Environmental Assessment
St. Croix Coastal Interceptor Relocation Project
Estates La Grande Princess and Golden Rock
St. Croix, United States Virgin Islands

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TABLE OF CONTENTS

1.0 Introduction 1
2.0 Purpose and Need 2
3.0 Background Information 2
4.0 Alternatives 3
4.1 Alternatives Considered in this EA 3
4.1.1 No Action Alternative 4
4.1.2 Alternative I: Relocation of the Coastal Interceptor Inland 4
4.2 Identification of Preferred Alternative – Relocation of the Coastal Interceptor Inland ... 5
4.3 Alternatives Considered and Dismissed 5
5.0 Affected Environment and Environmental Consequences 5
5.1 Topography, Soils, and Geology 7
5.1.1 Existing Conditions 7
5.1.2 Potential Impacts and Proposed Mitigation 7
5.2 Land Use and Zoning 8
5.2.1 Existing Conditions 8
5.2.2 Potential Impacts and Proposed Mitigation 8
5.3 Water Resources and Water Quality 8
5.3.1 Existing Conditions 9
5.3.2 Potential Impacts and Proposed Mitigation 9
5.4 Wetlands 10
5.4.1 Existing Conditions 10
5.4.2 Potential Impacts and Proposed Mitigation 10
5.5 Floodplains 10
5.5.1 Existing Conditions 11
5.5.2 Potential Impacts and Proposed Mitigation 11
5.6 Coastal Resources 11
5.6.1 Existing Conditions 12
5.6.2 Potential Impacts and Proposed Mitigation 12
5.7 Vegetation 12
5.7.1 Existing Conditions 12
5.7.2 Potential Impacts and Proposed Mitigation 13
5.8 Wildlife and Fisheries Habitat 13
5.8.1 Existing Conditions 14
5.8.2 Potential Impacts and Proposed Mitigation 14
5.9 Threatened and Endangered Species and Critical Habitat 15
5.9.1 Existing Conditions 15
5.9.2 Potential Impacts and Proposed Mitigation 15
5.10 Cultural Resources 16
5.10.1 Existing Conditions 16
5.10.2 Potential Impacts and Proposed Mitigation 17
5.11 Aesthetics and Visual Resources 17
5.11.1 Existing Conditions 17
5.11.2 Potential Impacts and Proposed Mitigation 18
5.12 Socioeconomic Resources 18

5.12.1 Existing Conditions 18
5.12.2 Potential Impacts and Proposed Mitigation 18
5.13 Environmental Justice 19
5.13.1 Existing Conditions 19
5.13.2 Potential Impacts and Proposed Mitigation 19
5.14 Air Quality 19
5.14.1 Existing Conditions 19
5.14.2 Potential Impacts and Proposed Mitigation 20
5.15 Contaminated Materials 20
5.15.1 Existing Conditions 20
5.15.2 Potential Impacts and Proposed Mitigation 20
5.16 Noise 20
5.16.1 Existing Conditions 21
5.16.2 Potential Impacts and Proposed Mitigation 21
5.17 Traffic 22
5.17.1 Existing Conditions 22
5.17.2 Potential Environmental Impacts 22
5.18 Infrastructure 22
5.18.1 Existing Conditions 22
5.18.2 Potential Impacts and Proposed Mitigation 22
5.19 Public Health and Safety 23
5.19.1 Existing Conditions 23
5.19.2 Potential Impacts and Proposed Mitigation 23
5.20 Climate Change 23
5.20.1 Existing Conditions 23
5.20.2 Potential Impacts and Proposed Mitigation 24
5.21 Cumulative Impacts 24
6.0 Permits and Project Conditions 24
7.0 Public Involvement 26
8.0 Conclusion 27
9.0 List of Preparers 27
10.0 References 27

LIST OF TABLES

Table 1 Summary of Potential Environmental Impacts and Mitigation 6

LIST OF APPENDICES

Appendix A Maps and Figures
Appendix B Preliminary Design Drawings
Appendix C Environmental Consultations and Studies
Appendix D EO 11988/11990 Eight-Step Review Decision-Making Process
Appendix E Cultural Resources Consultations and Studies
Appendix F Archaeological Monitoring Scope of Work

LIST OF ACRONYMS

ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
AD	Area of Disturbance
APE	Area of Potential Effects
BCA	Benefit Cost Analysis
BEACON	BEach Advisory and Closing ON-line
BMP	Best Management Practices
BsB	Cobble and Sand/Sandy Beaches
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFMC	Caribbean Fisheries Management Council
CO	Carbon monoxide
CWA	Clean Water Act
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Plan
dB	Decibel
dBA	Decibel
DPNR	USVI Department of Planning and Natural Resources
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EO	Executive Order
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GyB	Glynn Gravelly Loam
HMA	Hazard Mitigation Assistance
IPaC	Information, Planning, and Conservation
LBJ	Lyndon B. Johnson
Leq	Equivalent Noise Level
Ldn	Day-Night Noise Level
MBTA	Migratory Bird Treaty Act
MH	Manhole
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards

LIST OF ACRONYMS, Cont.

NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OSHA	Occupational Safety and Health Administration
Pb	Lead
PM	Particulate Matter
PDM	Pre-Disaster Mitigation
SAV	Submerged Aquatic Vegetation
SF	Square Feet
SHPO	State Historic Preservation Office
SiA	Sion Clay
SO2	Sulfur Dioxide
SPL	Sound Pressure Level
TSP	Total Suspended Particulate
UgC	Urban land-Glynn Complex
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USVI	United States Virgin Islands
VIR&R	Virgin Island Code of Rules and Regulations
VITEMA	Virgin Islands Territorial Emergency Management Agency
VIWMA	Virgin Islands Waste Management Authority
WWTP	Waste Water Treatment Plant

1.0 Introduction

The Virgin Islands Waste Management Agency (VIWMA), herein referred to as the "Subgrantee," has requested financial assistance from the U.S. Department of Homeland Security-Federal Emergency Management Agency (FEMA) to replace and relocate a 30-inch diameter line that transports sewage from the La Grande Princess and Golden Rock areas to the Lyndon B. Johnson (LBJ) pump station in Christiansted, St. Croix (Figure 1, *Appendix A)*. The Subgrantee has been awarded a Pre-Disaster Mitigation (PDM) grant through FEMA's Hazard Mitigation Assistance (HMA) program. The Virgin Islands Territorial Emergency Management Agency (VITEMA) is the Grantee partner for the proposed action. The HMA Subgrant Application reference number is PDMC-PJ-VI-2014-002.

The sewer service line referred to as the coastal interceptor is located along the southwest coastline of Christiansted Harbor in St. Croix. Coastal erosion since the sewer line's construction in the 1970s has resulted in approximately 1,900 feet of the coastal interceptor being located up to 50 feet offshore, necessitating the raising of the manholes above sea level. The manholes have occasionally overflowed, resulting in blooms of etrophic algae along the shoreline, degrading water quality and resulting in an eyesore. The manholes also create wave turbulence resulting in accelerated erosion along the shoreline and in the seagrass beds. More recently, an inflow of sand and debris into the system has resulted in additional wear and tear at the LBJ pump station, which would in turn reduce the life cycle of the pumps and reliability of the pump station.

In order to increase the reliability of the LBJ pump station, improve the water quality of Christiansted Harbor, and avoid potential breakage of the sewer line from the wave action or storm surge caused by hurricanes, the Subgrantee would relocate the sewer line further inland. To qualify for a grant award, PDM projects must meet the goals of a mitigation plan and be cost effective. The project would benefit Goal 3 of the Virgin Islands Territorial Hazard Mitigation Plan: Rapidly restore essential infrastructure with uninterrupted operation of critical facilities following a natural hazard event. To determine the project's cost effectiveness, FEMA conducted a Benefit Cost Analysis (BCA). The BCA compares the total project cost to the total cost of the projected benefits such as future damage to the facility, necessary emergency protective measures, temporary facilities, loss of function, and cost avoidance. The BCA resulted in a Benefit Cost Ratio of 2.53, showing the proposed mitigation measures to be cost effective. The inland location would allow for easier access to the sewer main for maintenance and would predominantly remove the sewer line from the floodplain, reducing the potential for environmental hazards.

FEMA is required as a Federal agency to evaluate the potential environmental impacts of its proposed actions, and alternatives to proposed actions, in order to make an informed decision in defining a proposed project for implementation. FEMA must consider and incorporate, to the extent practicable, measures to avoid, minimize, or mitigate adverse impacts to the human environment. The environmental analysis is conducted in compliance with the National Environmental Policy Act (NEPA), and its implementing regulations at 40 Code of Federal Regulation (CFR) Parts 1500-1508 and FEMA's regulations at 44 CFR Part 10. FEMA evaluates financial assistance projects prior to grant approval. This Environmental Assessment (EA) serves as documentation of FEMA's analysis of the potential environmental impacts of the proposed

relocation of the St. Croix Coastal Interceptor, including analysis of project alternatives and identification of impact minimization measures. The document serves as written communication of the environmental evaluation for public and interested party comment. Public involvement is a component of NEPA to inform an agency's determination of whether to prepare an Environmental Impact Statement (EIS) or issue a Finding of No Significant Impact (FONSI).

