Coral Bay Watershed Management Plan



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Executive Summary

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The Coral Bay Community Council (CBCC) is an existing watershed organization established in 2003 on the island of St. John in the US Virgin Islands, serving the Coral Bay Watershed, one of the largest in the Virgin Islands. In the past fifteen years, CBCC has effectively characterized the most significant sources of pollution to the island's eastern Bay (Coral Bay) – excessive turbidity resulting from unmanaged stormwater sediment transport and inadequate solid waste disposal systems. With funding from the EPA and NOAA, Coral Bay got its first watershed management plan in 2008 followed by an updated version in 2014 with a technical focus on turbidity and floatable debris. Dozens of on-the-ground projects, planning initiatives, and improvements have been made in the watershed as a result, funded by landowners, and federal and local agencies, and CBCC. The back-to-back hurricanes that hit the island in 2017 caused damage to project sites and other areas – that is currently being characterized. The Coral Bay Watershed is due for a 5-year update to the existing watershed management plan (using EPA's methodology). At this critical time, in the wake of a disaster and prior to extensive rebuilding efforts, the community and watershed need a comprehensive management plan that incorporates stakeholder input. Including a visioning effort that recognizes and includes diverse viewpoints will encourage a critical alliance among business leaders, residents, local government, and the scientific community regarding a renewed vision for a resilient future on the island. The work proposed here includes both technical elements to identify, characterize, and rank pressing areas for intervention and extensive stakeholder engagement efforts to gather problem area information as well as a shared vision for the watershed's future. The project will produce two documents: 1. An updated watershed management plan (in the EPA 9 elements style) and 2. A user-friendly visioning document integrating stakeholder input that illustrates community goals and strategies to achieve them. Funds will be used for watershed group and professional consultant time to develop the plans, documents, and data gathering as well as facilitation of community participation. The project directly aligns with the stated goals of the FOA to support Phase I activities to complete watershed restoration planning activities and design watershed management projects. The project is estimated for completion in just over 1 ½ years - estimated date of completion June 1, 2020. The watershed area is not located on a Federal facility, but it does border the Virgin Island National Park and the Coral Reef National Monument and visitors access the park from this watershed.

Background Data

St. John is one of three main Caribbean islands that make up the US Virgin Islands (USVI) archipelago. While more than half of the island is part of the Virgin Islands National Park and is therefore protected from development, rapid growth in other parts of the island throughout the

1990s caused extreme environmental pressures while the population increase outpaced government capacity to provide adequate public services and infrastructure improvements. From 1990-2000, the Coral Bay Watershed (on the island's east side) experienced close to 80% growth, making it the fastest growing area in the USVI. The construction boom lacked adequate regulations to govern appropriate road standards, stormwater runoff controls, slope stabilization needs, natural resource protection, or solid waste management. As a result, the torrential rains that are a common part of the island's climate readily wash out roads and carry excess surface runoff from hillside developments. Plumes of sediment and inappropriately-stored solid waste are deposited into the Bay causing significant environmental damage to high quality and sensitive ecological communities. Further, the finite fresh water resource in the form of rainfall is a critical need throughout much of the year when conditions are otherwise mostly dry. The lack of coordinated storage to provide a consistent fresh water source for agriculture, domestic uses, and municipal needs, leads to competition and shortages.

Outside of the VI National Park, most of the island is privately owned. Low density residential is the most common development type, covering about 10% of the land area in the main subwatersheds of the Bay (Center for Watershed Protection 2008). Prior to the 2017 hurricanes, the level of development represented less than 10% of the allowable buildout. Therefore, pressures are expected to increase as rebuilding efforts commence. Because the watershed is characterized by steep slopes, highly erodible soils, and high runoff volumes associated with average rain events, these factors, when combined with a large percentage of dirt roads, active construction, and little existing stormwater management, contribute to excessive sediment loading to the bay (Devine, Brooks, and Nemeth 2003).

Coral Bay watershed land use is dominated by undeveloped forested landscape. Agriculture and commercial development are limited and do not represent a significant portion of the watershed land use.

Benthic habitat mapping undertaken by NOAA's Biogeography Branch has shown that Coral Bay hosts 476 acres of seagrass, 8 acres of mangroves, 466 acres with 10-50% coral cover, and 2,484 acres of algae dominated habitats, of which 928 acres have coral reef and colonized hard bottom structures (Zitello et al. 2009). Red mangrove forests surround the bay and seagrasses cover most of the bottom providing nursery and foraging habitat for many commercially and ecologically important fish and invertebrate species, including more than 30 scleractinian coral species, around 35 fish species, birds, and marine mammals. Nonetheless, the capacity of the Bay to function as a flourishing marine habitat has been threatened by land-based sources of pollution (LBSPs). Experts (e.g., (Brooks et al. 2007; Ramos-Scharron 2012) agree that increased erosion associated with the unpaved road network and land development occurring in the 4.7 square mile (mi^2) watershed draining into Coral Bay is responsible for its deteriorated water quality condition.

LBSPs have been identified at both Federal and local levels as high priority threats to coral reef ecosystem health. Due to the significant and chronic impacts LBSP can have on coral reefs and other marine habitats, NOAA's Coral Reef Conservation Program (CRCP) has identified it as one of

three strategic program goals to be addressed to protect the coral reef ecosystem. Acknowledging that LBSP is a widespread stressor to United States Virgin Islands (USVI) reefs, but also one that can be effectively managed locally through the application of watershed-based management actions, including the use of best management practices (BMPs), it was highlighted as one of four targets in the revised USVI Local Action Strategies (LAS) and the USVI Coral Reef Management Priorities (CRMP) (2010).

The Coral Bay Community Council (CBCC) formed in 2003 to characterize and address the most pressing water resource problems on the island. Over the past 14 years, the organization has built partnerships across sectors and with diverse stakeholder groups. With funding from federal agencies including the National Oceanographic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), and the National Fish and Wildlife Foundation (NFWF), the organization helped create the first watershed management plan in 2008 (Center for Watershed Protection 2008) and led a follow-up plan in 2014 with a focus on marine debris and sediment loading in the EPA nine elements format. Several on-the-ground projects have resulted from those plans including restoration activities, erosion control projects, solid waste management improvements, marine debris clean up, and outreach and education to homeowners and contractors on responsible slope stabilization – in all more the $2.5 million in projects led by CBCC.

Fresh water resources are limited on St. John. The few active ground water wells coupled with residential rainwater harvesting on the island are insufficient to meet all domestic and commercial needs year-round. Agriculture is very limited due to the challenging topography and soils coupled with limited fresh water availability. Potable water is piped to the west side of St. John from neighboring St. Thomas island where reverse osmosis is used for desalination by the public utility. Rain water is the most commonly-used source for washing, cooking, and gardening purposes, and the majority of homes have purification systems to bring cistern-stored water to EPA drinking water standards; others used bottled water (Coldren 2015).

