Region 2 Urban Waters Federal Partnership Nomination

Martín Peña Channel in San Juan, Puerto Rico

Name and location

Caño Martín Peña, or Martin Peña Channel (MPC), is a 3.7 mile long natural tidal channel located at the heart of the San Juan Bay National Estuary, the only tropical estuary in EPA's National Estuary Program, in San Juan, Puerto Rico. The channel was once over 200 feet wide with enough depth to allow for navigation by commercial vessels and connects, San Juan Bay to San José Lagoon. Its margins were once covered with a lush mangrove forest and other wetland types.

In the 1930's, impoverished islanders began moving to San Juan looking to improve their way of life. Many of those families established squatter communities in the wetland areas around Martín Peña Channel. At the time, the ecological importance of these areas was not well documented, and the wetlands were mostly regarded as foul smelling sources of tropical disease. Settlers started to fill the wetlands surrounding Martín Peña with trash and other debris to construct housing. This development, which was largely overlooked by the local government, was performed in a haphazard manner, without planning or consideration for infrastructure needs. This practice continued for decades, as the communities grew and continued to reclaim land from the wetlands and the channel. Today, the eastern side of Martin Peña Channel has essentially disappeared. At the most critical segment of the channel, the area appears to be rapidly transitioning into an upland ecosystem, with little or no laminar flow connection. The current situation at Martín Peña has continued to deteriorate due to the establishment of a dense area of nuisance aquatic vegetation at the outlet of the channel towards San José Lagoon which blocks much of the water flow. These situations severely disrupt the natural water flow and circulation within the San Juan Bay estuary system, which was designated as an estuary of national importance under the National Estuary Program in 1992.

Local needs and challenges

In addition to the disruption of water flow within the channel, significant sewage discharges reach MPC through direct pipes and a precarious municipal storm sewer system. It is estimated that over 3,000 structures do not have a sanitary sewer system and discharge raw sewage into MPC. Debris that is accumulated in vacant lots throughout the communities and within the margins of the MPC includes ferrous metals, trash, grease, and oils. These materials end up further degrading the already compromised sewer systems, and contributing to the water pollution problems. The municipal storm sewer system in the area has suffered from decades of neglect. This clogged system, combined with the lack of flow within MPC, results in backflow problems and as a result, many streets within the communities are flooded by contaminated waters and sediments upon rain events. In 2002, a survey of the communities found that 39% of houses reported flooding between one and twenty times per year. This flooding exposes area

residents to contaminated water and sediments on a regular basis. Studies have reported up to two million fecal coliforms per 100 milliliters of contaminated water. Other contaminants such as mercury, lead, and PCBs have also been reported. Recent studies performed by the Ponce School of Medicine and the University of Puerto Rico suggest that asthma rates at Martin Peña are at least double of those for the pediatric population in the rest of the island, which in turn are above those for the rest of the U.S. These studies also correlate the prevalence of gastrointestinal diseases in the communities to the residents' exposure to contaminated floodwaters.

The designation of the Martín Peña Channel as an Urban Waters Federal Partnership (UWFP) location should result in an increased prioritization of activities by federal agencies such as the Department of Health and Human Services, the Department of Housing and Urban Development, and the Department of Education, among others, plus improved coordination with local organizations and the government of Puerto Rico to alleviate the environmental issues plaguing the area. In addition, the partnership would help promote the Martín Peña Channel Ecosystem Restoration Project, which aims to restore the channel and significantly improve water quality within the San Juan Bay estuary while promoting community revitalization, economic development, social justice, and the reclaiming of the water body for use by the general public.

The short term success achieved thru a UWFP designation would entail the escalation of existing collaborations among the above referenced federal agencies, the local government, and community-based organizations. While ongoing local efforts to engage the communities and to move forward with the ecosystem restoration project have been largely successful, many of the elements required for the project to materialize depend on the collaboration of local and federal agencies to provide support and initiate additional improvement opportunities, and to identify potential funding sources. Ideally, all stakeholders would hold initial meetings to gather first-hand knowledge about the status of the channel, as well as about the communities' goals and plans as contained in the community-based comprehensive redevelopment plan for the area, which was prepared under the guidance of *Proyecto Enlace del Caño Martín Peña* (Enlace). Enlace is a public corporation of the government of Puerto Rico who have become a major force in the residents' strife to achieve a cohesive, safe and prosperous community. Through Enlace's efforts, the communities and a large group of supporters from both the public and private sectors have organized themselves into a model of grassroots development that could be emulated at other disadvantaged communities in the nation. The UWFP designation would expand these efforts, include other potential sponsors from local academia and the private sector to educate the public, continue ongoing social and health studies, and to expand services and improve the well-being of the communities in the area. In addition, the designation would provide an excellent opportunity for all partners to become aware of the major problems that exist in the area, the difficulties associated with achieving effective results within existing management structures, and the identification of short and long term options to overcome such difficulties.