2.0 Purpose and Need

The objective of FEMA's PDM program is to reduce overall risk to people and structures, while at the same time reducing reliance on federal funding if an actual disaster were to occur. The purpose of this project is to reduce the risk of coastal storm damage to the wastewater line and pump station in the Christiansted project area and enhance the overall resiliency of the critical infrastructure. A linked purpose and outcome of the project is to also improve the water quality of the Christiansted Harbor. The need for the project is due to the coastal erosion that has already occurred in the area that has jeopardized the integrity of the existing wastewater line. The line and manholes are located in an area vulnerable to continued storm damage and potential failure. Failure of the coastal interceptor would pose public health and social issues in addition to imposing significant negative environmental impacts to the marine resources in the immediate area and greater Christiansted Harbor.

3.0 Background Information

The project area is located in what is locally known as the La Grande Princess and Golden Rock areas which are northwest of the town of Christiansted on the island of St. Croix. St. Croix is one of three major islands that comprise the territory known as the United States Virgin Islands. Christiansted is located on the north side of the island along Christiansted Harbor. The area developed significantly in the third quarter of the twentieth century. Following a beach nutrition project in the 1960s or 1970s, the coastal interceptor was installed along the upper portion of the beach. As previously mentioned, the beach has slowly eroded away since the installation of the coastal interceptor, particularly from manhole (MH) 0433 to MH 0438 (Figure 2). Hurricanes Hugo (1989), Marilyn (1995), and Earl (2010) accelerated the beachline erosion. Currently, approximately 1,900 feet of the 30-inch sewer line now is submerged in the waters of Christiansted Harbor.

The coastal interceptor was constructed to provide sewer service to what is known today as "condo row". At the time of construction, the sewer line was constructed along the beach approximately 50 feet from the coastline. Over the years, erosion of the beach caused the coastline to creep closer to the interceptor, until the three major storms in 2010, most notably Earl, scoured the beach until six manholes were as much as 50 feet into the water. These storms damaged manholes and allowed waves to cause direct water intrusion into manholes now in the water. This caused a rise in salinity and volume at the Anguilla wastewater treatment plant, increasing cost and making effluent unsuitable for irrigation.

Although the manholes have been raised and subsequently sealed, there has been an increase of inflow of sea water, sand, sea shells, and other ocean debris into the sewer system. The sand and debris in the system cause excessive wear and tear to the pumps and significantly reducing the life cycle of the pumps and reliability of the LBJ pump station. There is also a marked growth of eutrophic algae along the submerged section of the line signaling the leaking of sewage into the coastal waters and evidenced by elevated bacterial levels and the occasional

closing of the beach. Since 2006, the beaches within the project area have been closed 39 times for a total of 131 days due to high contamination levels.

The reduction of sea water inflow would also reduce the salinity of the Anguilla waste water treatment plant (WWTP) effluent which would provide a new opportunity for reuse. The project would also decrease the current coastal erosion of the seagrass beds which have colonized the inshore area around the existing manholes. The existing manholes are an eyesore to residents and visitors and prevent future development of the adjacent vacant properties of Turquoise Bay. With portions of the Coastal Interceptor submerged in the sea, access for personnel and equipment onto the beach and in the sea to the existing manholes for inspection and maintenance remains a challenge. In addition, in its current location, the coastal interceptor is at greater risk for breakage from hurricanes or storm surges. This would adversely affect the public health of the Princess, Golden Rock, and Christiansted areas such that sewage would flow in the sea and sand and debris would enter the pump station, damage the pumps, and force the pump station to shut down as a result of such events.

The proposed project was initially anticipated to be funded through an Environmental Protection Agency (EPA) grant. A draft EA was prepared by a consultant for VIWMA in support of the EPA grant. In order to not duplicate efforts and in alignment with Unified Federal Review, the content of this document was largely based upon information from an EA that was prepared by Bioimpact but not published. Bioimpact did not review/comment on this FEMA document. However, FEMA acknowledges the company's contribution to the NEPA process and cite the work of Bioimpact: *Environmental Assessment for the St. Croix Coastal Interceptor Rehabilitation U.S. Virgin Islands, June 2014*.

4.0 Alternatives

NEPA requires the analysis of reasonable alternatives as part of the environmental review process for the proposed project. Inclusion of a No Action Alternative in the environmental analysis and documentation is required under NEPA. The No Action Alternative is used to evaluate the effects of not providing eligible assistance for the project, thus providing a benchmark against which "action alternatives" may be evaluated. In developing alternatives to the proposed project, the Subgrantee identified the following as project objectives in addition to basic purpose and need: cost effective construction, minimize maintenance, avoid disturbances to the natural environment, optimize the use of public funds, and eliminate future threats to public health and safety.

4.1 Alternatives Considered in this EA

One viable action alternative was developed. The two alternatives discussed in this EA are as follows:

- No Action Alternative (4.1.1)
- Alternative I - Relocation of the Coastal Inceptor Inland (4.1.2)

4.1.1 No Action Alternative

Under the No Action Alternative, it is anticipated that absent Federal financial assistance, the Subgrantee would leave the coastal interceptor in its existing location and not pursue relocation. Continued erosion of the coastline would continue to expose the coastal interceptor to the open waters. Inflow of sea water, sand, sea shells, and other ocean debris into the sewer system would continue and result in the continued excessive wear and tear to the pumps at the lift station, resulting in an unreliable pump station. Leakage into the marine water would also continue and likely result in the closing of the waters and beach on more days. The No Action Alternative would result in continued poor quality effluent which could not be reused, and continued degradation of the marine environment and water quality in Christiansted Harbor. This alternative would not address the project's purpose and need.

4.1.2 Alternative I: Relocation of the Coastal Interceptor Inland

Under Alternative I, the Subgrantee's proposed alternative, the Subgrantee would relocate the coastal interceptor inland through vacant, undeveloped land and then within rights of way of existing roads (Figure 3). The reroute would begin at MH 0432 where a gravity line will extend approximately 300 feet westwards towards the new lift station. The new lift station would be located at the northern edge of an undeveloped parcel of land known as "Turquoise Bay" and would be accessed by an overgrown dirt path that lies along the northern boundary of the Turquoise Bay property. Force main piping would then extend through the undeveloped Turquoise Bay property approximately 885 feet in a southeasterly direction towards Route 752, passing just to the west of two pairs of tennis courts. The force main would continue along the right-of-way of Route 752 approximately 2,100 feet to a new transition manhole that would be constructed near the entrance of the Sugar Beach property. Approximately 600 feet of gravity line would be installed along the southeastern Sugar Beach property boundary from the transition manhole to MH 0439 where the reroute would be complete. MH 0432 and MH 0439 would be rehabilitated. Two lateral connections would also be installed at Mill Harbour and Colony Cove to reconnect current users.

Once the new line is brought online, the existing line from MH 0432 to MH 0439 (approximately 1,900 feet) would be cleaned with water, inspected, and abandoned in place below the sea bed. Six existing manholes would be cleaned and collapsed by hand, approximately two feet below the sea bed. The overgrown dirt path leading to the location of the new lift station would be cleared during construction and would remain a dirt/grass road following construction to provide access to the lift station. Electrical service to power the lift station is also anticipated to follow this dirt path. The project requires obtaining easements from private property owners to install portions of the line. This alternative is cost effective and meets the project purpose and need. As the Subgrantee is proposing a design-build contract, this route is subject to minor modifications during the final design.

The project can be divided into two sections. The northern undeveloped section encompasses the new gravity line from MH 0432 to the new lift station, the location of the new lift station, and the western segment of the new force main between the lift station and Route 752. The southern developed section corresponds to the route of the force main along Route 752 to the transition

manhole and from the transition manhole to MH 0439. Photographs of the general project area are located in *Appendix A.*

4.2 Identification of Preferred Alternative – Relocation of the Coastal Interceptor Inland

Of the Action alternatives identified, Alternative I, Relocation of the Coastal Interceptor, is the only viable option that met the project's purpose and need. Alternative I would eliminate the risk of 144,000 gallons per day of raw sewage spilling into the sea and along the shore line. Alternative I also eliminates sea water and ocean debris from damaging the sewage pumps and forcing the LBJ Pump Station offline. Additionally, Alternative I has fewer impacts on the human environment when compared to the other alternatives; and is the Subgrantee's preferred option. The No Action Alternative was also considered and exhibits high long-term risks to public health and safety as well as incremental costs for future construction and maintenance. The forgoing Environmental Assessment demonstrates the process and considerations inherent in the evaluation of addressing this most critical community asset.

4.3 Alternatives Considered and Dismissed

In an effort meet to the objectives of the Virgin Islands Territorial Mitigation Plan, the alternative to replace the coastal interceptor in kind and in its existing location was dismissed as an alternative. This alternative was found to have higher impacts to the natural environment and higher costs due to construction constraints from the submerged site conditions, lack of access, and the potential ongoing threat of recurrent damage in the floodplain.