Watershed Management Timeline - Previous Efforts and Existing Challenges

Since the CBCC was formed in 2003, several critical studies and reports have contributed to our understanding of the ecological condition of the island's natural resources and where the most significant impact is resulting from.

In 2003, a researcher at the University of the Virgin Islands completed a sedimentation rate study in Coral bay and provided watershed characteristics background coupled with management recommendations (Brooks et al. 2007).

In 2005, the University of the Virgin Islands contracted the creation of a conceptual stormwater management plan for the Coral Bay watershed (Schwartz and Honour 2005). The resulting report provides preliminary engineering analysis and conceptual design alternatives. The project team generated maps and delineated subwatershed boundaries as well as identified potential retrofit

project locations. It focuses on one small area and does not rank projects in a priority matrix related to hydrologic and pollutant loading as they relate to cost.

In 2006, a comprehensive inventory of marine and shorelines species provided information on the diversity of and location of marine and terrestrial wildlife. This document helped identify areas of critical concern based on impact to sensitive habitats.

In 2008, NOAA funded the first Watershed Management Plan for Coral Bay by the Virgin Islands Department of Planning and Natural Resources (DPNR). The report came in response to a 2006 Watershed and Stormwater Management Workshop conducted by the Center for Watershed Protection, also funded by NOAA. In that workshop, participants ranked watersheds across the USVI in most critical need of watershed assessment and planning activities. The workshops summary report provides recommendations to fill gaps in regulations and programs relevant to the Bay. Up to that date, efforts had been implemented inconsistently and without an overall guidance document. The 2008 report presents a framework for the comprehensive management of the watershed. It includes a list of actions and a management strategy for improving and protecting Coral Bay from nonpoint pollution sources resulting from land use changes and management behaviors. Importantly, the report also identified key partners and next steps toward implementation.

With the results of the 2008 plan, the CBCC received a $300,000 USEPA Community for a Renewed Environment (CARE) grant to begin implementing the recommendations. In 2009, CBCC and partners received a $1.5 million grant from NOAA's American Recover and Reinvestment (ARRA) program to invest in restoring natural drainage functions and hardscaping erodible roadways to control sediment-laden runoff. With significant success in implementing the first general recommendations from the 2008 plan, CBCC received grant monies in 2012 from the National Fish and Wildlife Foundation's Coral Reef Conservation Fund to create a five-year update to the watershed management plan using the US Environmental Protection Agency's (EPA) nine elements standards for Clean Water Act Section 319 funding eligibility. In 2014, the group produced the *Coral Bay Turbidity and Floatable Debris Management Plan*. This plan provided an updated to the 2008 version and was more focused on the target issues of concern (floating solid waste debris and turbidity in the Bay). It also produced a refined management and evaluation strategy to address these most pressing concerns. This plan provides a management strategy to address turbidity that includes load reduction targets. It also includes a strategy to reducing floatable solid waste. The coupling of strategies for implementation in the short term with information to aid prioritized regulatory and restoration activities, makes this plan both locally actionable and useful for regulatory agencies. In that same year, CBCC applied for and received a grant of expertise from the American Institute for Architects through the Center for Communities by Design, to create a planning assessment and concept designs in support of efforts to protect natural resources while supporting appropriate development. In that report, implementation of green infrastructure planning and prioritization were highlighted as future direction for the island. The report indicates the need to "develop resources and capacity to operationalize GI standards

in future development." Stormwater runoff has been identified as a leading challenge on the island, negatively impacting aquatic resources and reducing reuse options of scarce freshwater resources (AIA Communities by Design 2014).

Using the Watershed Management Plans, significant work on project implementation has taken place on the island. An erosion control handbook for residents was published by CBCC in 2017 to aid in outreach efforts to property owners and contractors on slope stabilization techniques to reduce sediment movement into the Bay. Additionally, the CBCC has lead a number of restoration projects from the plan, including a 1.5-acre wetland restoration project close to the Bay, drainage and erosion engineering and construction help for neighborhoods, marine debris removal, and several targeted drainage improvement projects in critical areas. The structure provided by the planning and implementation reports gave priority and focus to this work and inspired the mobilization of partners across sectors to make notable progress in meeting our water quality goals.

In September 2017, the USVI were hit hard by two back-to-back CAT 5 hurricanes: Irma and Maria. St. John experienced significant damage to public and private infrastructure and left everyone without power, and 90% of structures damaged. Significant assistance is being provided by FEMA and other agencies. It is expected that extensive redevelopment will initiate on the island following the damage assessments. With the hardship of the storm damage still fresh in the community's consciousness, the time is right for an inclusive visioning effort that allows residents, business owners, and government representatives to cooperatively produce an actionable roadmap to increased resilience. Significant federal investment has already been made on the island to develop and implement watershed management plans. A comprehensive cataloguing of assessed project sites and a gaps analysis will inform an inclusive, community-lead management plan development effort. The resulting watershed plan will reflect the needs of the community in an accessible and actionable document. This effort aims to provide a timely benefit to the island as it rebounds from a disaster by providing ample time and space for community input, education, and visioning for the future.

Project Location

The island of St. John is in the USVI Caribbean archipelago (18.3480° N -64.7132° W) (Figure 1). More than half of the island of St. John is protected in a more than 7,000-acre Virgin Islands National Park. An additional 12,000+ acres of protected underwater Coral Reef National Monument adds to the park within the waters of Coral Bay.