Active Federal Agencies

Several federal agencies are currently actively pursuing projects within the Martin Peña area. EPA's Region 2 has identified Martín Peña as a priority area, and performed several activities, such as the evaluation of pesticide application at area schools, compliance inspections to facilities in the area, environmental evaluation of properties under the Brownfields program, initiatives to evaluate the municipal storm sewer systems and unpermitted sewage discharges, and the support of Enlace's initiatives through Urban Waters and Environmental Justice Grants. These grants allowed Enlace to conduct a successful workshop on land tenure and environmental justice issues, an important and relevant issue for many area residents. In addition, the receipt of an UW grant in the first year of the program allowed Enlace to significantly strengthen educational projects in area schools that teach children about the health risks of contacting polluted water, and empower youngsters to become involved in the decision making process. These projects, which combine performance arts with environmental science, have a multiplying effect, as the involved youth travel through the communities performing and delivering information and knowledge to other residents of the area. EPA is also an active participant in Enlace's Technical Committee for the Ecosystem Restoration Project and provides guidance and assistance in environmental matters to Enlace. In 2011, EPA also awarded Enlace its National Achievement in Environmental Justice Award and an Environmental Quality Award to Martín Peña Recycles, a community based volunteer recycling effort run out of a formerly abandoned home that was restored and converted into a community Recycling Center.

In 2007, the Water Resources Development Act authorized $150 million to the U.S Army Corps of Engineers (USACE) for the dredging of Martín Peña. Such funding was conditional to the preparation and approval of a feasibility report and Environmental Impact Statement (EIS) for the project in accordance with USACE regulations. Through Enlace, $1M from a Puerto Rico 2007 bonds emission was set aside for the conducting the feasibility study for the dredging project. The Feasibility Report and a Preliminary Draft EIS were completed in April 2012. Enlace and the USACE, Jacksonville District, entered into an agreement to complete the document review in June of 2012.

Applying Entities

EPA and USACE are the primary federal agencies in this process. Close coordination will be crucial for the successful implementation and completion of the channel dredging project. Local leadership will be retained by Enlace and the San Juan Bay Estuary Program, which have a long history of working to characterize the problems at Martín Peña. These programs work with communities and perform projects to achieve short and long term solutions to environmental problems within the project area.

Planned Critical Actions

Major elements of this project involve:

- Internal and external coordination between current partners and potential partners to ensure clear and consistent objectives.
- Channel dredging to re-establish the hydrologic/hydraulic connection between the San José Lagoon and the San Juan Bay. This costly activity depends on Congressional authorization. In addition to the benefits from the re-establishment of the hydraulic connections, the current plan calls for the beneficial use of an estimated 700,000 cubic yards of dredge material to fill several deep depressions at the adjacent San José Lagoon, which are currently anoxic.
- Resident relocation: Approximately 2,300 families may need to be relocated to implement the dredging. Approximately a thousand (1,000) families are located in right-of-way or footprint of the proposed channel. Of these, 300 have already been relocated. Each demolition and relocation is estimated at $125,000. 1,300 new public housing units will need to be constructed. The total amount of funds needed to relocate the families could reach $290M. Assistance from the Department of Housing and Urban Development would be greatly beneficial in the exploration of potential alternatives and the identification of funding to address this portion of the proposed project.
- Wastewater and Drinking Water Infrastructure: Several pipelines must be relocated to complete the dredging project, including the Rexach Avenue 66" diameter sewer line and the San José Community 66" diameter sewer line. Sanitary sewer systems are needed in currently unsewered portions of the area. A drinking water line, known as the Borinquen 36" line, must also be relocated. The relocation and installation cost of these pipelines has been estimated at $35 M. A vacuum sewer system that has already been constructed at the Barrio Obrero Marina sector at a cost of over $6.5M need to be repaired and troubleshot prior to the start of operations.
- Improvement of socio-economic conditions: A business incubator was developed by Enlace, and several new businesses have developed in the area, including an ecotourism small enterprise, and a small recycling community business owned by community residents. Additional efforts to provide alternatives for residents to overcome poverty remain to be explored.
- Other Infrastructure: In addition to relocating/constructing new wastewater and drinking water pipelines, new streets, storm water sewer systems, and electric power lines, among other utilities, must be constructed.
- Removal of aquatic vegetation at the easternmost segment of the channel, close to the San José Lagoon.
- Acquisition and demolition of structures located within the relocation area adjacent to the channel. Relocation alternatives within the community appear to be available, but are limited due to the lack of funding for acquisition and/or rehabilitation.
- Upgrading of existing homes and/or relocation units for energetic and water consumption efficiency.
- Environmental awareness and community enhancement projects at schools and at communities, such as an urban music contest with environmental restoration themes, youth programs, violence prevention activities, and adult literacy campaigns.