Repair of the coastal interceptor with a lining was also considered as an alternative; however, the lengths necessary to complete this repair are greater than existing technology allows so this alternative was dismissed as technically infeasible.

Another alterative that was considered was locating the lift station near MH 0429 (approximately 950 feet upstream of the proposed Alternative I lift station). This alternative would use a similar route as Alternative I but would require an additional 950 feet of force main piping. This alternative would also require demolition of additional existing manholes and piping increasing the potential for environmental impacts. Therefore, this alternative was dismissed.

Locating a lift station near Breeze Road, just east of the Club St. Croix Condominiums, was also considered as an alternative. However, locating the lift station in this location would result in deep excavations for the gravity line to LBJ pump station as well as a deep wet well. Construction time would be increased and the deep wet well is not practical or feasible for the operation of a lift station. Therefore, this alternative was dismissed.

5.0 Affected Environment and Environmental Consequences

Table 1 on Page 6 summarizes potential impacts of the No Action Alternative and Alternative I. The following sections provide a more detailed description of the affected environment and potential environmental impacts of the two alternatives.

Table 1 Summary of Potential Environmental Impacts and Mitigation

Resource	Potential Impacts		Agency/ Permits	Mitigation
	No Action Alternative	Alternative I		
Topography, Geology and Soils	No impact	No significant impact. Short term impacts to <1 acre of soil disturbed during construction.		Best management practices for erosion and sediment control. Species are opportunistic would quickly recolonize disturbed areas.
Land Use and Zoning	No impact	No impact		
Water Resources and Water Quality	Potential negative impact if overflows or if main breaks due to continued erosion or storm surge.	Positive impacts through relocation of line out of water. Short term impacts during demolition of manholes; no long-term impacts.	USACE, DPNR	Compliance with permit conditions to avoid long-term impacts. Best management practices for erosion and sediment control.
Wetlands	Potential negative impact if overflows or if main breaks due to continued erosion or storm surge.	Positive impacts through relocation of line out of wetlands. Short term impacts during demolition of manholes in wetlands; no long-term impacts.	USACE, DPNR	Compliance with USACE permit conditions to avoid long-term impacts. Best management practices for erosion and sediment control.
Floodplains	Potential negative impact if overflows or if main breaks due to continued erosion or storm surge.	Positive impacts through relocation of line out of floodplain. Short term impacts during demolition of manholes in floodplain; no long-term impacts.		Best management practices for erosion and sediment control.
Coastal Resources	Potential negative impact if overflows or if main breaks due to continued erosion or storm surge.	Positive impacts through relocation of line out of water. Short term impacts during demolition of manholes; no long-term impacts.	DPNR	Compliance with DPNR permit conditions to avoid long-term impacts. Best management practices for erosion and sediment control.
Vegetation	No impact	No significant impact. Less than <1acre would be permanently disturbed in upland corridor of the new line; temporary disturbances for trenching in recently cleared land. Improvement in seagrass bed habitat long-term		Species are opportunistic would quickly recolonize.
Wildlife and Fisheries Habitat	Minor negative impact; continued degradation of the marine environment and water quality.	No adverse impact		Manholes would be demolished by hand.
Threatened and Endangered Species and Critical Habitat	Potential negative impact if overflows or if main breaks due to continued erosion or storm surge.	Short term impacts during demolition of manholes; no long-term impacts.	USFWS	No heavy equipment on beach. Use of turbidity curtains during demolition. Manholes would be demolished by hand.
Cultural Resources	No impact	Potential impacts to below-ground resources during ground disturbing activities.	SHPO	Archaeological monitoring required during ground disturbing.
Aesthetic and Visual Resources	Significant negative impact.	Temporary impacts during construction; no long-term impacts on relocated route. Positive impacts due to removal of manholes.		Reseeding and mulching of disturbed areas would return disturbed areas to natural state.
Socioeconomic Resources	Potential negative impacts from future loss of service.	Positive impact from restoration of pristine beach and coastal waters. Short term positive impacts due to jobs and commercial activity.		N/A
Environmental Justice	No impact	No impact		N/A
Air Quality	No impact	Short-term impacts from dust and emissions due to construction and operation of backup generator for lift station if loss of power; no long-term impact.		Best management practices.
Contaminated Materials	No impact	Fuel for lift station generator would be stored on site in event of a power failure; no long-term impacts.		Best management practices.
Noise	No impact	Short-term impacts from construction noise; no long-term impact.		Use of manufacturer specified noise reduction equipment during construction.
Traffic	No impact	Short-term impact during construction, no long term impact.		Best management practices.
Infrastructure	Potential negative impact if overflows or if main breaks due to continued erosion or storm surge.	Positive impact		N/A
Public Health and Safety	Potential negative impact if overflows or if main breaks due to continued erosion or storm surge.	Positive impact due to reliable sewage collection system.		Compliance with Federal, State, and local safety standards and codes.
Climate Change	No impact	No impact		N/A
Cumulative Impacts	No cumulative impacts	No cumulative impacts		N/A

5.1 Topography, Soils, and Geology

5.1.1 Existing Conditions

Topography

The proposed project is located along the southwestern shore of Christiansted Harbor. The existing coastal interceptor follows the natural shoreline, which has eroded overtime, resulting in portions of the line being submerged in ocean waters. The western portion of the proposed relocation is located within undeveloped land while the eastern portion is located within existing right-of-way associated with urban development in the latter half of the twentieth century. The area has relatively no slope.

Soils

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) operates the Web Soil Survey, which includes the soils of St. Croix (NRCS USDA). The existing route is located in submerged cobble and sand and sandy beaches (BsB). The Web Soil Survey maps show soils within the proposed relocation route primarily as Sion clay (SiA), 0 to 2 percent slopes. Areas near the transition manhole and the new Colony Cove lateral connection fall into Urban land-Glynn complex, (UgC), 0 to 12 percent slopes, and Glynn gravelly loam (GyB), 2 to 5 percent slopes.

The Farmland Protection Policy Act (FPPA) requires Federal agencies to minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural use and to assess potential conversion of farmland to developed property. The SiA soils are considered well drained and categorized as Prime Farmland soils (if irrigated).

Geology

The existing coastal interceptor is located offshore of a sandy beach underneath sand and cobble. The relocated line would be placed within an area of relatively no slope in areas of sedimentary deposits. No bedrock should be encountered during construction.

5.1.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would not impact topography, geology, or soils. The existing coastal interceptor would remain at its present location along the shoreline and within Christiansted Harbor. Temporary impacts may occur during routine maintenance of the line.

Alternative I

Alternative I would have minor impacts to the physical features to both the current location and the relocation site. At the existing location, temporary impacts would occur during the collapsing of manholes. Best management practices (BMPs) would be utilized to reduce soil erosion, reduce sedimentation, and limit turbidity and siltation into Christiansted Harbor. Demolition of the manholes would occur by hand and turbidity curtains would be placed around the manholes to limit turbidity impacting the surrounding seagrass beds. Along the relocation alignment, temporary impacts would also occur at the locations of the new sewer line (including the gravity, force main, and lateral sections), as well as at the location of the new lift station. Along the

relocation corridor, all trenching soils would be stockpiled in areas that are not subject to erosion and if soils are to be stored overnight they would be protected with erosion control fabric. When trenching undeveloped land (such as at Turquoise Bay), silt fencing would be properly placed and maintained between all excavation areas and Christiansted Harbor. BMPs would minimize ground disturbance. Planting or seeding is not anticipated due to the narrow disturbance footprint and the species along the proposed route are opportunistic and would quickly recolonize the route. The area of disturbance (AD) would be approximately 12,000 square feet (SF) and incorporates less than one acre (approximately 0.275 acres) of overall surface soil disturbance.

Although the project does include soils designated as being prime farmland (if irrigated), FEMA determined that the project is exempt from the FPPA provision. In accordance with 7 CFR § 658.2, land is not classified as farmland if developed with 30 structures per 40-acre area. The residential development of the area constitutes urban development per FPPA regulations. The project is only impacting a small area that would be restored to its previous state after construction.

5.2 Land Use and Zoning

5.2.1 Existing Conditions

The existing sewer line is located along the shoreline in the La Grande Princess and Golden Rock areas, northwest of the town of Christiansted. The northern portion of the proposed project, including the site of the proposed lift station, is located on vacant land that would likely be developed in the near future. The remainder of the project area is located within a residential area that developed primarily during the 1960s and 1970s, but has continued over time. The entire project area is classified as R-3 Medium Residential Density.

5.2.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would not impact land use or local zoning.

Alternative I

Implementation of the action complies with local zoning.

5.3 Water Resources and Water Quality

Congress enacted the Federal Water Pollution Control Act in 1948, which was reorganized and expanded in 1972, and became known as the Clean Water Act (CWA) in 1977, as amended. The CWA regulates discharge of pollutants into water with sections falling under the jurisdiction of the U.S Army Corps of Engineers (USACE) and the EPA. Section 404 of the CWA establishes the USACE permit requirements for discharging dredged or fill materials into Waters of the United States and traditional navigable waterways. The USACE regulates activities within navigable waters, as authorized under the 1899 Rivers and Harbors Act. Under National Pollutant Discharge Elimination System (NPDES), the EPA regulates both point and non-point pollutant sources, including stormwater.