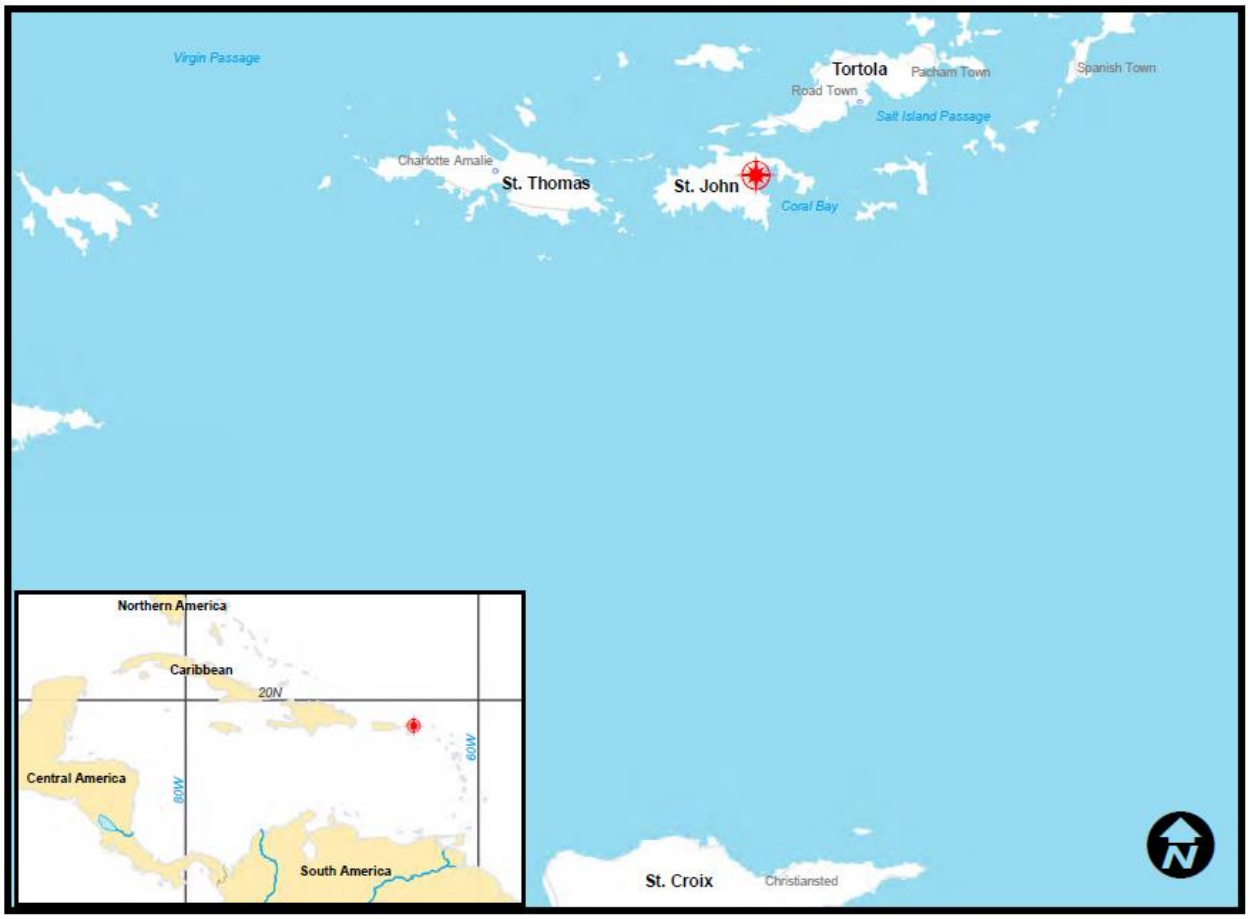

Figure 1: Project location on the eastern side of the island of St. John in the US Virgin Islands.

The Coral Bay watershed comprises 3,000 acres of land on the east side of St. John. Roughly 50% of the housing structures in the Coral Bay watershed are vacation rental properties, serving as the backbone of the local tourist economy. St. John is a well-known vacation destination sought after for its beaches, fishing, boating, camping, and water sports. It also contains important environmental features, including forests, salt ponds, beaches, mangroves, seagrass beds, algal plains, and unique coral reef systems.

The island is very steep – with slopes averaging 30 percent across the island – making it sensitive to erosional forces. Housing development on these steep slopes exacerbates the mobility of sediment from the hillsides into the Bay – causing sediment loading and deleterious impacts to coral ecosystems.

Watershed Boundaries

The Coral Bay management area comprises three watersheds – Coral Bay, Lameshur Bay, and Mennebeck Bay. The Coral Bay watershed is located on the eastern side of St. John (Figure 2). Approximately 4.7 square miles (3,000 acres) in drainage area, the terrestrial watershed border closely follows Bordeaux Mountain and Centerline Roads, and roughly bisects the East End peninsula (CWP 2008). The Lameshur Bay watershed occurs along the southeastern St. John

shoreline and encompasses Europa, Great and Little Lameshur, Grootpan, Kiddle, and Salt Pond bays. The watershed's ridgeline boundary runs along Bordeaux Mountain to the north and separates the watershed from Reef Bay to the west and Coral Bay to the north and east (Figures 2 and 3). The watershed is approximately 2.6 square miles (1,545 acres) in size and is almost entirely within the Virgin Islands National Park Boundary. The Mennebeck Bay watershed includes an approximately 803-acre drainage area occurring along the north and eastern St. John shoreline and encompassing Brown, Mennebeck, North Haulover, Newfound, and East End bays.

