ID</th>
<th>Date</th>
<th>Temp (°C)</th>
<th>Salinity (ppt)</th>
<th>DO (mg/L)</th>
<th>pH (s.u.)</th>
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Table 6.05.4 Water Quality Data from the VIAWQMP Station #42.

![Figure 6.05.5 Location of dock in relationship with VIAWQMP Station #42.](image)

The offshore waters within Christiansted Harbor classified as Class B, and the best usage of these waters is listed as the propagation of desirable species of marine life and for primary contact recreation (swimming, water skiing, etc.). The quality criteria include dissolved oxygen not less
than 5.5 mg/l from other than natural conditions. The pH must not vary by more than 0.1 pH unit from ambient, at no time shall the pH be less than 7.0 or greater than 8.3. Bacteria (fecal coliform) cannot exceed 70 per ml., and turbidity should not exceed such that a secchi disc is not visible at minimum depth of one meter.

**IMPACT OF PROPOSED PROJECT**

The project proposes the construction of a new dock in the location of the dock which was destroyed by hurricane Maria in 2017. The reconstruction will involve the picking up of debris from the seafloor and the vibra-hammering of piles. Both activities may create minor amounts of turbidity. Turbidity barriers will be installed prior to all dock construction to contain in turbidity which is created.

The site is deep enough that vessels utilizing the dock should not create turbidity as a result of prop wash. The area was previously used as a dock and the reconstruction and use of the area for vessels will not result in any change in water quality. No fueling, live-a-boards or boat repair will be allowed to take place at the dock.

**6.06 Marine Resources and Habitat Assessment**

The project involves clean up of debris, the vibra-hammering of piles and the placement of joist beams, bracing and grated decking. This will be done in the location the dock which was destroyed by hurricane Maria in September of 2017. The new dock will be larger than the previous dock which was a straight dock which was 170’ in length and 10’ wide. A total of 7 pile caps and 16 existing concrete piles will be re-used in the new construction.

**METHODS**

In-water surveys were conducted during the month of April 2018. Surveys were conducted on SCUBA. Figure 6.06.1 depicts the benthic habitats which occur in the area as shown on the Benthic Habitat Map prepared by NOS, NOAA. The NOS habitat map shows the project area as seagrass 10-30%. Because of the heavy marine use there is only very sparse highly scattered patches of *Thalassia* in the area. There is a large patch to the north of the dock and one to the east of the dock which is intermixed with *Halophila stipulacea* and there is also scattered sparse seagrass adjacent to boardwalk. The area around the dock ruin is primarily uncolonized sand and macro algae. The dock piling which have been in place for years are colonized by corals, mostly *Porites porites* and *Porites astreoides* with a few *Siderastrea siderea* and *S. radians*. Some of the corals were knocked off the pilings during the storm and there are some scattered coral fragments in the sand.
FINDINGS

There are large amounts of macro algae and drift algae around the dock ruin, primarily drift *Dictyota*. There is scattered debris include ropes, anchors, boards, dock sections, pipes, tires, branches, cans, bottles and even a large section of a roof.
Within the drift algae there is some *Laurencia, Hypnea sp. and Enteromorpha sp.* There is a narrow band of sparse *Thalassia testudinum* immediately along the boardwalk extending less than 10ft off shore.

The pier is coral colonized due to the length of time the piles have been in place. The piles have as much as 5 to 10% coral coverage. *Porites porites* and *Porites astreoides* are the two most abundant corals present with only a few *Siderastrea siderea* and *S. radians* colonies.

The scattered debris has almost no colonization and there were only several very small corals on the pipeline which runs across the area and on piece of old “H” beam had a *P. astreoides* on its edge neither of these will be effected by the project,

Several lobster (*Panularis argus*) were seen around the dock and the pilings were sparsely colonized by feather duster worms (*Sabellastarte magnifica, Bispira sp.*).

*P. astreoides* is the most abundant coral on the pilings and some of them do show old tissue damage. There are several large *P. porites* colonies on the piles. Most of the corals are midwater to near the bottom of the pilings. This may be a result of the hurricane and shallower corals being knocked off.
A *P. porites* shown above was noted in the sand adjacent to debris, this was probably knocked off a pile. The ropes and debris are visible round the remaining pilings.

The narrow band of seagrass near the shoreline (boardwalk) is spare and is amid coral and small rock rubble. A few *S. siderea* were found on the pilings but these were in very low abundance.