5.3.1 Existing Conditions

The project site is located northwest of Christiansted along Christiansted Harbor. Due to continuing erosion, the existing line, from approximately MH 0432 to MH 0438, is now submerged offshore, in some locations up to 50 feet off of the coastline. The waters of Christiansted Harbor in the project location have been designated for Class B use, which are of a quality sufficient for "propagation of desirable species of marine life and for primary contact recreation" (United States Virgin Islands (USVI) Department of Planning & Natural Resources (DPNR) 2010). The coastal interceptor line has periodically impacted the marine environment through overflows and seepages of nutrient rich water. Since 2006, the beaches in the project area have been closed 39 times for a total of 131 days (EPA BEACON 2014). The proposed relocation route is located in wooded land and residential development that occurred in the last several decades of the twentieth century.

In 1985, the Virgin Islands entered into a consent decree that included remedial actions to eliminate pump station and WWTP overflows throughout the territory. The LBJ pump station and the WWTP on St. Croix were specifically cited. In 1996, the decree was modified to extend the St. Croix outfall of the WWTP to over the reef, thereby diluting the effluent which could not be effectively treated at the plant. In 2002, a second modification to the stipulated order was filed to include the replacement of the St. Croix WWTP. This modification also required evaluating opportunities to eliminate the discharge of wastewater through reuse or artificial wetlands. However, the salt water intrusion eliminates water reuse, as the treatment plant cannot remove salts or medicines. The damage caused by the storms in 2010 was significant. In 2013, because of spillage violations, the Subgrantee entered into a Stipulated Order that then included repairs for pump stations, and repair and replacement of portions of the collection system, including the coastal interceptor, that were causing violations of EPA CWA regulations.

5.3.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would potentially result in continued periodic impairments to the water quality and natural resources of Christiansted Harbor. The location of the existing line within the ocean waters may lead to future adverse impacts if continued erosion were to contribute to damage of the line. Additionally, the manholes exposed to the open waters would continue to cause turbidity created by wave turbulence around the structure.

Alternative I

This alternative would abandon the existing sewer line in place and reroute a new line inland. Water quality would improve as the exposed manholes would no longer cause turbidity in the immediate area. Relocating the line would also remove the risk of contaminated waters. No impacts to groundwater quality would be anticipated as excavation would not reach high groundwater table depths and there would be no discharge of sanitary wastes into groundwater. The use of turbidity curtains during the demolition of the manholes would minimize and contain dispersion of floating debris or silt in the water. The Subgrantee applied for a USACE permit on February 13, 2015.

5.4 Wetlands

Executive Order (EO) 11990 "Wetlands Protection" requires that Federal agencies take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the beneficial effects of wetlands. Compliance with this EO is insured through the process of identifying whether the action would be located within or would potentially affect Federally-regulated wetlands (USFWS 1977). Federal regulation of wetlands is under the jurisdiction of the USACE. Federal actions within wetlands require the Federal agency to conduct an Eight-Step Review Process. This process, like NEPA, requires the evaluation of alternatives prior to funding the action. FEMA's regulation for conducting the Eight-Step Review process is contained in 44 CFR § 9.6. The Eight-Step Review Process for this project can be found in *Appendix D*.

5.4.1 Existing Conditions

Based on a review of the United States Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) website, Federally-regulated wetlands are present along the existing coastal interceptor (No Action Alternative) (USFWS-NWI). Christiansted Harbor is identified as a M1UBL (Marine, Subtidal, Unconsolidated Bottom, Subtidal). The proposed route of the relocated coastal interceptor (Alternative I) is not located within a designated wetland. See *Appendix A*.

5.4.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would continue to have an impact on wetlands as approximately 1,900 feet of the coastal interceptor is located within the federally-protected wetland. The No Action Alternative has the potential to continue to allow seepage of nutrients into the marine environment. Future maintenance of the line would also require access within the wetlands and has the potential to result in temporary impacts.

Alternative I

Alternative I would have temporary impacts within the marine environment as six manholes would be collapsed under the seabed. BMPs, including completing the proposed demolition by hand and installation of turbidity curtains, would minimize impacts to the wetlands. The proposed action would have long-term benefits for the marine wetland, as the leaking line would be relocated inland outside of the wetland area. It is anticipated that the health of submerged aquatic vegetation (SAV), such as the seagrass beds, around the existing manholes would improve post-construction and potentially expand to infill the collapsed manhole areas.

5.5 Floodplains

EO 11988 "Floodplain Management" requires that Federal agencies avoid funding activities that directly or indirectly support occupancy, modification, or development of the 100-year floodplain whenever there are practicable alternatives (FEMA 2010). FEMA uses Flood Insurance Rate Maps (FIRMs) to identify floodplains for the National Flood Insurance Program (NFIP). Federal actions within the 100-year floodplain, or 500-year floodplain for critical actions, require the Federal agency to conduct an Eight-Step Review Process. This process, like NEPA, requires the evaluation of alternatives prior to funding the action. FEMA's regulation for

conducting the Eight-Step process is contained in 44 CFR § 9.6. The Eight-Step Review Process conducted for this project can be found in *Appendix D*.

5.5.1 Existing Conditions

According to the FIRM (Community Panel Number 7800000071G, effective April 16, 2007), the existing coastal interceptor (Alternative I) is located entirely within an AE Zone in the Special Flood Hazard Area (Figure 4). Alternative II, the preferred alternative, is primarily located outside of the floodplain, although MH 0432 and MH 0439, as well as small sections of the immediate gravity lines, are located within the AE Zone (El 12). The lift station, the force main, and the majority of the gravity mains are located outside of the 500-year floodplain. The repair and replacement of the sewer line would be a critical action as defined at 44 CFR § 9.4, as a critical component of wastewater treatment to the community; therefore, impacts to and by the 500-year floodplain are considered in accordance with EO 11988 and 44 CFR Part 9.

5.5.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The no action alternative would leave the existing sewer line in use within the floodplain, thereby having the potential to affect or be affected by the floodplain.

Alternative I

Alternative I would relocate the majority of the sewer line outside of the 500-year floodplain; therefore, the action would have a positive impact through flood and erosion damage risk reduction. The lines are functionally dependent on a location within close proximity to the service area. The risk of flood damage would be minimized to the extent practicable with the relocation inland, and the public benefits of the project would outweigh the risks associated with the facility's partial continued floodplain occupancy. MH 0432, approximately 20 feet of gravity line connecting to MH 0432, MH 0439, and approximately 30 feet of gravity line connecting to MH 0439 would remain within the floodplain; temporary impacts to the floodplain during construction implementation would be mitigated to the extent possible through BMPs. Turbidity curtains used in-water during the demolition of the manholes would minimize and contain dispersion of floating debris or silt in the water. The project would provide long-term benefits for the floodplain habitat, and for the public's recreational use of the floodplain area, due to reduction of potential releases of wastewater with the new line.

5.6 Coastal Resources

The Coastal Zone Management Act (CZMA), administered by states and territories with shorelines in coastal zones, requires states and territories to have a Coastal Zone Management Plan (CZMP) to manage coastal development. Projects falling within designated coastal zones must be evaluated to ensure they are consistent with the CZMP. Projects receiving federal assistance must follow the procedures outlined in 15 CFR 930.90 – 930.101 for federal coastal zone consistency determinations. In order to guide development and resource management within the U.S. Virgin Islands, substantive policies have been identified and promulgated by the U.S. Virgin Islands Coastal Management Program, as administered by the Department of Planning and Natural Resources (DPNR). The primary authority for the coastal management program is the U.S. Virgin Islands Coastal Zone Management Act, and the coastal zone includes the entire territory. A Coastal Zone Management (CZM) permit is required for any development activity in the first tier of the coastal zone.

5.6.1 Existing Conditions

Both the existing coastal interceptor and the proposed route of the relocated coastal interceptor are located within the first tier of the coastal zone. In recent years, there has been a marked growth of eutrophic algae along the submerged section of the line signaling the leaking of sewage into the coastal waters and evidenced by elevated bacterial levels and the occasional closing of the beach. Although sealed, the presence of six MHs in Christiansted Harbor has also allowed the inflow of sea water and debris into the coastal interceptor which results in excessive wear and tear to the pumps at the LBJ pump station. The presence of sea water in the coastal interceptor also does not allow for the Anguilla WWTP to effectively reuse effluent.

5.6.2 Potential Impacts and Proposed Mitigation

No Action Alternative

In the event of further coastline erosion or storm surge causing a break in the embedded coastal interceptor, the No Action Alternative could result in the discharge of untreated wastewater in Christiansted Harbor. The untreated wastewater could potentially have a negative impact on the coastal resources including damaging habitats, wetlands, floodplains, and the adjacent residential communities of Christiansted Harbor.