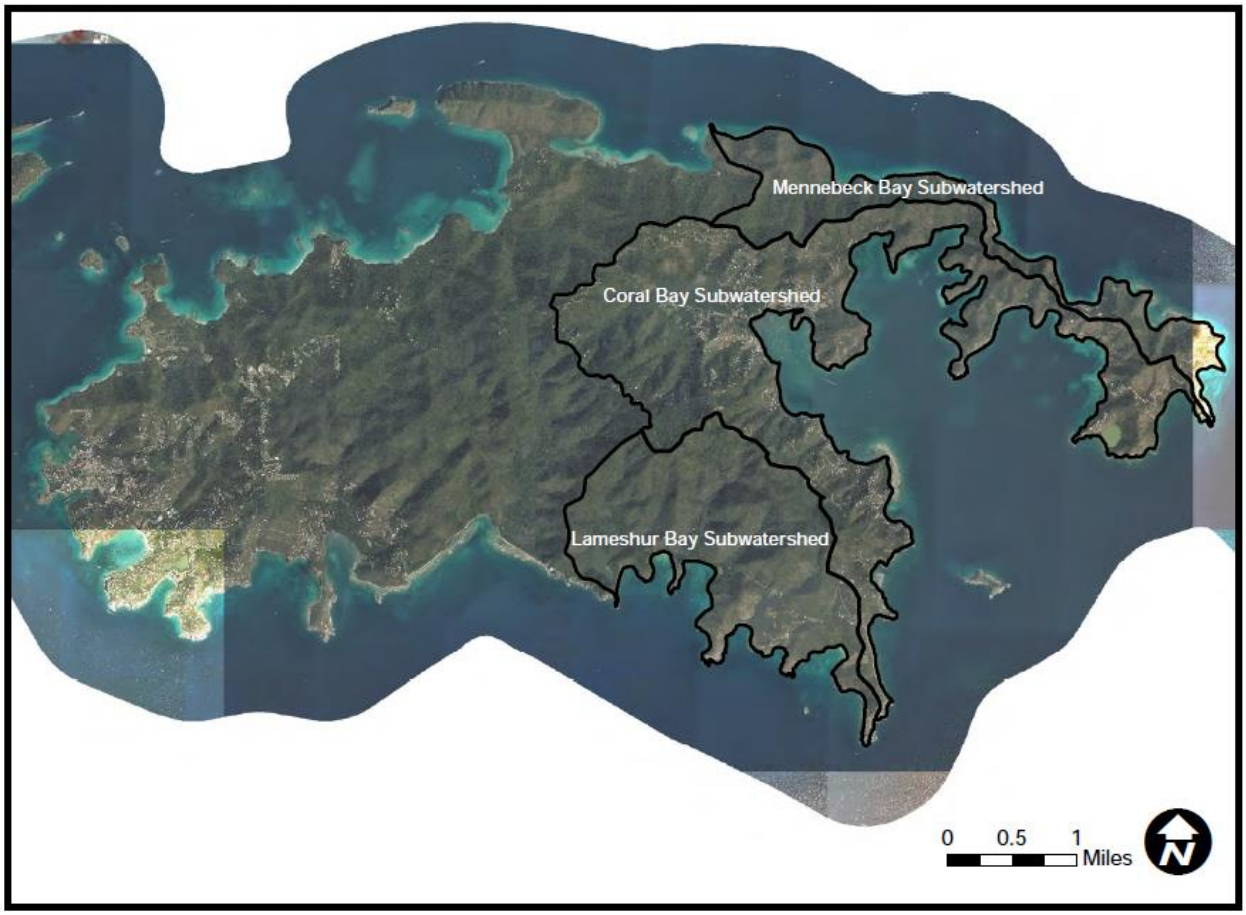

Figure 2: Coral Bay Management area including the subwatersheds of Lameshur and Mennebeck Bays.

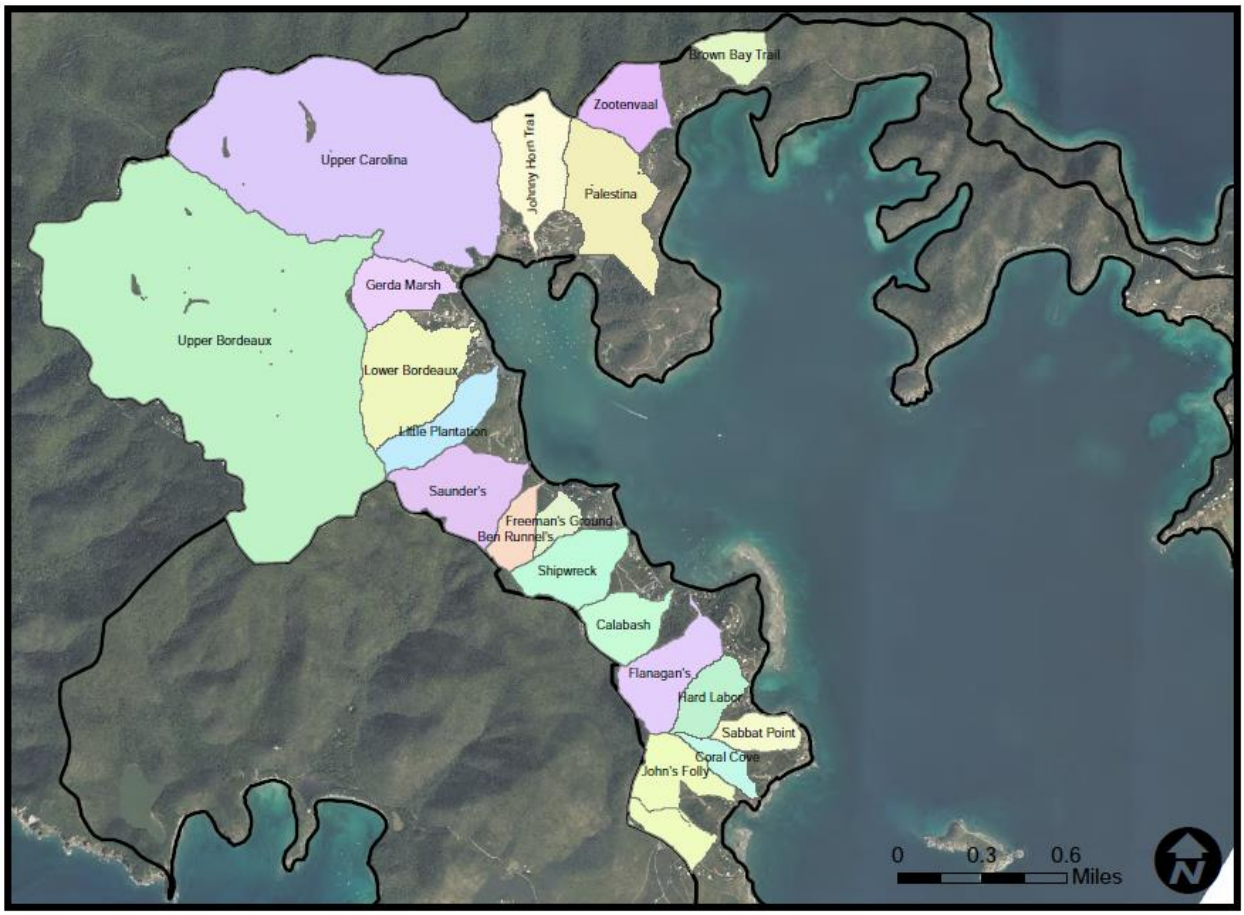

Figure 3: Subcatchments of Coral Bay watershed.

These watersheds have steep slopes (Figure 4) and limited, rural development with a year-round population of around 1,000 with a seasonal (December through May) increase in population as winter residents and tourists arrive in the area.

