

**An integrated approach for addressing solid waste pollution sources
in the New River, Calexico - Mexicali Region**

A proposal presented by

Sonoran Institute



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I. Introduction

The New River originates in the northern part of the Mexicali Valley in Mexico and flows through the Mexicali and Calexico urban areas before terminating in the Salton Sea, north of the Imperial Valley in the United States. The river has long been considered a serious binational pollution issue by both the US and Mexico. In Mexico, the New River is contaminated by untreated and partially treated effluent from the city of Mexicali, industrial discharge, urban storm water, agricultural runoff from the Irrigation District, and illegal dumping of trash (CalEPA, 2011¹). The water that feeds the river primarily originates from five drains located within and around the city of Mexicali: the International, Mexicali, Tula, Colector and the Xochimilco drains (Figure 1). In 2014, the New River average flows at the International Boundary were 2.9 cubic meters per second (m³/s) (or 101 cubic feet per second, CILA 2015 personal communication). Although several actions implemented in Mexico during the last decade have significantly improved the water quality of the flows, large portions of these drains continue to be illegal dumping grounds and consequently, breeding grounds for vermin, which has posed health risks for human populations in Mexico and the US. These drains represent one of the main sources of trash that is brought across the border by the river flows. Furthermore, the expected increase in rainfall and potential flash floods associated with El Niño event may significantly increase the amount of trash that is brought from Mexico into the US, representing an additional threat to the quality of the water flowing into the New River.

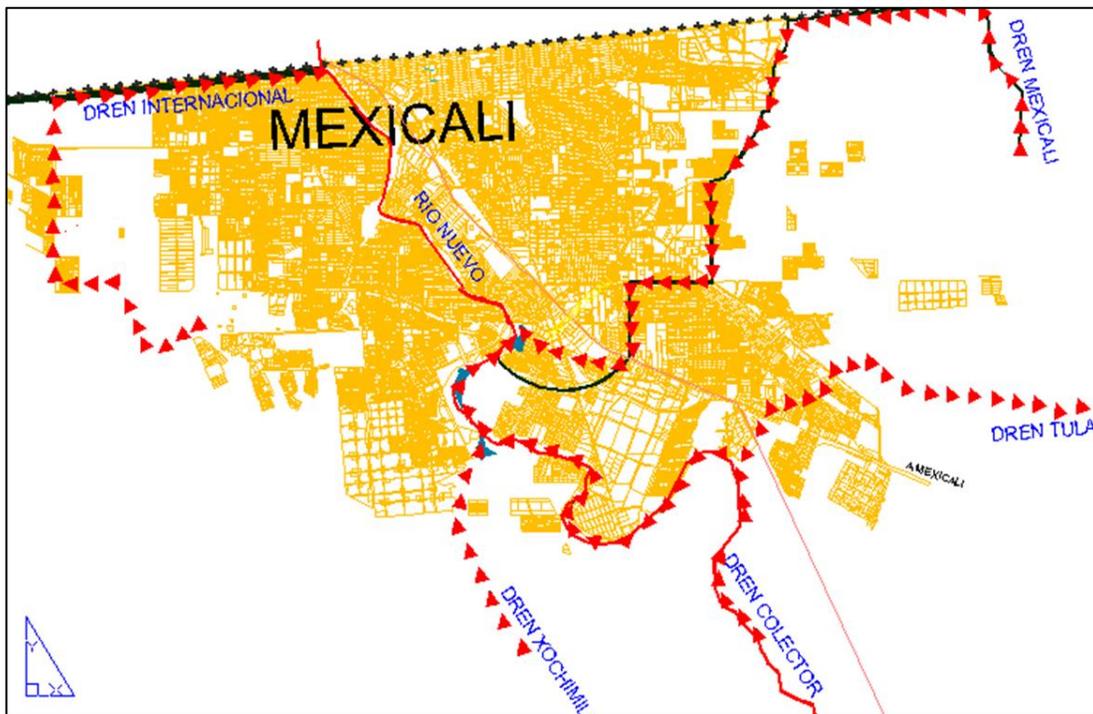


Figure 1. The International, Mexicali, Tula, Xochimilco, and Colector drains and their discharge locations into the New River in Mexicali