Alternative I

Alternative I would provide additional protection to coastal resources. The project relocates a portion of the coastal interceptor, from MH 0432 to MH 0439, from Christiansted Harbor to an inland location. Although the relocated route is within the first tier of the coastal zone, Alternative I would improve the water quality of Christiansted Harbor and improve the reliability of the LBJ pump station by reducing the inflow of sea water and debris that causes excessive wear and tear to the pumps. The reduction of sea water inflow would also reduce the salinity of the Anguilla WWTP effluent which would provide new opportunities for reuse. The project would enhance the natural resources of Christiansted Harbor by the collapsing of six MHs that are currently exposed in the waters once the relocation is complete.

FEMA found that the proposed project would be consistent with the Coastal Zone Management Act and would provide benefits to coastal resources as described above. The Subgrantee submitted a major permit application to the DPNR, in accordance with the USVI CZMA, on February 4, 2015. The Subgrantee requested concurrence with the Federal Consistency Determination for the coastal interceptor relocation project. This application is currently pending. FEMA will incorporate the regulatory agency's finding for the Coastal Zone Consistency Review with the anticipated Finding of No Significant Impact Statement. A USACE permit application was also submitted by the Subgrantee to the USACE on February 13, 2015.

5.7 Vegetation

5.7.1 Existing Conditions

The project location includes approximately 22 acres of vacant, undeveloped land. The area has been cleared in the past and most of the vegetation is second growth. White manjack (*Cordia alba*) is the most common tree on the undeveloped tract of land. Also present are Tibet (*Albizia*

lebbekk), tantan (*Leucean leucacephala), Sesbania,* heart vine (*Antigonon leptopus),* lizard flood (*Momoridica charantia),* physicnut (*Jatrophya gossypinfolia),* castor bean (*Ricinus communis), Sanservia,* and guinea grass (*Panicum maximum (Urochloa maxima)).*

5.7.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would not impact vegetation as no work would be completed.

Alternative I

Minor impact to vegetation is anticipated within the northwest project area for the construction of the new lift station and for a portion of the force main, the gravity line from the new lift station to MH 0432, and the new connection for the Mill Harbour lateral line. These temporary disturbances account for approximately 12,000 SF. Additional minor impacts may be anticipated for staging areas, although those areas have not been identified during the preliminary design phase. The construction of the pump station would result in the permanent alteration of approximately 0.09 acres. The project area has recently been cleared and so the construction of the pump station and routing of the force main would result only in the removal of secondary growth trees, herbaceous plants, and grasses. The species along the proposed route are opportunistic and would quickly recolonize the route. Planting or seeding is not anticipated due to the narrow disturbance footprint. Additionally, a portion of the proposed route within the Turquoise Bay property was cleared in the spring of 2014. As noted previously, the SAV around the manholes would potentially expand to infill the collapsed manhole areas post-construction.

5.8 Wildlife and Fisheries Habitat

The Endangered Species Act (ESA) of 1973 provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agencies for implementing ESA are USFWS and National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS). The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife.

The Migratory Bird Treaty Act (MBTA) of 1918 provides a program for the conservation of migratory birds that fly through lands of the United States. The lead Federal agency for implementing the MBTA is the USFWS. The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any migratory birds or result in the destruction or adverse modification of designated critical habitat of such species.

Federal agencies are required to assess the potential impacts that proposed actions and alternatives may have on Essential Fish Habitat (EFH), in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

5.8.1 Existing Conditions

The project location includes an undeveloped parcel of land that was cleared in recent year but is suitable for wildlife such as mammals, birds, amphibians, and reptiles typical of the region. There is no sensitive migratory bird habitat along any of the potential project routes.

For the NMFS Southeast Region, including the U.S. Caribbean, EFH has been identified for hundreds of marine species covered by 20 fishery management plans, under the auspices of the Gulf of Mexico, South Atlantic, Caribbean Fisheries Management Council (CFMC) or the NFMS. Due to the extensive number of species and occurrence habitat, CMFC has identified and described EFH based on areas where various life stages of 17 selected managed species and coral complex commonly occur. The selected species as outlined in the *Essential Fish Habitat (EFH) Generic Amendment to the Fishery Management Plans (FMPs) of the U.S. Caribbean Including a Draft Environmental Assessment (1998)* include Nassau grouper (*Epinephelus striatus*), red hind (*Epinephelus guttatus*), coney (*Epinephelus fulvus*), yellowtail snapper (*Ocyurus chrysurus*), mutton snapper (*Lutjanus analis*), schoolmaster (*Lutjanus apodus*), grey snapper (*Lutjanus griseus*), silk snapper (*Lutjanus vivanus*), butterfly fish (*Chaetodon striatus*), squirrel fish (*Holocentrus ascensionis*), white grunt (*Haemulon plumieri*), queen triggerfish (*Balistes vetula*), sandtilefish (*Malacanthus plumieri*), redtail parrotfish (*Sparisoma chrysopterum*), trunkfish (*Lactophrys quadricornis*), spiny lobster (*Panulirus argus*) and queen conch (*Strombus gigas*). All of these species occur in the wider project area.

Under the 1998 amendment, EFH is defined everywhere the 17 selected species occur. Because these species collectively occur in all habitats of the U.S. Caribbean, the EFH includes all waters and substrates (mud, sand, shell, rock and associated biological communities), including coral habitats (coral reefs, coral hardbottoms and octocoral reefs), sub-tidal vegetation (seagrasses and algae) and adjacent intertidal vegetation (wetland and mangroves). Therefore, EFH includes virtually all marine waters and substrates from the shoreline to the seaward limit of the U.S. Caribbean Exclusive Economic Zone. Based on the results of the benthic survey, the project area is near EFH areas which consist of seagrass, muddy and sandy substrate.

5.8.2 Potential Impacts and Proposed Mitigation

No Action Alternative

Under the No Action Alternative, the presence of the manholes in the coastal waters would continue to impact seagrass along the shoreline and the potential nutrients in the water would continue to result in the occasional presence of eutrophic algae along the shoreline. The No Action Alternative could result in the continued degradation of the marine environment and water quality in Christiansted Harbor.

Alternative I

Alternative I would not permanently impact wildlife in the area. Some populations may be displaced temporarily during construction, but ample habitat exists to accommodate any displaced wildlife resources. In accordance with the MBTA, FEMA has determined that there would be no significant adverse impact to migratory bird habitat and no take of migratory bird species associated with any of the project alternatives.

The abandonment of the line and removal of the manholes would allow for an expansion of seagrass along the shoreline. The removal of the potential nutrient vector would decrease the amount of eutrophic algae along the shoreline.

The project is a mitigation measure that would result in the long term improvement to water quality and restoration of habitat. Short term there may be localized water quality impacts from the re-suspension of sediments and the introduction of nutrients as the manholes are collapsed. Turbidity barriers would be installed to control fines and demolition would be done by hand to limit impact to the surrounding environment. FEMA determined that Alternative I is located in or near an EFH and in coordination with MSA determined that the project would not adversely affect EFH. FEMA submitted this finding to NOAA-NMFS in November 2014. In their informal response dated November 17, 2014. NOAA-NMFS provided guidance that supported their determination that there are no plausible routes of adverse effects or direct physical injury to EFH, stating that the likelihood of adverse effects occurring is so extremely remote that it is implausible to assume that effects could occur. Additionally, Bioimpact consulted with NOAA-NFMS in June 2014 as part of the consultations they prepared for the EPA EA. In their response dated July 21, 2014, NOAA-NFMS concluded that the demolition of six manholes and abandonment of 2,200 feet of the coastal interceptor would not adversely impact EFH, and recommended no EFH conservation measures under Section 305(b)(4)(A) of the Magnuson-Stevens Act. In short, NOAA-NMSS concluded that the project would be a net benefit to the local ecosystem.

5.9 Threatened and Endangered Species and Critical Habitat

5.9.1 Existing Conditions

The USFWS's Endangered Species Program webpage and the Information, Planning, and Conservation (IPaC) system was reviewed to determine whether any Federally-threatened or endangered species were known to be located at or near the site (USFWS 2005; USFWS n.d.). The USFWS website provides a list of federally-listed species by territory; as of June 2011, the green sea turtle (*Chelonia mydas*) is listed as threatened and the hawksbill (*Eretmochhelys imbricata)* and leatherbacks (*Dermochelys coricea*) sea turtles are listed as endangered within the beach and offshore waters of the project area. IPaC also identified two endangered flowering species, Vahl's boxwood (*Buxus vahlii)* and *Catesbaea melanocarpa* (no common name), and two terrestrial reptiles, the St. Croix Ground lizard (*Ameiva polops)* and the Virgin Islands Tree boa (*Epicrates monensis granti*) to be considered in effects analysis of the project area.

5.9.2 Potential Impacts and Proposed Mitigation

<u>No Action Alternative</u>

The turtles forage in the seagrass beds and the wide sandy beach at Sugar Beach is suitable for turtle nesting. The No Action Alternative would not remove the manholes from the beach and water quality would have the potential to be affected in the event of continued leaking or breaking of the sewer line.