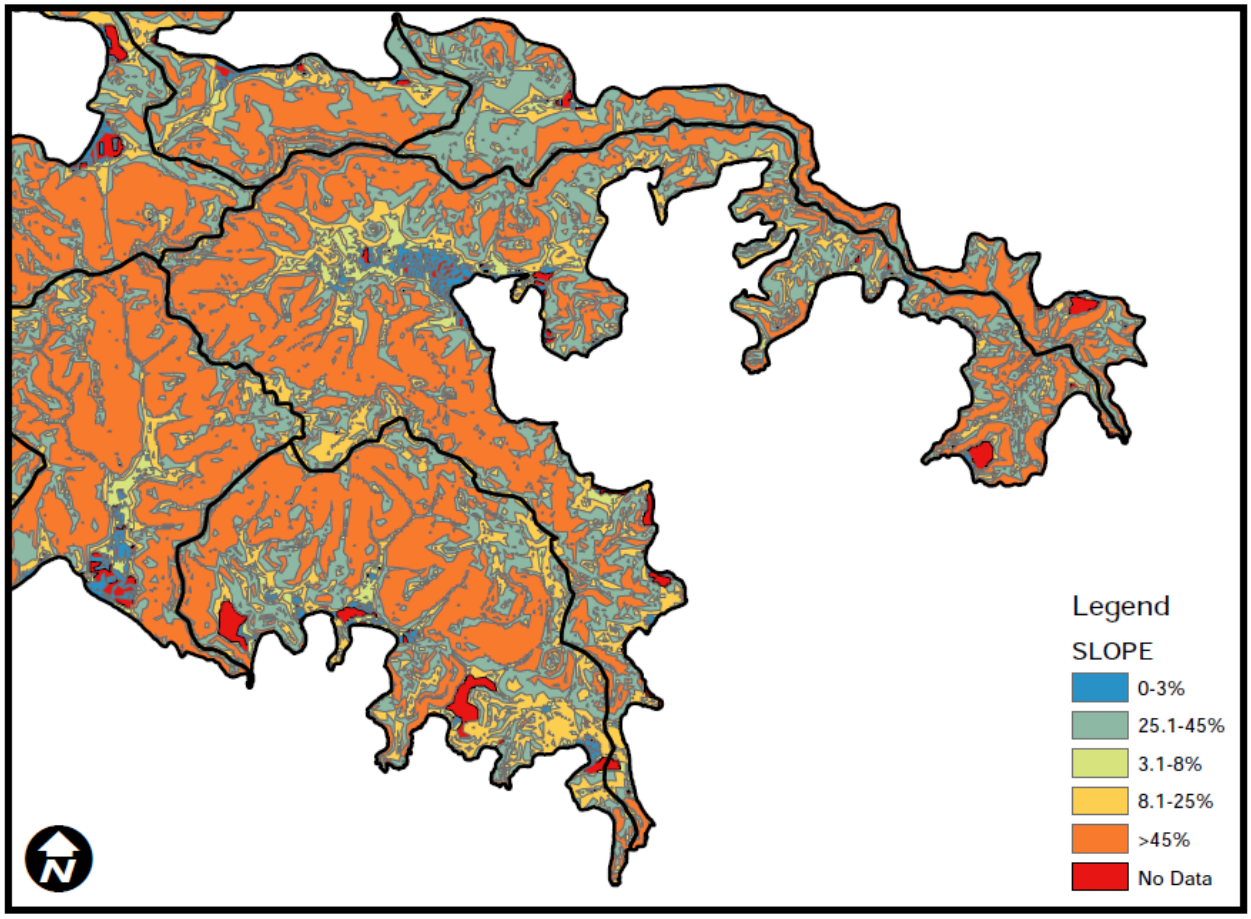

Figure 4: Slope conditions in the Coral Bay management area on St. John.

Technical Project Description

The Coral Bay Community Council (CBCC) is an existing watershed group, established in 2003, with the purpose of acting as a watershed management association that seeks to address threats to water quality in the Bay and the subwatersheds that contribute to it. Tackling solid waste disposal, potable water resources, sedimentation and erosion, wetland restoration, and roadside vegetation, the CBCC takes a comprehensive approach to watershed management.

Over the past 14 years, the organization has worked to bring together diverse stakeholders, identified the most critically pressing problems, developed watershed management plans to address those problems, and implemented several high priority projects working towards a solution. As detailed in the previous sections, CBCC has been an active player in the development and implementation of watershed management plans and projects for the island, with focus on the Coral Bay watershed. Previous efforts have engaged the community in a shorter timeframe with action planning and included limited government involvement. As the make-up of the community shifts, there is a need to continually engage to sustain interest and participation. The unique state of the community following the devastation from the hurricanes necessitates a strategy to 1. Educate the public on the role of watershed planning, 2. Incorporate diverse

perspectives in the crafting of a visioning document, and 3. Produce a user-friendly document that clearly articulates that goals of the community with actionable steps to continually engage diverse stakeholders. This proposed project seeks to address *Task B – Watershed Restoration Planning*.

As outlined in the previous sections, significant federal resources have been invested to identify sources of pollution and protect critical natural resources on St. John. The recent hurricanes have caused widespread damage. While destruction extent is still being characterized, rebuilding efforts are already underway. Reconstruction can be an opportunity to incorporate better development practices and to integrate natural resource protection as a strategy for greater resiliency from extreme events. This requires an inclusive and timely approach to effectively communicate watershed management planning goals with the community and cooperatively engage in visioning with a diverse stakeholder group – before redevelopment is complete. With years of work behind CBCC and the recent hurricane damage, a gaps analysis to determine where our efforts can be best applied moving forward is a needed component of this work. Our most recent watershed management plan focused heavily on target pollutants of sediment and solid waste. While the resulting report effectively characterizes the source of the problem and provided needed professional LBSP assessments, it is too technical in nature to serve as a needed communication tool for the organization, and extremely limited funding did not extend to producing this next step at the time. At this critical junction in the development of the watershed and community, we seek a management plan that prioritizes community engagement and results in a plan that incorporates a shared vision in an accessible format. This type of plan could influence the long-term future of the island's aquatic resources at a time ripe for intervention via an inclusive process.

This project proposes to do the following:

1. Existing Conditions Review: Compile documentation of existing resources including a complete cataloguing of relevant data (reports, project locations, GIS information). This project element will include stakeholder input (via a survey) to identify and capture issues not previously addressed or those that are newly emerged because of the storms. Information from completed damage assessments will be included in the data analysis.
    a. OUTPUT: Up-to-date compilation of existing data to characterize the problem, conditions on the ground, and status of past work efforts to improve water quality.
2. Gaps Analysis and Data Collection: Identify gaps in the existing data and rank them based on importance for setting priorities or moving projects towards implementation. Data gaps that can be filled from information gathering from community members will be separately flagged for integration into the community engagement/ visioning effort. Gaps that can be addressed with field data collection will be identified for follow-up. Pollutant loading will be estimated using WinSLAMM modeling software.
    a. OUTPUT: Gaps identification, new data generation to address gaps, modeling and ranked project list
3. Public engagement/ Visioning: Prioritizing stakeholder diversity, three public meetings will be held in the Coral Bay watershed. Business leaders, residents, seasonal vacationers, local

government representatives, non-profit partners, academic researchers, and large-scale developers will be specifically targeted. Workshops will be widely advertised to ensure inclusion. The project team will provide an overview of the collected data (in tasks 1 and 2) to serve as an introduction to past work and current conditions on the ground. Attendees will share their perspective on environmental challenges, add critical areas to the map for consideration, and craft a 10-year plan through a collaborative visioning process.

   a. OUTPUT: Public meeting minutes and compiled input for visioning document

4. Watershed Management Plan: Create a user-friendly watershed management plan in two parts: 1. Technical document that includes data methods, new data generated, GIS files, model outputs, and a complete catalogue of previous work complete, and updated conditions assessment after the 2017 hurricane impacts, and 2. A publicly accessible (user-friendly) version of the plan that includes community vision outcomes with photo-realistic renderings (Figure 5)of a shared community plan for the future (a concise and visually appealing tool for communication).
   a. OUTPUT: Watershed Management Plan and Visioning document

Figure 5: Example of landscape design visualizations to highlight community vision plans for change. Features like these will be integrated into the user-friendly version of the watershed management plan.

The resulting watershed management plan will update the most recent plan from 2014 and include critical input from community members about their experiences and their vision for the future. A shared vision for the watershed, articulated in a concise and visually-appealing communication tool. The stakeholder support possible from a community visioning effort will further coalesce stakeholders at a critical time of rebuilding.