¹ CalEPA. 2011. <http://www.calepa.ca.gov/border/CMBRC/2011/StrategicPlan.pdf>

In 2015, Sonoran Institute developed and implemented a comprehensive ecological sanitation project to address the problem of illegal dumping in a portion of the International Drain in Mexico, one of the drains that discharge into the New River. The project integrated sanitation activities, environmental education of local community members, institutional collaboration, and community participation to rehabilitate the urban landscape. Among other achievements, the project successfully removed 2,000 cubic meters (m³) of waste from the international drain and has become a model for other ecological sanitation projects in the area.

II. Scope of the project

For this project, we propose to implement the Ecological Sanitation Model in Mexico, in sections of the International, Mexicali, Tula, Colector and the Xochimilco drains, and to examine the possibility of replicating the model in Calexico. Specifically, we propose to implement four components: (1) a Needs Assessment and Action Plan for the New River in the US, (2) drain sanitation, (3) environmental education, and (4) communication and dissemination.

The decision to focus sanitation activities in Mexico is based on the fact that most of the solid waste that makes it into the New River originates in Mexicali due to its multiple illegal dump sites, as compared to a lesser number of dump sites located along the river in Calexico. This was confirmed after a field visit to the New River in Calexico and conversations with representatives from the Calexico New River Committee and CalEPA. Based on this information, we propose to focus our sanitation efforts in Mexico, as we believe that greater investment returns for the US portion of the New River can be accomplished in the short term by targeting the area with the highest number of dump sites and major source of solid waste.

III. Objective

The overall project objective is to permanently reduce the illegal disposal of solid waste in drains in the City of Mexicali that contribute to the pollution of the New River, for the purposes of eliminating public health risks, improving the urban landscape in Mexico, and improving water quality of the New River as it flows to the US.

IV. Proposed activities and expected results

1. Needs assessment and action plan for the New River in the US

We propose to implement a targeted consultation process with different stakeholders from government agencies, civil organizations, and members of the local communities to develop an action plan that clearly outlines the magnitude of the problem and the necessary steps required to remove and dispose of the solid waste found along the New River flood plain in the US within and around the city of Calexico. This assessment is needed to identify any local initiatives working to ameliorate the issue, to determine the magnitude and location of trash accumulation and illegal dumping occurring in the US, to generally characterize the type of solid waste present at these sites, and to define specific actions that can be taken to properly and efficiently remove and dispose of solid waste from these sites.

In addition, we will compile existing information on potential risks and preventive measures that Mexican and US government agencies have prepared to address the potential impacts of El Niño on the New River. This information, along with relevant existing literature, will be used to develop an initial assessment of potential risks from El Niño effects as they refer to the movement of trash by flash floods. The assessment will be presented to representatives from both governments. It is important to note that a detailed risk assessment is beyond the scope of this project. The goal is to advance the development of a full risk assessment by government agencies through the compilation of information and identification of the key issues, strategies, and additional research needed to effectively prepare for and mitigate the impacts from El Niño. In addition, results from the preliminary assessment will inform the sanitation activities outlined below by identifying those sites along the drains in Mexicali that can be targeted under the sanitation component.

1.1 Proposed key activities

- Compilation of information on both trash issues and potential impacts of El Niño
- Identify stakeholders for the New River sanitation project in Calexico: local authorities, private and government agencies, community members, and any local initiatives already working on the reduction of illegal dumping.
- Conduct a total of at least six stakeholder meetings and two workshops in the US and Mexico.
- Conduct several visits to areas along the New River, in Mexico and US, to identify illegal dumping sites and their sources.
- Generally characterize the type of solid waste found in dump sites along the river in the US and along drains in Mexicali. This will be done through direct observation only and will not include separation and/or analysis of waste.
- Analysis of information, and preparation of the assessment including additional consultation with stakeholders.