Alternative I

The turtles forage in the seagrass beds and the wide sandy beach at Sugar Beach is suitable for turtle nesting. The removal of the manholes located in the water would likely result in the spreading of seagrass into their footprints and the halos around them providing additional turtle forage habitat. The removal of the beach manholes may improve the beaches for turtle nesting. Following construction of the inland route, the six manholes would be demolished by hand and collapsed approximately two feet under the seabed. These temporary disturbances may disrupt the turtle habitats.

FEMA consulted with USFWS regarding the proposed action and determined that the project may affect but is not likely to adversely affect the three turtle species. USFWS concurred with FEMA's findings (December 23, 2014; *Appendix C*). In order to comply with this finding, heavy equipment would not be driven on the beach. FEMA also determined a finding of "No effect to species or designated critical habitat" for the terrestrial species as the flowering plants are not known to occur within the project area, nor would the temporary disturbances during construction affect habitats of the reptile species.

FEMA also informally consulted with NOAA-NMFS in November 2014. In their informal response consultation, NOAA-NMFS provided guidance that supported their determination that there are no plausible routes of adverse effects or direct physical injury to any ESA-listed species in the purview of NOAA-NMFS specifically swimming sea turtles and corals, as well as acroporid coral critical habitat. NOAA-NMFS determined that the likelihood of adverse effects occurring is so extremely remote that it is implausible to assume that effects could occur and that an ESA Section 7 consultation was not necessary for Alternative I.

5.10 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA), as amended, and implemented by 36 CFR Part 800 requires Federal agencies to consider the effects of their actions on historic properties and provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on Federal projects that would have an effect on historic properties. These actions must take place prior to the expenditure of Federal funds. Historic properties include districts, buildings, structures, objects, landscapes, archaeological sites, and traditional cultural properties that are listed in or eligible for listing in the National Register of Historic Places (NRHP).

5.10.1 Existing Conditions

Alternative I would include the construction of a new lift station and below ground sewer lines, all of which would require limited tree clearing and trenching. The Area of Potential Effects (APE) for Alternative I would be the area of ground disturbance throughout the length of the project. Archival research and review of previous archaeological studies within the APE indicates a historic site, 12VAm-197 Estate Little Princess, is located northwest of the proposed lift station. Additionally, a prehistoric site, 12VAm1-54 Sugar Beach, is documented all along the beach in front of the housing complex Colony Cove, Mill Harbour, and the St. Croix Beach and Tennis Resort.

FEMA also reviewed a Phase IA survey report and a Phase IB and Phase II artifact recovery and assessment report that investigated parcels 53 and 53A (also known as the Turquoise Bay property). The Phase IA utilized surface reconnaissance and identified three areas with concentrations of historical artifacts and one possible prehistoric site. The historic concentrations contained ceramics and building materials and were identified in the southwest, the southeast and the north central areas. No structures were observed. The prehistoric site was described as an irregular shell midden of conch and clam exposed on the face of the beach berm, with scattered evidence extending some 80 meters inland.

The Phase IB survey consisted of excavation of twenty-one 1x1 meter test pits in the four areas where artifacts were identified. Outside the shell midden area, no cultural stratification was found. In the north central area, the artifacts were restricted to the surface; the southeast area had been modified by the construction of the cottages complex; and the southwest area had been plowed. The testing was able to define the limits of the shell midden, which comprised mostly conch shells, but no indication of prehistoric evidence was found.

Phase II consisted of the excavation of trenches, eleven units of 5x5 feet, in the shell midden. The trench revealed a uniform stratigraphy. All the cultural material was historic, dating roughly to the period 1750-1850. The investigators did not recommend any further investigation. Cultural resources investigations can be found in *Appendix E*.

5.10.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would not impact cultural resources.

Alternative I

Alternative I has the potential to affect below-ground cultural resources within the APE. In letters dated November 4, 2014, February 5, 2015, and February 23, 2015, FEMA determined that an archaeological monitor would be required for all ground disturbing activities that occur as part of the proposed action. State Historic Preservation Office (SHPO) concurrence with this determination was received on March 3, 2015 (*Appendix E*). The scope of work for the archaeological monitoring, which was reviewed by SHPO, can be found in *Appendix F*.

The Subgrantee is responsible for applying for the St. Croix Historic Preservation Committee Permit.

5.11 Aesthetics and Visual Resources

5.11.1 Existing Conditions

Due to coastal erosion, approximately 1,900 feet of the coastal interceptor line is now buried offshore. At its greatest extent, the line is located approximately 50 feet offshore and six associated manholes are visible within the coastal waters. As for the proposed location, the western half is undeveloped land while the eastern half is located within existing right-of-way for roadways that provide access to late twentieth-century condominium and residential development.

5.11.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would continue to have a significant negative impact on aesthetic or visual resources. Although the sewer line is buried underneath cobble and sand, six associated manholes are above grade and visible within the coastal waters of Christiansted Harbor. Local residents and tourists consider the manholes to be eyesores and avoid the beach due to the visual impacts.

Alternative I

Temporary impacts are expected to aesthetics and visual resources during construction. No long-term impacts to aesthetics and visual resources would be expected. The alternative consists of the routing of an underground public utility that would not be visible once construction is completed and the excavation areas returned to their natural state. This area has been cleared in the past, and the opportunistic species of second growth trees, herbaceous plants, and grasses that lay along the proposed path would quickly recolonize. Although a 0.09-acre parcel would be permanently cleared for the pump station construction, this location is at the northern edge of an undeveloped parcel of land to the south and a forested parcel to the north and would not impact any important viewsheds. The alternative also includes abandoning the existing buried pipeline in place and collapsing the above grade manholes so that they would no longer be visible above grade, which will improve and enhance aesthetics and visual resources.

5.12 Socioeconomic Resources

5.12.1 Existing Conditions

According to census data provided by the U.S. Census Bureau, the 2010 Population for the Sion Farm subdistrict (which encompasses the project area) of St. Croix Island was 13,003 persons. The adjoining town to the east, Christiansted, has a population of 2,433 persons. Sion Farm is the most populated subdistrict or town on St. Croix Island, which has a total population of 50,601 persons. The U.S. Virgin Islands has a population of 106,405 persons (US Census Bureau 2010). The total number of households serviced by this sewer project is estimated to be approximately 4,100.

5.12.2 Potential Impacts and Proposed Mitigation

No Action Alternative

This alternative would likely have no immediate impact on the socioeconomic resources of the Sion Farm subdistrict. However, in the event of the failure of the sewer line due to continued coastal erosion or storm surge, 4,000-5,000 persons would not have access to a sanitary sewer system putting health and safety at risk. The submerged location also allows for the possibility that sand and debris can enter the system which would result in damage to pumps at the pump station and result in the shutdown of the pump station, and thereby denying approximately 4,100 residences with access to a sanitary sewer system. Additionally, the coastal interceptor has leaked into the Christiansted Harbor in the past and this would likely continue under this alternative, thereby resulting in elevated bacterial levels and the closing of the beach.

Alternative I

Short-term positive impact to socioeconomic resources would be anticipated as a result of construction jobs and activity in the area that may support shopping/restaurants/gasoline/ hardware & supplies/other retail. The long-term impact of the project would be restoration of a pristine beach and coastal waters, as well as a reliable sanitary sewer system.

5.13 Environmental Justice

EO 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," guides Federal agencies to "make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (EPA 1994).

5.13.1 Existing Conditions

According to 2010 census data and the American Community Survey (ACS), the population of the Sion Farm subdistrict, which encompasses the project area, is predominately 72% Black or African American (U.S. Census Bureau 2010). About 5% of Sion Farm subdistrict residents and 5% of St. Croix island residents live below the poverty level. The project location is not delineated as an Environmental Justice (EJ) community (EPA 2014) in comparison to other communities of the island. However, there are low-income housing apartments in the southern portion of the project area.

5.13.2 Potential Impacts and Proposed Mitigation

None of the project alternatives would have disproportionately high or adverse impacts on human health and human environment of minority or low-income populations. All residents would benefit as a result of the proposed action because a safe and reliable sanitary sewer system would remain available.

5.14 Air Quality

The Clean Air Act (CAA) of 1963 (amended 1970, 1977 and 1990) requires each state to attain and maintain specified air quality standards. National Ambient Air Quality Standards (NAAQS) have been promulgated by the Federal government for carbon monoxide (CO), nitrogen dioxide (NO2), total suspended particulate (TSP), sulfur dioxide (SO2) and lead (Pb). Primary air quality standards are set to protect human health and secondary standards are set to protect human welfare. The EPA implements 2008 ozone standards as required by the CAA and meets these standards to provide public and environmental health benefits (EPA 2008).

5.14.1 Existing Conditions

As identified on the EPA EJ Mapper, the proposed project is not located in a non–attainment area for Ozone 8-Hour, Lead 2008 Standard, Particulate Matter (PM) 2.5 Annual, or PM 2.5 24-Hour Standard. All of St. Croix is designated Class II by the EPA in compliance with the National Ambient Air Quality Standards. According to the Virgin Island Code of Rules and Regulations (VIR&R), 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.