Evaluation Criteria

Criterion A – Watershed Group Diversity and Geographic Scope

Historically, CBCC has sought to develop a consensus about common issues of concern among the diverse small community – especially focused on securing quality government services – within the larger Coral Bay watershed. CBCC is one of two recognized watershed groups in the US Virgin

Islands. It is an active volunteer-led organization involved in community planning, advocacy, and environmental restoration. The group engages directly with stakeholders through public meetings, hosting a website and e-newsletter focused on environmental issues on the island, demonstrating good stewardship through on-the-ground projects, and providing workshop and training opportunities for property owners and contractors on St. John. The organization's approach has identified the most pressing problems through watershed management planning efforts as well as seeking input from the government agencies who manage the island and the residents and visitors who use the island's resources. In addition to working with the territorial Department of Planning and Natural Resources (DPNR), CBCC has sought and received the assistance of federal agencies, including the National Oceanic and Atmospheric Administration (NOAA) and United States Environmental Protection Agency (USEPA) and the US Department of Agriculture (USDA). Funding from these Agencies has allowed CBCC to begin making progress to address the most pressing environmental concerns on the island. Taking action to address these issues, CBCC has implemented projects to reduce sediment loading, created a landscaping guide for erosion control, and led a community process to determine improved solid waste disposal options that avoid water quality conflicts, and create a drinking water and wastewater management plan.

CBCC seeks to provide accessible information to stakeholders in the watershed. In 2013, CBCC hosted a community visioning effort led by the American Institute of Architects in Coral Bay. Participants included local politicians, leaders in regional government, developers, public school representatives, and full- and part-time residents. The resulting document proposed a future vision for the watershed – as suggested by the experts leading the public meetings. That visioning document will provide a starting point for discussion in this 5-year updated iteration of the Coral Bay vision and management plan.

Coral Bay represents a critical gateway to the Virgin Islands National Park covering the island's middle section. Development pressure is most acute on the eastern side on the steep slopes with the best views, and with slopes averaging 20% (with many over 35%), the Coral Bay watershed is inundated with sediment from improperly managed construction sites, poorly-planned developments, and dirt road networks installed with little attention to long-term stability, beginning in the 1980's. As a result, most of the planning and resource investigation work has been focused in the Coral Bay watershed. CBCC has expanded that focus in our 2014 Watershed Management Plan to include the subwatersheds of Mennebeck and Lameshur Bays in recognition of the need for inclusive management planning (Figure 2). This proposed management plan effort will hold that expanded watershed definition and produce a plan for the entire extent of the land facing development impacts in this practical management area – east of the National Park.

Criterion B – Addressing Critical Watershed Needs

In 2007, the Virgin Islands Department of Planning and Natural Resources (DPNR) added Coral Bay harbor to the 303(d) impaired waters list due to elevated turbidity – an official recognition of the severity of one pollution challenge the CBCC is aiming to address. Early colonial development cleared almost 90% of the island's vegetation to establish sugar cane production. While much of

the deforested land has since been revegetated and about 3/4 of the island is protected as part of the National Park, stormwater runoff causing sediment transport to the Bay is the leading environmental concern in the watershed (Bay 2014). The island's steep slopes and highly erodible soils make it sensitive to erosion during rainfall. Climatic conditions influence long periods of drought (making the establishment of roadside vegetation challenging) followed by brief but intense rain events delivering huge volumes of water to the island, saturating soils, and transporting sediment plumes into the Bay (Figure 6). Poor management of development and a large percentage of dirt roads exacerbates the challenge. Hurricane threats and realities increase the planning and resiliency challenge.

The CBCC is working consistently to address these threats.

Figure 6: Photos of sediment-laden runoff entering the Bay and threatening water quality, habitat, and recreational use.

Additional environmental threats include uncontrolled development, damage from feral goats, donkeys, and pigs and invasive plant species (Reed 2015). Nine terrestrial wildlife species on the island are federally designated as threatened or endangered. Over 500 surveys of Coral Bay marine sites have taken place between 2001 and 2010. These studies reveal the presence of 30 distinct coral species and 194 species of fish. The Bay and its surrounding waters host humpback whales, sea turtles, manatees, and dolphins and the federally endangered or threatened leatherback turtle, hawksbill, green turtle, and loggerhead turtle. High quality habitat for nesting and foraging is critical to provide much needed spaces for these species. In 2017, two back-to-back hurricanes hit the island, causing damage to restoration sites and further highlighting the need to manage erosional forces on the islands steep slopes. Additional concerns regarding fresh water access influence development decisions as current supply is limited and is surpassed by demand.

Several high-quality studies have already been published for the Coral Bay watershed, including two watershed planning documents by CBCC, a study by the Center for Watershed Protection, several papers by academic researchers, and an analysis of planning needs by the American Institute for Architects. These reports provide a rich scientific context in which our work is embedded and allows this proposed planning effort to use already-characterized challenges as a framework for community engagement and visioning.

CBCC has a very close working relationship with the University of the Virgin Islands, representatives from Friends of the National Park, local business groups, CBCC 400+ members who are residents and or property owners providing financial support, additional residents and property owners, the St. John Community Foundation, the Coral Bay Yacht Club, local churches, long term hurricane recovery groups, FEMA, and the local territorial government agencies that make up the watershed stakeholders. As a result, the project team will first seek these partners' input on areas necessitating the greatest attention. Because it is critically important to also include input from all residents, visitors, and off-island property owners, the information gathering process will also include open stakeholder meetings and a process to provide input remotely via a Google Map interface. We see this as a crucial and efficient way to identify problem areas on which the team will focus for more in-depth field investigations and as a tangible way to directly include stakeholder input.

As previously described, a visioning effort led by the American Institute for Architects in 2013 resulted in a first phase visioning document to reflect the thoughts of stakeholders. Simultaneously, a watershed management plan developed by CBCC focused addressing professionally-determined environmental challenges (turbidity and floatable debris). This project seeks to build on these previous efforts by combining stakeholder process with rigorous scientific review. The resulting document will provide a readable review of the state of the watershed, a vision for the future, and actionable steps to achieve the stated goals.

Criterion C – Implementation and Results

The project team expects to complete this environmental management plan and integrated visioning effort over 1 ½ years. The following table indicate when each task item will take place and the associated cost estimates for each.