Urban waters and related communities

The Martín Peña Channel is a tidal channel located at the heart of the San Juan Bay National Estuary. It is approximately 3.7 miles (6 km) long and ranges in width from 6 feet (2 m) to over

400 feet (122 m). In the 1980s, the western half of the channel was dredged to approximately to 400 feet wide and 10 feet (3 m) deep. This western portion is now surrounded by mangroves and has a concrete boardwalk along one of its banks. In contrast, the eastern half of Martín Peña has been reduced to about 2 or 3 feet wide, and its depth has been reduced to a few inches in some areas. Furthermore, some areas of the channel are obstructed nearly a 100%, disrupting the water flushing and circulation of the entire San Juan Bay Estuary system.

Raw sewage discharges contributed to the further environmental degradation of the channel and the San Juan Bay Estuary. For over 40 years, a combined sewer system which collected wastewaters from the nearby financial district office buildings and residential condos discharged raw sewage into the channel, even in dry weather. Fecal coliform concentrations in the channel's waters exceed the local water quality standards by far. Other contaminants of concern, such as mercury, lead and PCBs have also been detected. Frequent flooding constantly exposes the residents to the sewage polluted waters threatening the public health and damaging property. Skin rashes and respiratory conditions have been reported at alarming levels in the pediatric population of the area. Power line support structures have been installed in unstable soils, including a 115 KW power line that crosses the channel and the communities north of it. In case of a major hurricane or an earthquake, public safety would be severely degraded by this situation, and thousands of residential and commercial customers could be left without power for an extended period of time. The current street configuration does not allow for appropriate access by emergency or rescue services, and hampers sanitation and maintenance efforts.

The eight communities surrounding Martín Peña Channel have become a symbol of urban poverty and environmental degradation in Puerto Rico. The area, called home by approximately 27,000 residents (according to the 2010 Census data), has the highest population density on the island. It is estimated that 65% of area residents live below the poverty level, with 55% of households earning under $10,000 per year. Despite this data, the rate of participation in the labor force, and employment rates among the residents of the eight communities are higher than for the rest of Puerto Rico. Marginalization and social invisibility, despite the central location of Martín Peña within the San Juan metropolitan area, have prevented the general public from being aware of the urgent need for the channel's restoration.

These communities suffer from the precarious infrastructure and housing conditions derived from improvised community settlements, in addition to the risks associated with the contamination found within Martín Peña Channel. While the environmental condition of the channel has been studied, most of the initiatives conceived to rehabilitate it overlooked the relationship between environmental degradation and poverty. In the past, multiple land use proposals by both the government and the private sector have included community displacement as a common denominator. Land speculation threatens the existence of these communities because of their strategic location. Most residents of the area do not want to be displaced. The

uncertainty regarding household relocation and the unwanted gentrification became the spark for mobilization and community organizing, which resulted in strengthened grassroots institutions. The communities, which have organized themselves as the G-8, Inc., want to be part of the solution, prevent gentrification, guarantee affordable housing in the long term, address public health issues related to flooding, have access to housing relocation alternatives within their communities, guarantee access to the channel as an important feature of their collective history, and want to benefit from the investments made in their communities as a way to promote entrepreneurship. Economic development and education are important concerns among residents, who also demand continued participation in the decision making process and in the implementation strategies. Although during important steps have been taken in the right direction, communities are concerned with the lack of governmental support and funding for the main infrastructure and public works required to achieve the environmental restoration of Martín Peña.