1.2 Expected products

- Needs Assessment and Action Plan for the New River on the US side that will serve as an informational tool for future sanitation actions.
- Preliminary risk analysis to address potential impacts of El Niño.

2. Drain Sanitation

We propose to remove approximately 4,000 m³ of solid waste from portions of five drains and their surrounding communities—the International, Mexicali, Tula, Xochimilco, and Colector drains². Removing waste from these principle drains will reduce the amount of trash that can potentially flow into the US, as well as reduce the risks associated with expected flooding from

² This 4,000 m³ will add to the 2,000 m³ of solid waste that we proposed to remove as part of a complementary sanitation project with direct funding from COCEF in different sites along the same five drains. This proposal to CalEPA will help us secure matching funds to complement COCEF's funding. The integrated sanitation project will remove a total of 6,000 m³ of solid waste from the drains that discharge into the New River. Additional volume of solid waste can be removed or the costs to CalEPA can be reduced if in-kind support from government agencies in Mexico is secured for the removal and disposal of solid waste.

El Niño. The project will also benefit community members by reducing pollution and public health risks and by improving living conditions along the drains.

In order to maintain clean drains, a critical component of the sanitation model is the transformation of the urban landscape into green corridors that offer community recreational space. Although this project does not include activities to create green corridors, we will work with private and government agencies to develop a concept plan for green corridors in portions of the five drains targeted by this project in Mexicali. The green corridor concept plan will promote increased connectivity between drains, installation of basic recreational infrastructure, and tree planting initiatives. By improving the urban landscape, members of local communities are more likely to organize and work together to maintain the areas clean.

Another important aspect of maintaining drain sanitation is the promotion of local enforcement of environmental laws by informing community members about existing laws and regulations against illegal dumping. In each of the proposed sites, community members will be invited to be part of a vigilance committee where they will collaborate with government agencies to help enforce the law by agreeing on the functions and roles of each in reporting and implementing sanctions.

2.1 Proposed key activities

- Remove and properly dispose of approximately 4,000 m³ of solid waste from five drains in Mexicali (International, Mexicali, Tula, Xochimilco, and Colector) and surrounding areas, including vacant lots and abandoned houses.
- Install two screens at critical sites to retain large trash items.
- Install trash containers in strategic sites along the drains to prevent and reduce the amount of trash thrown in drains and surrounding areas.
- Work with private and government agents to implement two bulky trash collections at each drain during the project's life with the purpose of reducing the large items, such as furniture, that end in or adjacent to the drains.
- Install time-lapse cameras to monitor project process and use as a "policing" tool.
- Work with the Ministry of Environmental Protection, National Water Commission, Colorado River Irrigation District, and a private landscape architect to develop a concept plan for green corridors that promotes connectivity of rehabilitated sites.
- Create and coordinate a vigilance committee composed of community members and government agencies, including Municipal Public Security and the Municipal Public Services.
- Analyze the federal, state, and municipal legal framework (laws, codes and regulations) to identify legal mechanisms that can influence and promote the long-term sanitation of drains through collaborative agreements with government agencies (SPA, CESPM, CONAGUA and Colorado River Irrigation District).

2.2 Expected key results

- A reduction of solid waste pollution along five drains and surrounding areas (equivalent to 4,000 m³) that contributes to the pollution of the New River.

- Household reduction of solid waste volume disposed of in drains.
- Reduction of open-air burning of tires and other waste.
- Reduction of water contamination in the New River.
- Reduction of health risks and diseases associated with having open-air contamination in drains.
- Improvement of urban living space.
- Continue collaboration among multiple government agencies to promote and enforce a culture of law abidance.
- Strengthen law abidance by providing community members with adequate information on regulations and penalties to sensitize them to the importance of adhering to environmental laws for the benefit of the community.