5.14.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would not impact air quality.

Alternative I

For Alternative I, temporary impacts (approximately nine to 12 months) to air quality would be anticipated during construction activities; no long-term impacts are expected. Construction activities on the project site may have a potential impact on the local air quality through the generation of fugitive dust or airborne dust. Fugitive dust is generated during ground breaking and excavation activities. Emissions from diesel construction vehicles are also a potential source of air pollution. The use of BMPs would help minimize dust and vehicle emissions. BMPs may include but would not be limited to application of water or stabilizers to control dust or reducing equipment idling time to prevent excessive emissions. Temporary impacts (hours to days) may also result from the operation of an emergency generator in the event of a power failure at the lift station; no long-term impacts are expected. It is FEMA's finding that the construction emissions would be below *de minimis* levels for ozone and other criteria pollutants.

5.15 Contaminated Materials

5.15.1 Existing Conditions

The project area is not believed to contain any hazardous materials. The current alignment is located in sandy beach and cobble. The privately owned parcels of land for the relocation route are either undeveloped land or occupied by residential development constructed during the last quarter of the twentieth century. Route 752 is a paved asphalt surface and is not believed to contain contaminated materials.

5.15.2 Potential Impacts and Proposed Mitigation

The two alternatives would not impact or be impacted by contaminated materials as no part of the project area is believed to contain contaminated materials. No evidence of significant contamination to site structures, soils, surface/groundwater from hazardous materials has been identified; however, during construction activities, hazardous materials may be present on-site. BMPs should be implemented in the event that petroleum or other hazardous material leaks occur during construction. These practices include requiring all contractors to keep materials on hand to control and contain a petroleum spill. Contractors are responsible for ensuring responsible action on the part of construction personnel. Occupational Safety and Health Administration (OSHA) standards would be adhered to during construction to avoid impacts to worker health and safety. The backup generator at the lift station would have stored fuel. The fuel would be properly stored in double containment and would use proper control measures during the fueling of the generator. The Subgrantee would obtain the proper permits for the construction and operation of the backup generator.

5.16 Noise

Sound pressure level (SPL) is used to measure the magnitude of sound and is expressed in decibels (dB or dBA), with the threshold of human hearing defined as 0 dBA. The SPL increases

logarithmically, so that when the intensity of a sound is increased by a factor of 10, its SPL rises by 10 dB, while a 100-fold increase in the intensity of a sound increases the SPL by 20 dB.

Equivalent noise level (Leq) is the average of sound energy over time, so that one sound occurring for 2 minutes would have the same Leq of a sound twice as loud occurring for 1 minute. The day night noise level (Ldn) is based on the Leq, and is used to measure the average sound impacts for the purpose of guidance for compatible land use. It weights the impact of sound as it is perceived at night against the impact of the same sound heard during the day. This is done by adding 10 dBA to all noise levels measured between 10:00 pm and 7:00 am. For instance, the sound of a car on a rural highway may have an SPL of 50 dBA when measured from the front porch of a house. If the measurement were taken at night, a value of 60 dBA would be recorded and incorporated into the 24-hour Ldn.

Leq and Ldn are useful measures when they are used to determine levels of constant or regular sounds (such as road traffic or noise from a ventilation system). However, neither represents the sound level as it is perceived during a discrete event, such as a fire siren or other impulse noise. They are averages that express the equivalent SPL over a given period of time. Because the decibel scale is logarithmic, louder sounds (higher SPL) are weighted more heavily; however, loud infrequent noises (such as fire sirens) with short durations do not significantly increase Leq or Ldn over the course of a day.

The Noise Control Act of 1972 required the EPA to create a set of noise criteria. In response, the EPA published *Information On Levels Of Environmental Noise Requisite To Protect Public Health and Welfare With An Adequate Margin Of Safety* in 1974 which explains the impact of noise on humans. The EPA report found that keeping the maximum 24-hour Ldn value below 70 dBA would protect the majority of people from hearing loss. The EPA recommends an outdoor Ldn of 55 dBA. According to published lists of noise sources, sound levels and their effects, sound causes pain starting at approximately 120 to 125 dBA (depending on the individual) and can cause immediate irreparable damage at 140 dBA. OSHA has adopted a standard of 140 dBA for maximum impulse noise exposure.

5.16.1 Existing Conditions

The project site is located in the La Grande Princess area, just northwest of the town of Christiansted in St. Croix. The northern portion of the project area is undeveloped land. The southern portion of the project area is comprised of low-income housing apartments, single-family homes, and condominiums. The ambient noise level in the vicinity of the project site is typical for a suburban residential area. Vehicle noise is also generated from along Northside Road, southwest of the project area, along which more commercial developments are located. The Ldn is typically about 55 dBA for small-town suburban residential areas (Cavanaugh and Tocci 1998).

5.16.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative would not impact ambient noise levels.

Alternative I

Temporary impacts (9-12 months) to ambient noise levels would be anticipated during construction; no long-term impacts would be expected. Methods such as utilization of manufacturer specified noise reduction equipment should be used during construction to minimize impacts. Construction daily work times and noise levels would adhere to any local noise ordinance.

5.17 Traffic

5.17.1 Existing Conditions

Route 752 is a local access road that provides access to the condominium and residential developments that flank the roadway. The roadway is not heavily traveled.

5.17.2 Potential Environmental Impacts

No Action Alternative
The No Action Alternative would not impact traffic volume.

Alternative I
Short-term impacts (9 to 12 months) to traffic would be anticipated during construction; no long-term impacts are anticipated. The presence of construction and delivery vehicles is necessary during construction; however, this impact would be temporary and all site construction activities would comply with BMPs.

5.18 Infrastructure

5.18.1 Existing Conditions

The proposed project would reroute a sewer line that serves approximately 4,100 residences in the vicinity. Portions of the existing sewer line are located offshore due to erosion of the coastline. The sewer line is in operation; however, six manholes, although sealed, are located within open waters and are exposed to coastal erosion and storm surge.

5.18.2 Potential Impacts and Proposed Mitigation

No Action Alternative
The No Action Alternative could have a significant negative impact on infrastructure. Leaving the sewer line in its existing location would continue to allow for inflow of sand and debris into the system causing excessive wear and tear at and reducing reliability of the LBJ pump station. Continued erosion of the coastline and storm surge could result in a break to the line which would not only contaminate the water but also result in an interruption to sewer service to 4,100 residences, putting human health and safety at risk.

Alternative I
This alternative would have a positive impact on infrastructure as it would ensure the reliability of the sewer system and would reroute the sewage completely inland eliminating the risk of a

sewage spill in the coastal waters. The infrastructure would support the needs of the community by providing more than 4,100 residences with the safe disposal of human waste.

5.19 Public Health and Safety

5.19.1 Existing Conditions

Although the coastal interceptor is operating normally, the sewer line is a concern as increased sand and debris within the line is causing excessive wear and tear to the pumps at the LBJ pump station. Additionally, coastal interceptor line has periodically impacted the coastal waters through overflows and seepages of nutrient rich water. Since 2006, the beaches in the project area have been closed 39 times for a total of 131 days (EPA BEACON 2014).

5.19.2 Potential Impacts and Proposed Mitigation

No Action Alternative

The No Action Alternative could potentially negatively impact public health and safety if the system were to fail due to wear and tear at the LBJ pump station or if a hurricane or storm surge caused a rupture in the buried sewer line. Additionally, upon total failure of the sewer line, 4,000-5,000 people, including residences and businesses would not have a facility to dispose of human waste.

Alternative I

The impact on the overall public health and safety would be positive with a safe and reliable sewer line. The completed sewer main would meet all territorial and federal codes and regulations for public health and safety.

5.20 Climate Change

According to the EPA, climate change "…refers to any significant change in the measures of climate lasting for an extended period of time" (EPA n.d.). This includes major variations in precipitation, sea surface temperatures and levels, atmospheric temperature, wind patterns, and other variables resulting over several decades or longer. However, the EPA identifies and regulates human actions that may affect climate change. This is dubbed "abrupt climate change," which occurs over decades and distinguishes it from natural variability that occurs gradually over centuries or millennia. Embodied energy measures sustainability to account for the energy used by structures or to create materials. Another measure of sustainability is life-cycle or cradle-to-grave analysis that accounts for the extraction, manufacture, distribution, use, and disposal of materials. While resources exist to quantify embodied energy and life cycle analysis, the calculations were not prepared by the Subgrantee for the options presented in this EA.

5.20.1 Existing Conditions

Climate change could potentially increase temperatures in the territorial islands, could potentially cause more severe weather incidents to occur, and could potentially cause sea levels to rise.

5.20.2 Potential Impacts and Proposed Mitigation

None of the alternatives would impact or be significantly or uniquely impacted by climate change. The Subgrantee's proposed action incorporates hazard risk reduction through the relocation of the infrastructure further inland, thus reducing exposure to wave action. The Subgrantee would consider opportunities to recycle and use locally available materials as sustainable practices for construction implementation.