Another loose *P. porites* lies at the base of a pile. A large roof section is found to the northwest of the dock ruin. *H. stipulacea* lies off shore of the dock and is found in scattered patches through out the entire bay and is found intermixed with the *Thalassia* offshore.

**IMPACT OF DEVELOPMENT**

The reconstruction of the dock will re-use the existing pilings and since the coral colonization is midwater to the bottom of the pilings there should be minimal if any impact to the corals. These corals all colonized the pier when the deck of the dock was in place, so they should not be negatively impacted by shading, especially since grated decking will be used. New pilings will be driven with a vibra-hammer and all will be placed in areas which only have drift algae, therefore neither the piling or potential shading will have an impact on benthic resources. The dock has been designed to avoid the *Thalassia* which is close to shore and to the northeast.

Turbidity barriers will be utilized to minimize any turbidity impacts and the contractor reconstructing the dock will be required to follow NOAA’s Sea Turtle and Smalltooth Sawfish Construction Guidelines and Vessel Strike Avoidance Measures and Reporting for Mariners.
Because a vibra-hammer will be used there will be minimal acoustic impacts during construction. Because of the lack of seafloor colonization, the use of a spud barge to construct the dock will have minimal impacts.

6.6 Terrestrial Resources

The entire project is offshore and therefore will have no impact on terrestrial resources.

6.8 Wetlands

The U.S. Army Corps of Engineers defines wetlands as "those areas that are periodically inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, bogs, marshes and similar areas." (U.S. Army Corps of Engineers, 1986).

There are no terrestrial wetlands in the area.

6.09 RARE AND ENDANGERED SPECIES

Four rare or endangered sea turtle species: hawksbill turtles (*Eretmochelys imbricata*), green turtles (*Chelonia mydas*), loggerhead turtle (*Caretta caretta*) and leatherback turtles (*Ermochelys coriacea*), occur in the offshore area. Green turtles, and hawksbills turtles have been seen repeatedly in the area over the last 35 years.

No ESA coral species were noted within the project area. These corals do occur on the barrier reef well to the north and on hardbottom areas at the mouth of the harbor.

The Nassau Grouper, *Epinephelus striatus*, recently listed by ESA was seen during a previous survey of the area but not during this survey.

In order to minimize and abate impacts to the listed sea turtle species the applicant will comply with the following NMFS construction conditions:

Sea Turtle and Smalltooth Sawfish Construction Conditions

*The permittee shall comply with the following protected species construction conditions:*

a. *The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.*

b. *The permittee shall advise all construction personnel that there are civil and criminal*
penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service’s Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at “no wake/idle” speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service’s Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

In order to avoid and minimize an injury or death to marine mammals and sea turtles the following NMFS measures form the Vessel Strike Avoidance Measures and Reporting for Mariners will be taken by all vessels associated with the project:

1. Vessel operators and crews should maintain a vigilant watch for marine mammals and sea turtles to avoid striking sighted protected species.

2. When whales are sighted, maintain a distance of 100 yards or greater between the whale and the vessel.

3. When sea turtles or small cetaceans are sighted, attempt to maintain a distance of 50 yards or greater between the animal and the vessel whenever possible.

4. When small cetaceans are sighted while a vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal’s course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area.
5. Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures should always be exercised. The vessel should attempt to route around the animals, maintaining a minimum distance of 100 yards whenever possible.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When an animal is sighted in the vessel’s path or in close proximity to a moving vessel and when safety permits, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area.

Several West Indian manatees (*Trichechus manatus*) have been seen in the waters surrounding St. Croix, the same guidelines proposed above should serve to help protect these species.

6.10 Air Quality

All of St. Croix is designated Class II by the Environmental Protection Agency in compliance with National Ambient Air Quality Standards. In Class II air quality regions, the following air pollutants are regulated: open burning, visible air contaminants, particulate matter emissions, volatile petroleum products, sulfur compounds, and internal combustion engine exhaust (Virgin Islands Code Rules and Regulations).

There will be minor increases in emissions during construction due to the use of heavy machinery. Once the dock is complete air emissions will be limited to combustion engine emissions from vessels utilizing the dock.

7.0 IMPACTS ON THE HUMAN ENVIRONMENT

7.1 Land and Water Use Plans

The plot from which the dock extend is zone B-1, Business. The dock lies in an area designated a marine dependent uses on Land and Water Use Map (Figure 2.00.2). A dock has been on the site for more than 50 years and a dock was previously permitted on the site under Major CZM permit CZX-21-91W.