3. Environmental education

In order for a sanitation project to have successful long-term results, community members must be engaged and committed to the project, as they will be the long-term stewards once the project ends. Based on our previous experience with the International Drain sanitation project, we identified a tremendous need to raise awareness among community members living near drains about the health and environmental risks associated with polluted drains, as well as the benefits of maintaining clean environments.

For this project, we will facilitate the process whereby community members, government agencies, and non-governmental organizations work together to develop the skills and tools necessary to enable better solid waste management at the household, local, and regional level, thus promoting proactive approaches for the ecological sanitation of the urban landscape.

3.1 Proposed key activities

- Work with the State Educational System of Baja California (SEE) in the Mexicali Delegation to engage with selected schools surrounding the five proposed drains.
- Implement 20 talks/workshops in primary and secondary schools on recycling, waste management, and environmental benefits of green spaces.
- Establish a volunteer program with high school students to train them on recycling activities in their schools and communities.
- Train local schoolteachers and administrators on the importance of recycling and proper solid waste management so that they become promoters of good waste management practices in the classroom.
- Implement 10 workshops with community members to inform them about the importance of reducing waste production in their homes and appropriate waste disposal and separation methods.
- Train households' members on the proper separation of household solid waste and inform them on the options to dispose of their waste, including selling to local recycling businesses.

3.2 Expected key results

- 10,000 school-aged children and young adults will be knowledgeable on the importance of recycling, proper waste disposal and benefits from clean environments.
- Young environmental stewards (high school students) promoting recycling practices in their schools and communities.
- Increase in the volume of recycling materials at households and schools.
- Increase in the collection and disposal of recycling materials from households and schools.
- Reduction of the volume of household solid waste and schools.
- Integration of the “Conservation and pollution prevention at a shared border” curriculum for grades 1-6th in teachers’ daily lessons in all the schools chosen around the drains.

4. Communication and dissemination

Removing waste from drains is a tangible goal; the challenge is, however, in keeping them clean. We propose to implement an awareness campaign that targets the entire urban community of Mexicali on the importance of maintaining sanitary urban drains.

Sonoran Institute is currently developing an awareness campaign called “Mexicali Fluye” (or Mexicali Flows) with the goal of promoting positive habitual changes regarding household solid waste production and recycling by engaging with people from different sectors of the Mexicali population. The awareness campaign will improve environmental and public health and ensure community engagement and commitment to the sanitation project.

The proposed project will complement the awareness campaign through the implementation of the activities specified below³. In particular, this project will enable us to reach out to a larger population in the city of Mexicali through the awareness campaign, in turn promoting a more extensive network of community members that are knowledgeable on the benefits of maintaining sanitary drains and surrounding areas.

4.1 Proposed key activities

- Develop an engagement strategy that describes a protocol for recruiting, contacting, presenting information, and following up with stakeholders. The protocol will outline the recruitment criteria, script for first contact (phone call), letter of presentation, follow-up plan, and benefits for involved businesses and organizations.
- Design outreach materials to support the awareness campaign.
- Create a media strategy that identifies media outlets for dissemination of project progress, activities, community events, and duration of promotion. For example: a billboard would be kept for six months, project progress would be published in

³ Note: Some of the proposed activities will be partially funded by COCEF through the project “Alianza comunitaria e institucional para el saneamiento ambiental de drenes de Mexicali”.

newspapers every three months and posted on social networks (Facebook, Twitter, Instagram, etc.), media tours would be planned and implemented to identify television and/or radio channels to broadcast project activities, schedules, etc.

- Develop a 30-second video clip that illustrates the progress of waste removal activities, environmental education activities, and the participation and collaboration between community members and government agencies. The video clip will be televised as a commercial or preview in theaters and events throughout the city as part of the social responsibility of companies.