Environmental Justice

The ultimate goal of dredging the MPC is to restore the health of the ecosystem, while attaining social and environmental justice. Social and environmental justice is the driving force behind the Enlace Project's day-to-day efforts. The benefits of implementing their community-based rehabilitation and redevelopment plan go beyond the Martín Peña and its surrounding communities. As recognized by local researchers and the media, it is probably the most important comprehensive development initiative currently underway in Puerto Rico. However, additional work by local and federal agencies to address environmental justice concerns is still needed.

- The involvement of the local Department of Health, plus the federal Department of Health and Human Services (HHS) is crucial to address the disproportionate percentage of poor children suffering from asthma and skin conditions in the area. Aside from the environmental restoration of the area, intense public education and awareness campaigns are needed in order to help the population overcome these issues.
- The Puerto Rico Economic Development Administration could become a valuable partner, improving the economic conditions of the area through loan and funding programs, analyzing the economic impact of the recurrent flooding, and assisting in restoration activities.
- The Department of Housing and Urban Development (HUD) may be able to address the revitalization of the community, as well as current development needs and future developments required to achieve the environmental restoration of the area, such as providing affordable housing alternatives for families that need to be relocated. HUD's Healthy Homes program could also provide valuable assistance in addressing EJ issues such as lead, asthma, and pesticide poisoning that may result from poor housing conditions.
- The U.S. Department of Education, in coordination with the local Department of Education, could work with Enlace and other local organizations to identify and provide alternatives to improve schools that are currently affected by severe flooding. In addition, they could potentially develop school programs educating children on the risks

associated with exposure to contaminated waters, as well as fostering water quality activities and strengthening the environmental curricula of local schools to encourage environmental careers. In addition, Enlace has successfully integrated an adult literacy program into its offerings for the past several years. This program, while volunteer based, may be expanded to include the large migrant population of the area.

Other federal/non-federal partners

The environmental restoration of Martin Peña Channel depends on the coordination of efforts from a number of federal agencies who must assess the project, coordinate efforts, provide guidance or assist through the development of permits, certifications, and related documentation. Among these agencies are those in charge of protecting water bodies and associated resources, such as EPA, USACE, NOAA and USFWS. In addition, local government agencies such as the Department of Natural and Environmental Resources (DNER), the Puerto Rico Planning Board (PRPB) and the Puerto Rico Environmental Quality Board (PREQB) are key players in the advancement of the project. Working together, these partners would ensure the successful completion of the restoration, including the dredging of Martín Peña Channel and the redevelopment of the area avoiding gentrification and significantly improving the quality of life for area residents.

Other key players include:

- The Puerto Rico Aqueduct and Sewer Authority (PRASA), who are instrumental in working with other partners to assess the conditions of the sanitary sewers and potable water pipelines. In addition, PRASA would design and supervise the construction of the water and wastewater infrastructure projects required in order to make the dredging of the channel viable.
- The Puerto Rico Electric Power Authority will need to relocate power lines currently crossing the channel to facilitate the dredging process, and to relocate a major high voltage line that currently traverses the communities.
- The Municipality of San Juan, owners and operators of the municipal storm water sewer system.
- The San Juan Bay Estuary Program, part of EPA's National Estuary program. They developed the EPA approved comprehensive conservation and management plan for the estuary, which includes the dredging of Martín Peña as a priority action to improve water quality within the system. They have partnered with Enlace and other entities to advance projects related to water quality improvements.
- The Puerto Rico Solid Waste Management Authority, to support and expand the current recycling initiatives, and to promote the establishment of other recycling projects within the Martín Peña communities.
- G-8, Inc., the group representing the eight communities surrounding the channel, as key decision makers in the process.
- Enlace a public corporation that has led and participated in many projects aimed at improving quality of life and environmental conditions within the Martin Pena communities. Enlace personnel has assisted EPA in water quality sampling along the channel and in adjacent areas. In addition, they compiled information and contracted studies related to the preparation of a feasibility report and Environmental Impact

Statement for the dredging of the channel, and have partnered with EPA and the Ponce School of Medicine for the completion of an epidemiological study on the effects of the residents' repeated exposure to contaminated water and sediment.

Key Points/Contacts

EPA has appointed Evelyn Huertas, of the Caribbean Environmental Protection Division, as lead contact. Contact information, as well as additional, key personnel is included below:

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