7.2 Visual Impact

The construction of a new dock on this site will not change the character or the visual landscape of the area. There has been a dock offshore of the site for more than 50 years.

7.3 Impact on Public Services

7.03a Water

The dock will have water service and will be attached to the public water supply.
7.03b Sewage Treatment and Disposal

The dock will not allow live-a-boards and will not produce any sewage.

7.03c Solid Waste Disposal

Debris collected prior to construction will be disposed of at the Anguilla Landfill.

7.03d Roads, Traffic and Parking

Components of the project will be brought in by barge. Only a small crew will be required to construct the dock and the addition of 5 to 6 vehicles coming to the downtown area during the construction of the dock will have a negligible impact on traffic. The dock will serve the existing boating community and will not result in additional traffic once complete.

7.03e Electricity

The dock will utilize solar lighting. Electrical service will be available for boats on the dock and the dock will tie into the local grid.

7.03f Schools

The construction of the dock will have no impact on public or private schools.

7.03g Fire and Police Protection

The construction should have no impact on fire and police protection. The dock will have a security gate.

7.3 Health

The construction of the dock should not increase the use of the public health facilities.

7.4 Social Impacts

The construction of the dock should have no social impact.

7.5 Economic Impact

This dock has historically been one of the centerpieces of the waterfront for Downtown Christiansted. Before it was destroyed by the hurricane, this dock was the very first dock one would see when coming through the channel into the harbor. The newly renovated dock should be an improvement for the community, not just a quick fix. Whether it is traffic coming from neighboring islands or day trippers, ownership at the King Christian Hotel envision ease of use, location on the waterfront and a newly renovated facility to attract boaters to come to Downtown.
7.6 Impacts on Historical and Archeological Resources

The new dock will be built in the same location as the previous dock which was damaged by hurricane Maria. The new dock footprint marginally is larger. No resources were noted during the surveys. Significant amounts of debris was noted but all was modern in nature and much of it from the most recent hurricane. A letter has been transmitted to SHPO requesting clearance.

7.7 Recreational Use

The boardwalk is used for a variety of recreational activities. The construction of this dock will in no way interfere with those activities.

7.8 Waste Disposal

The debris collected prior to the construction of the new dock will be disposed of at the Anguilla Landfill. The dock may generate minor amounts of debris from boaters utilizing the dock. Debris will be collected in a small bin and disposed of by the private hauler who services the King Christian Hotel.

7.9 Accidental Spills

The project is for the construction of a dock which will service powered vessels which will have hydrocarbons. As such a spill kit will be kept on site to assist any boater who has a leak or release from their vessel. No fueling or mechanical work will be allowed from the dock.

7.10 Potential Adverse Effects Which Cannot Be Avoided

Detailed environmental surveys were conducted during the design of the project and were used to develop the dock design. The nearest seagrass bed was surveyed in by the surveyor doing the site conditions and was avoided. The existing pilings are being re-used in the new design therefore the corals which have colonized them will be preserved. There are minimal resources in the area and therefore there is no significant impact to any resources.

8.00 Mitigation Plans

The proposed dock construction has no significant impact on any resources. Corals which are present on the existing pilings will not be impacted and impacts to water quality will be minimal. No mitigation is proposed.

9.00 Alternatives to Proposed Action

The applicant could leave the dock ruin as is and not rebuild the dock. This would continue to be an eyesore and would make the waterfront of Christiansted look run down.

The applicant could build the dock just back as it was and this would not have any additional impacts
from what is proposed however it would not services as many vessels.

The applicant could remove the existing pilings and it would result in impact to approximately 45 corals.

The proposed design will protect the coral colonized pilings, pick up debris within the area and not impact any seafloor areas with seagrass colonization. The proposed plan will have no more impact than building the smaller structure. A few more vessels will be able to utilize the dock, and this will mean a greater potential for vessel impacts, however, the intent is to service vessels in the local community therefore the construction of the dock should not result in an increase of vessels overall.

**10.00 Relationship Between Short Term and Long Term Uses of Man’s Environment**

The reconstruction of a dock utilizing a previously developed site is a far better short term and long term use of man’s environment rather than developing an undeveloped site and impacting an area with significant natural resources.

**11.00 Literature Cited**

Bowden, M.J. et. al., 1969. Climate, water balance and climatic change in the north-west Virgin Islands. Caribbean Research Institute, CVI, St. Thomas, Virgin Islands.