Note: The revised budget reduced funds allocated to the dissemination and communications component. Activities related to the design of the communication strategy and materials remained unchanged, but we have reduced the scope of the implementation of the strategy, including printing and dissemination of materials and information. For example, we will only have a billboard for six months instead of two billboards, we will publish information about the project on newspapers every three months instead of every month, we will post information on social media every other week rather than every week, and we will implement two media tours to project sites instead of five tours.

We decided to ensure the design of the communication's strategy and materials to make it feasible and easier to seek additional funds from public and private sources, including in-kind, for implementation of the strategy, thus minimize the impact of the reduced budget on the expected project results.

4.2 Expected results

- Approximately 100,000 habitants of Mexicali are aware of the importance of maintaining sanitary drains and the community and environmental benefits.
- New household recycling initiatives emerged in communities along drains in Mexicali.
- Reduction in illegal dumping in drains and adjacent areas in Mexicali.

Note: We eliminated the expected result regarding the emerging of new cleanup initiatives in communities along drains in Mexicali due to the reduction of activities associated with the implementation of the communication strategy, which results in less exposure of Mexicali citizens to project's needs and progress results.

V. Estimated budget

The new revised budget for this project is \$200,000, which has been reduced from the original amount of \$230,925 by reducing the scope of the Communications and Dissemination component, as described in section IV.4 of this proposal. In addition, the program support/indirect costs were also reduced. The scope of work for the needs assessment, sanitation, and environmental education components remained the same as in the original proposal.

Description	Needs Assessment	Sanitation	Environmental Educ	Communications	Total Proposal Budget
Salaries & Benefits	18,551	23,167	28,805	6,362	76,886
Consultants & Outside Services	4,001	42,525	205	2,710	49,442
Grants/Sub-Awards/Sponsorships	0	0	0	0	0
Project/Program Operations	7,350	1,063	5,836	5,898	20,146
Supplies/Materials/Printing	50	8,016	2,500	0	10,566
Travel	800	1,080	1,080	0	2,960
Program Support/Indirect Costs	7,688	18,963	9,607	3,743	40,000
Total Proposed Budget	\$38,440	\$94,814	\$48,033	\$18,713	\$200,000

VI. Sustainability of the project

Since the project inception, we recognized the need to establish a model that will create long-lasting results. The components of our Sanitation Model were created under this premise, which emphasizes the engagement and mutual collaboration of community members and key government agencies. In specific, the strategies that contribute to the sustainability of the drains' sanitation initiative include:

1. **Project appropriation and ownership from community members:** By engaging and training community members in project activities during all phases of the project, they begin to take ownership of their common areas (e.g. open areas and drains) and consequently project activities. The communities' appropriation of these activities is re-enforced by forming local committees and training members on several aspects of the project, including cleaning, recycling and vigilance activities that remain active on a continuous basis.
2. **Accountability:** Promoting a transparency mechanism whereby government agencies and community members are fully aware of the responsibilities and consequences (e.g. sanctions) of each agency in relation to drain activities. This mechanism includes quantifying indicators that measure the success of the response by government agencies as well as the community to specific aspects of the problem. For example, analyzing the number of complaints from community members of illegal disposal of trash versus the number of actual recorded fines by the regulatory authorities.
3. **Additional financial support:** In order to ensure long-lasting results, at least one full cycle of the sanitation model at each site must be completed. Based on previous results, we estimate this cycle to be from 3 to 4 years. The communications component is designed to increase the visibility of the project among the public and private sectors in the city of Mexicali to motivate a response in the form of a continued and new technical and financial support to this initiative through the Mexicali Fluye Campaign. Sonoran Institute is committed to continue to play a facilitating role in future years by seeking the support from private and public organizations that can fund existing and/or future projects in drains.

VII. Timeline

This project has a timeline of 14 months from March 1, 2016 to April 28, 2017, which includes 12 months for implementing activities and two months for final reporting.

Note: Gant chart is presented in a separate document.