Project Schedule

Project Task	Year 1												Year 2											
	2018			2019									2020											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Task 1 – Existing Conditions Review		$10,371.50																						
Task 1.1 - Kickoff Meeting with partners																								
Task 1.2 - Collect & Review Existing Plans & Data																								
Task 1.3 - Design & release digital stakeholder survey to gather input on other high prioirity sites/ add context (map-based. Analyze data.																								
Task 1.4 - Quarterly Reporting																								
Task 2 – Gaps Analysis and Data Collection									$29,125.00															
Task 2.1 – Identify data gaps in existing plans and datasets inhibiting project progress or priority setting																								
Task 2.2 - Create plan for additional data collection if necessary																								
Task 2.3 - Collect additional field data to improve quality of dataset																								
Task 2.4 - Data analysis and pollutant loading modeling																								
Task 2.5– Rank projects/ priorities																								
Task 2.6 - Quarterly Reporting & Sufficiency Reporting																								
Task 3 – Public meetings/ visioning											$5,480.00													
Task 3.1 - Hold three public meetings on the island - providing ample outreach to diverse groups of stakeholders																								
Task 3.2 – Compile input from public meetings - identifying goals, challenges, and cross-cutting themes in visioning exercises																								
Task 3.3 - Quarterly Reporting																								
Task 4 - Watershed Management Plan																			$43,935					
Task 4.1 - Create user-friendly document on watershed management planning, status of work in Coral Bay, the community's future vision, and steps to achieve success.																								
Task 4.2 - Develop monitoring plan																								
Task 4.3 - Identify technical and financial resources needed for full implementation																								
Task 4.4 - Assess and compile findings of desktop and field data gathering with community visioning effort into a comprehensive management plan.																								
Task 4.5 - Community outreach with finalized plan																								
Task 4.6 - Quarterly and Final Reporting																								

This project will result in a management plan that conforms to EPA Nine Elements planning guide for watershed planning. Additionally, the work of CBCC complements the goals and initiatives of several federal agencies.

- The US EPA seeks to reduce environmental risk. The agency funded CBCC's watershed management planning effort through the Community Action for a Renewed Environment (CARE) program in 2009-2012, provided support to implement a number of the resulting projects.
- NOAA's work includes a prioritization of coastal restoration and the 2008 Watershed Management Plan. From 2009-2012, NOAA (through the American Recovery and Reinvestment Act (ARRA)) provided funding to CBCC to construct projects designed to reduce erosion on the island.
- The National Fish and Wildlife Foundation recognize coral reefs as valuable and threatened ecosystems, and channels funding from NOAA and EPA to selected projects. Through NFWF's Coral Reef Conservation Fund, they provided support for CBCC to develop the updated watershed management plan in 2014.
- The USDA identifies drinking water and waste disposal services as critical for public safety and economic vitality. Through their Rural Utilities Service Program for solid waste and water supply planning, USDA supported CBCC in two Solid Waste Management grants in 2014 and 2017, and a TAT grant in 2015 to develop a drinking water and waste disposal assessment and plan
- Local government has been supportive of CBCC's projects through participation in Watershed Management planning activities and Department of Public Works (DPW) and DPNR partnership on some implementation projects – such as drainage fixes on secondary public roads, and stormwater feature maintenance.

Partner Qualifications

Coral Bay Community Council - CBCC's President (and Executive Director), Sharon Coldren, will provide overall coordination and general oversight of the project. Ms. Coldren is a full-time volunteer, guided by her years of professional experience providing planning, financial and regulatory analysis, complex issues analysis, project management and leadership skills to various businesses and nonprofit organizations. She has worked for AT&T, Pitney Bowes, and the American Council on Education, and holds a master's degree in Regional Planning. CBCC's Environmental Programs Manager and Associate staff will be paid staff people on this project, interacting with the Watershed Consultants and the community and submitting all required reports in a timely manner. Organizational Capacity and Grant Management Experience: The Coral Bay Community Council is a 14-year-old 501(c)(3) nonprofit organization in Coral Bay, St. John. It is in good standing with the Lt. Governor's office, and holds a negotiated federal government indirect cost recovery rate, having participated in federal grants with EPA, NOAA, USDA, and the National Fish and Wildlife Foundation in the past 10 years. CBCC's annual expenditures are

approximately $260,000, thus CBCC has never had a single audit, nor a formal annual audit. A pro bono CPA reviews our annual books and makes year-end adjustments. All financials are done on Quickbooks, and all federal rules are followed closely. CBCC manages a website at http://coralbaycommunitycouncil.org which includes further information on our mission, financials and information on CBCC and its projects.

Watershed Consulting Associates, LLC - is a Vermont-based environmental consulting firm consisting of a team of hydrologists, water quality scientists, and engineers with demonstrated experience in watershed investigation, green stormwater retrofit evaluations, site design, advanced hydrologic & hydraulic / water quality modeling, permitting, and GIS mapping & analysis. Watershed has a proven track record of delivering complex, data intensive environmental management planning analyses that provide a targeted approach to solving water quality problems. WCA is known for out of the box solutions with a particular expertise in erosion and stormwater-related challenges. With additional expertise in delivering training program and measuring learning and environmental action outcomes, the Watershed team has the range of skills most applicable for the development of a management plan with a community engagement element. Watershed worked with CBCC in 2017 to produce the island's first slope stabilization and erosion control manual with funding from the NOAA Coral Reef Conservation Program. As a result, the Watershed team is familiar with conditions in Coral Bay and equipped to deliver a scientifically and technically rigorous product that is simultaneously locally relevant.

Criterion D – Nexus to Department of the Interior Initiatives

Development of the Coral Bay Management plan and visioning document will complement efforts of the US Department of the Interior at the Virgin Islands National Park on St. John. Because the Park land that borders the Coral Bay Watershed is within a designated wilderness zone, prioritizing land management techniques that reduce erosion and negative impacts to the National Park land will support the goals of the Department of the Interior. As previously described in this proposal, there are a number of threatened and endangered species that rely on Coral Bay for forage and breeding areas. An updated management plan and the implementation of that plan is critical to support a healthy ecosystem for these sensitive animals and plants.

Environmental & Cultural Resource Compliance

The field data collection portion of this project will include recording existing conditions, locations of infrastructure, and extent of damage. The project team will use field data collection mobile application software (Fulcrum) to take photographs and notes with GPS-referenced locations. Publicly accessible sites will be prioritized. The project team will receive written landowner permission for any field site assessment on private property. This zero-impact data collection does not require review for environmental or cultural resource compliance.

Permits or Approvals

No permits or approvals for this work are required, as it is planning and prioritization in scope and does not include implementation or destructive or extractive field work components.