5.21 Cumulative Impacts

Cumulative effects are defined by the Council of Environmental Quality (CEQ) as the impact on the environment resulting from the incremental impacts of the evaluated actions when combined with other past, present, and reasonably foreseeable future actions, regardless of the source, such as Federal or non-Federal. Cumulative impacts can result from individually minor but collectively significant actions taken over time. Following the construction of the relocated line and the subsequent demolition of the existing line, Sugar Beach Condominiums may choose to nourish their beach depending on the results of the demolition. The nourishment may result in temporary turbidity impacts as the sand is redistributed along the beach. This should not negatively impact the nearshore submerged aquatic vegetation. Finally, the Subgrantee may rehabilitate sections of sewer line immediately upstream of the LBJ pump station. The scope of work for this project is unknown and would not be finalized until cleaning and camera inspection is completed. The project would address any inflow and infiltration. Overall, the relocation of the coastal interceptor is a net benefit and would, along with any associated impacts, have a positive long term impact on both man's and the natural environment. No other projects in the past, in the present, or in the reasonably foreseeable future are anticipated in the project area that would cumulatively exacerbate impacts on the human environment in combination with the proposed action. (Table 1, Section 5.0 summarized the potential impacts of the No Action Alternative and Alternative I).

6.0 Permits and Project Conditions

The Subgrantee is responsible to obtain all applicable Federal, state, and local permits for project implementation prior to construction, and to adhere to all permit conditions. Any substantive change to the approved scope of work would require re-evaluation by FEMA for compliance with NEPA and other laws and executive orders. The Subgrantee must also adhere to the following conditions during project implementation and consider identified conservation recommendations:

1. No heavy equipment shall be operated or stored on the beach.
2. Demolition of manholes shall be done by hand. Turbidity curtains must also be used to minimize and contain dispersion of floating debris or silt in the water.
3. The Subgrantee must hire a qualified Archaeologist that meets the Secretary of the Interior Professional (SOI) Qualification Standards for Archaeology and Historic Preservation to monitor ground disturbing activities. The goal of archaeological monitoring would be to identify evidence of historic and/or prehistoric human/cultural activities that may inadvertently be displaced by excavation activities. The archaeologist would be present on site at all times during excavations. The Subgrantee would notify FEMA once the excavation schedule has been established and agreed upon with the SOI-

qualified archaeologist. The archaeologist's work is to conform to the guidelines established for archaeological investigations in the United States Virgin Islands. Analysis of any cultural material recovered and report preparations are also to be under the supervision of a SOI-qualified archaeologist. The monitoring and all excavations shall follow standard archaeological practice and the level of description and documentation in the report submitted to FEMA for review shall be consistent with The Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (http://www.nps.gov/history/local-law/arch_stnds_7.htm) and National Park Service publication, The Archaeological Survey: Methods and Uses (1978).

4. The Subgrantee's contractor shall use Best Management Practices (BMPs) to include, but not limited to, stockpiling all trenching soils in areas that are not subject to erosion and if storing overnight, protect soils with erosion control fabric. When trenching undeveloped land (such as at Turquoise Bay), silt fencing would be properly placed and maintained between all excavation areas and Christiansted Harbor. BMPs would also minimize ground disturbance.
5. The Subgrantee will complete all applicable local land-use reviews in accordance with territory and local regulations.
6. Excavated soil and waste materials will be managed and disposed of in accordance with applicable Federal, territory, and local regulations.
7. The United States Army Corps of Engineers (USACE) may require a permit for the subject work that would involve wetland disturbance. The Subgrantee is responsible for obtaining all necessary permits and complying with all conditions of the permits including but not limited to notification and signature requirements to ensure validation of permits. The Subgrantee must submit a copy of the permit to VITEMA/FEMA at/or before project closeout in accordance with grant administration procedures.
8. The Department of Planning and Natural Resources (DPNR) requires a permit for the subject work that occurs within the coastal zone. The Subgrantee is responsible for obtaining all necessary permits and complying with all conditions of the permits including but not limited to notification and signature requirements to ensure validation of permits.
9. In the event that unmarked graves, burials, human remains, or archaeological deposits are uncovered, the Subgrantee and its contractors would immediately halt construction activities in the vicinity of the discovery, secure the site, and take reasonable measures to avoid or minimize harm to the finds. The Subgrantee would inform the VITEMA, SHPO and FEMA immediately. The Subgrantee must secure all archaeological findings and shall restrict access to the area. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Subgrantee is notified by VITEMA.
10. Occupational Safety and Health Administration (OSHA) standards shall be followed during construction to avoid adverse impacts to worker health and safety.
11. The Subgrantee shall not initiate construction activities until fifteen (15) days after the date that the Finding of No Significant Impact (FONSI) has been signed as "APPROVED." The FONSI serves as a final notice per 44 CFR Part 9.12. Any

comments received from the public during this time will be considered by FEMA, the Grantee and Subgrantee before construction is implemented.

7.0 Public Involvement

In accordance with NEPA, the EA report would be released for a 30-day public review and comment period. Availability of the document for comment was advertised via public notices in the *Virgin Islands Daily News* and the *St. Croix Source.* A hard copy of the EA would be made available for review at VIWMA, 941-946 Estate Williams Delight, Frederiksted, St. Croix, U.S Virgin Islands, 00840. An electronic copy of the EA will be made available for download from the FEMA website at http://www.fema.gov/resource-document-library. VIWMA will notify adjacent properties owners of the availability of the EA.

This EA reflects the evaluation and assessment of the Federal government, the decision-maker for the Federal action; however, FEMA takes into consideration any substantive comments received during the public review period to inform the final decision regarding grant approval and project implementation. The public is invited to submit written comments by mail to **FEMA, Office of Environmental Planning & Historic Preservation, 26 Federal Plaza, 13th Floor, New York, New York 10278**, or E-mail to: FEMAR2COMMENT@fema.dhs.gov.

Copies of this EA will be sent to:

VITEMA
8221 Nisky
St. Thomas, Virgin Islands, 00802

VIWMA
941-946 Estate Williams Delight
Frederiksted, St. Croix, U.S Virgin Islands, 00840

The following will receive notice of the Environmental Assessment's availability:

Mr. Sean Kriegger
Acting Director and Deputy State Historic Preservation Officer
Strand Street 198, Fort Frederik Museum
Frederiksted
St. Croix, Virgin Islands 00840

Mr. Sindulfo Castillo
Chief, Antilles Regulatory Section
United States Army Corps of Engineers
400 Fernandez Juncos Avenue
San Juan, PR 00901-3299

Ms. Grace Musumeci
Chief, Environmental Review Section

Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007-1866

Mr. Jean-Pierre Oriol
Acting Commissioner
Department of Planning & Natural Resources
45 Estate Mars Hill
Frederiksted, St. Croix, U.S. Virgin Islands, 00840

The EA evaluation resulted in the identification of no significant impacts to the human environment. Obtaining and implementing permit requirements along with appropriate best management practices would avoid or minimize potential adverse effects associated with the two alternatives considered in this EA to below the level of a significant impact. If no substantive comments are received as a result of the public review and comment period, FEMA will adopt the EA as Final and issue the Finding of No Significant Impact (FONSI). It is anticipated that the Federal Coastal Consistency Review process will be completed in parallel to the public review and comment period. The CZM findings will be included in the FONSI. If substantive public comments are received during the public review and comment period, FEMA will evaluate and address comments as part of the FONSI or prepare a Final Environmental Assessment to document comments and responses and any changes to the proposed action in response to input from the public.

8.0 Conclusion

FEMA through NEPA has found that the Proposed Action to relocate the St. Croix Coastal Interceptor further inland, which is the Subgrantee's preferred Alternative I, is a practicable solution that would not significantly adversely impact the human environment. During the construction period, short-term impacts to soils, vegetation, traffic, air quality, and noise are anticipated. These short-term impacts would be mitigated through permitting by the regulatory agencies and utilizing best management practices such as silt fences, site restoration, proper equipment maintenance, and appropriate signage. The long-term environmental impacts to soils, topography, and vegetation as a result of the relocation sewer line are outweighed by the positive impacts to public health, infrastructure, socioeconomic resources, floodplains, water quality, wetlands, coastal resources, and threatened and endangered species that the relocated coastal interceptor will have in providing a reliable and safe sewage transportation system to St. Croix.

9.0 List of Preparers

FEMA Region II, 26 Federal Plaza, New York, New York 10278

The proposed project was initially anticipated to be funded through an Environmental Protection Agency (EPA) grant. A draft Environmental Assessment was prepared by a consultant for VIWMA in support of the EPA grant. In order to not duplicate efforts and in alignment with Unified Federal Review, the content of this document was largely based upon information from an EA that was prepared by Bioimpact but not published. Bioimpact did not review/comment on this FEMA document. However, FEMA acknowledges the company's contribution to the NEPA

process and cite the work of Bioimpact: *Environmental Assessment for the St. Croix Coastal Interceptor Rehabilitation U.S. Virgin Islands, June 2014*.

Bioimpact, Inc., P.O. Box 132, Kingshill, St. Croix, U.S. Virgin Islands, 00851

10.0 References

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