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Budget

Task	CBCC staff time ($30/hr)	Fringe (35%)	Contractual - WCA					Materials and Supplies	Regulatory Compliance	Totals
			Staff	A Torizzo	B Tharp	D Allen	H Greenleaf			
			Title/Role	Principal	WQ Manager	WQ Specialist	Landscape Designer	Travel		
			Rate ($/hr)	$110	$100	$95	$80			
1.1 - Kickoff Meeting	20			8	8			$ 2,154		
1.2 - Collect and review existing plans & data	40				20					
1.3 - Design and release survey & data entry	15				10					
1.4 - Quarterly Reporting					5					
Task 1: Existing Conditions Review	**$ 2,250**	**$ 787.50**		**$ 880**	**$ 4,300**	**$ -**	**$ -**	**$ 2,154**	**$ -**	**$ -**	$ 13,897.81
2.1 - Gaps Assessment				8	15					
2.2 - Data collection plan				5	10	6				
2.3 - Collect field data	40			12	30	40		$ 6,555		
2.4 - Model pollutant loading				5	15	20				
2.5 - Rank projects/ Priorities	10			5	10	15				
2.6 - Quarterly & Sufficiency Reporting					10					
Task 2: Gaps Analysis - Data Collection	**$ 1,500.00**	**$ 525.00**		**$ 3,850**	**$ 9,000**	**$ 7,695**	**$ -**	**$ 6,555**	**$ -**	**$ -**	$ 35,819.94
3.1 - Public meetings	40			10	10	5				
3.2 - Compile public meeting information					5					
3.3 - Quarterly Reporting					5					
Task 3: Public meetings/ visioning	**$ 1,200.00**	**$ 420.00**		**$ 1,100**	**$ 2,000**	**$ 475**	**$ -**	**$ -**	**$ -**	**$ -**	$ 5,745.80
4.1 - Create user-friendly visioning document	20			10	25	10	40		$ 500		
4.2 - Develop monitoring plan				5	15	10				
4.3- Identify needed tech and financial resources	10			10	25	20				
4.4 - Compile & analyze all data and findings into management plan	10			20	80	20				
4.5 - Share plan with community	20			20	30	20		$ 2,985		
4.6 - Quarterly & Final Reporting					15					
Task 4: Watershed Mngmt Plan	**$ 1,800.00**	**$ 630.00**		**$ 7,150.00**	**$ 19,000.00**	**$ 7,600.00**	**$ 3,200.00**	**$ 2,985.00**	**$ 500.00**	**$ -**	$ 43,691.20
Total Direct Charges	**$ 6,750.00**	**$ 2,362.50**		**$12,980.00**	**$34,300.00**	**$15,770.00**	**$ 3,200.00**	**$11,694.00**	**$ 500.00**	**$ -**	**$ 87,556.50**
Total Indirect Charges	**$ 10,795.00**	**$ 803.25**									**$ 11,598.25**
TOTALS	$ 17,545.00			$ 12,980.00	$ 34,300.00	$ 15,770.00	$ 3,200.00	$ 11,694.00	$ 500.00	$ -	**$ 99,154.75**

Total year 1 direct budget (tasks 1, 2, and 3) = $44,691.50
Total year 2 budget (task 4) = $42,865.00
CBCC fringe rate (applied only to organizational staff time – column 1 in the table above) = 35%
CBCC Indirect Rate (applied to CBCC staff time and the first $25,000 of the contractual budget) = 34%

Budget Narrative

Salaries and wages

Coral Bay Community Council staff will manage the grant and serve to coordinate public meetings, provide outreach, document review, and overall project guidance for technical contractor. CBCC staff to be involved in this project include the Environmental Program manager and Associate staff. CBCC hourly rate is $30/ hour. Sharon Coldren (Executive Director) will volunteer her time on this project. Total CBCC hours in the first project year is 165 and the balance (60 hours) will be applied to the second year of the project.

Fringe Benefits

The fringe rate of 35% is applied to CBCC staff time.

Contractual

Salaries and Wages

Watershed Consulting Associates staff primarily involved in this project include:

Andres Torizzo (Principal and Hydrologist: $110/hr) - Mr. Torizzo will provide project oversight and quality control: 53 hours in year 1 and 65 hours in year 2.

Becky Tharp (Water Quality Program Manager: $100/hr) - Ms Tharp will serve as lead technical project coordinator and will synchronize efforts with CBCC leadership. Ms. Tharp will spend 153 hours in the first year of the project (including 20 hours for reporting) and 190 hours in the second year with 15 years allocated for reporting requirements.

Dana Allen (Water Quality Specialist: $95/hr) – Mr. Allen will provide project support throughout the field data collection and modeling and reporting phases – using integrated digital application technology to interface directly with mapping and modeling software for seamless data transfer during the analysis phase. Mr Allen will allot 86 hours in the first year of the project and 80 hours in year two.

Holly Greenleaf (Landscape Designer: $80/hr) – Ms. Greenleaf will provide photo-realistic renderings of community visioning exercise outcomes for inclusion in the final documentation and for outreach purposes. Ms. Greenleaf's time will be allocated in the second year at 40 hours.

Fringe

No fringe is applied to contractor time.

Travel

Travel to the study site on three occasions for the contractor team is budgeted. For project kickoff, project leads Mr. Torizzo and Ms. Tharp will travel to the study site at cost of $800/ airline ticket (from airline estimates) plus one night of accommodations at $277/ person (federally-approved per diem rate). The second visit to the study site will include three project team members (Mr. Torizzo, Ms. Tharp, and Mr. Allen). Project team will spend 5 days at the site collecting field data, meeting with community members and holding community meetings at $277/day per diem plus $800 * 3 for airline tickets to the site. The final site visit will take place after the management plan is complete in order to share with the community. This visit will include two team members for 2.5 days at the same per diem and airline rates described above.

Materials and Supplies

The community visioning document will be printed with copies provided to the community. Based on rates for printing similar documents, it is estimated that a 100 high quality, full color, glossy, bound documents can be printed for $5/unit for a total of $500.

Environmental and Regulatory Compliance Costs

As this project does not include any mitigation measures, and environmental data collection is limited to site scoping, location identification, field verification, measurement, and photographs, no environmental or regulatory compliance is expected to be necessary.

Indirect Costs

CBCC has a federally-negotiated indirect rate of 34%. This rate has been applied to the first $25,000 of this budget plus the salaries and fringe total for CBCC staff.

Total Costs

The total costs associated with this project over two years is $99,154.75.

Letters of Support

CBCC has a number of partners that are in support of this effort to update the management plan. Due to the extreme workload associated with Hurricane recovery efforts, we did not feel that is was timely to request that support in writing for this opportunity. If formal letters are strongly desired, CBCC would request more time to allow those already over-extended with recovery efforts to respond with written support.

CORAL BAY COMMUNITY COUNCIL

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www.CoralBayCommunityCouncil.org

Whereas the Coral Bay Community Council, Inc. is applying for BOR-DO-18-005, 15.554 , and the Bureau of Reclamation desires confirmation of our capabilities;

It is Resolved that:

The President of the Coral Bay Community Council, Inc. , Sharon L. Coldren, has the legal authority to enter into this agreement.

The Board of Directors has reviewed and supports the application submitted.

The applicant has the financial capability to carry out the proposed project, as described.

The Coral Bay Community Council will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

Voted affirmatively by the Board, January 26, 2018

Signed 1/30/17

David Silverman,

Secretary