

Implementation of the Clean Water Act 303(d) Program Vision Long - Term Vision

Introduction

In December 2013, Environmental Protection Agency (EPA) announced a new framework for implementing the Clean Water Act (CWA) Section 303(d) Program – A long-term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program. This new vision, encourage states and territories to develop tailored strategies to implementation CWA 303(d) responsibilities of their overall water quality goals and individuals states priorities.

Recognizing each State is unique, EPA expects that States will vary in the extent to which and how they implement the goals of the Vision, depending on particular circumstances and water quality goals of the State. To support State and EPA discussions on re-orienting CWA 303(d) Program responsibilities consistent with the Vision, EPA is providing additional information for States to consider when implementing the Prioritization, Engagement and Alternative Goals. EPA and States jointly identified these topics as warranting further clarification to promote timely implementation of the Vision and submittal and review of States' 2016 Integrated Reports. EPA anticipates working closely with the States on these issues as States move forward with developing their Integrated Reports.

Long-term Prioritization from 2016 to 2022

Consistent with the new EPA's vision, Puerto Rico Environmental Quality Board (PREQB) identify those assessment units (AU) for priority restoration and protection activities. This prioritization provides a framework to focus the location and timing for the development of, alternative restoration, protection plans and TMDLs. Those alternatives should include:

- Identification of specific impairment addressed by an alternate approach.
- Planning, development and implement effectiveness monitoring programs.
- Revisions, and amendments to the existing regulations.

Recently, PREQB update its Non-Point Source Management Program (NPSMP). One of the most important parts of this NPSMP is the development and implementation of a Priority System. This Priority System will be used as a priority based system in the long-term vision of the assessment restoration and protection under the CWA section 3303(d). The main purpose will be standardize the priority systems and the basic criteria used for a more effective assessment of island's water quality.

Priority Ranking Criteria System

The Priority Ranking Criteria System is based on the awarding of points, distributed in 10 criteria, which will identify the priority. To establish the degree of priority for the protection and restoration the evaluation will be by AU. The selected criteria are:

1. Segment Classification (description)

Under this criteria was established six (6) categories to which a score is assigned considering where it drains the segment into the basin or sub-basin. The highest score in this criteria is awarded to the lake itself and in descending order to its tributaries according to its draining on the basin or sub-basin. Each AU will be classified as follow:

- Stream or Channel not related to river or lakes
- Tributary of main river not flowing into a lake
- Main river not flowing into lake
- Tributary of the main river, which flows into a lake
- Main river which runs into a Lake
- Lake

2. Population Density

The population density is an important criteria to determine which segments are in the greatest need for protection in relation to each other. The relationship of people with respect to the surface space they occupy an area allows us to anticipate where we can find more activity that involves activities with a potential impact on the basins or sub-basins.

The ranges of population density used are the following:

- 160-499
- 500-749
- 750-999
- 1,000-1,349
- 1,350-2,999
- 3,000-9,1000

3. Mean Annual Rainfall

Precipitation generates run-off waters that run on the ground, which have the potential to drag and transport sediment and other pollutants into waterbodies. Those areas in which the precipitation is high, have a greater potential impact on surface water (AU). Therefore, as part of the prioritization system is included the mean annual rainfall as a criteria to assign the priority level of protection of AU. For this criteria were established five classification based on ranges that are shown below:

- 35-49 in
- 50-69 in
- 70-89 in
- 90-99 in
- 100 in or more

4. Predominant Special Activities

The surface water that are impacted, sometimes can be associated to certain contaminant activities. Those activities that are related to specific pollutants have been identified and included under predominant activities criteria. This criteria is intended to give priority to surface water with such activities present in the AU. The classification established are the following:

- Agriculture
- Industrial

5. Monitory Station

Monitoring stations are essential to gather data on water quality and keep it updated. The lack of water quality data, limits the analysis and monitoring that can be performed on a waterbody. The existence of a sampling station is essential to carry out successfully the monitoring of the AU. Therefore, this approach is essential in determining whether it is potential candidate or not to be protected. The criteria of monitoring station will be:

- Exist
- Do not exist

6. Known Potential Pollution Source

The potential pollution sources, affect significantly the water quality. The recognition of knowns potential pollution sources on the watershed or sub- basin, imparts a greater certainty in the prioritization process. Therefore, the identification of that sources, will allow to establish the priority order to protect the AU as needed. The classification under this criteria are the following:

- Superfund Site
- Non active landfill
- Active landfill
- Underground storage tanks (UIC)
- Wastewater pump stations (Bypass)
- CES projects
- Livestock Enterprises
- Presence of communities without sanitary sewerage

7. AU frequency on 303(d) List

This criteria was based on the analysis of the 2014 303(d) list. The value of percentage ranges increase according to the frequency the AU was included in the 303(d) List in each evaluation cycles.

- 100-90%
- 89-80%
- 79-70%
- 69-60%
- 59-0%

8. Priority Watersheds

It will be considered if the AU is part of one of the 18 priority watersheds identified in the *Puerto Rico Unified Watershed Assessment and Restoration Activities (PRUWA)* document.

9. Sensitive Natural Area

The presence of sensitive areas in an AU is a criteria that is also important to consider as a matter of priority, since runoff can impact it with many potential pollutants. Therefore we establish the following criteria:

- None
- Proposed area for conservation
- Designed Natural Reserve
- Natural Reserve designed with proposed area for conservation

10. Water intake from Puerto Rico Aqueduct and Sewer Authority (PRASA)

Water Intakes in the AU will be taken in consideration as a priority criteria.

11. Valuable Coral Reef Areas (Coastal Sensitive Area)

Assessments units that drains to an area identified as valuable coral threatened areas will be established as priority criteria to be manage with a higher priority. On this criteria are considered two categories: For coral reef areas, PREQB took in consideration the information of the National Oceanic and Atmospheric Administration and DNER.

- AU do not drains to a valuable coral reef area (No)
- AU drains to a valuable coral reef area (Yes)

Detail Point of the Priority Ranking System

In order to establish the priority ranking each one of the AU for the inland waters was evaluated considering the following point system.

Table 1: Detailed Point System

Criteria Detailed and element	Points
1. Segment Clasification	
• Stream or Caño not related to river or lakes	1
• Tributary of a main river not flowing into a Lake	2
• Main river not flowing into a Lake	3
• Tributary of the main river, which flows into a lake	4
• Main river which runs into a Lake	5
• Lake	6

Criteria Detailed and element	Points
Points to be considered in the percentage calculation	6
2. Population Density	
• 160-499	1
• 500-749	2
• 750-999	3
• 1,000-1,349	4
• 1,350-2,999	5
• 3,000-9,100	6
Points to be considered in the percentage calculation	6
3. Mean Annual Rainfall	
• 35-49 in.	1
• 50-69 in.	2
• 70-89 in.	3
• 90-99 in.	4
• 100 in or more	5
Points to be considered in the percentage calculation	5
4. Predominant Special Activities	
• Industrial	1
• Agriculture	2
Points to be considered in the percentage calculation	3
5. Monitory station	
• No	0
• Yes	2
Points to be considered in the percentage calculation	2
6. Known Potential Pollution Sources	
• Superfund Site	1
• Non active landfills	2
• Active landfill	3
• Underground storage tanks (UIC)	4
• Wastewater pump stations (Bypass)	5
• CES projects	6
• Livestock Enterprises	7
• Presence of communities without sanitary sewerage	8
Points to be considered in the percentage calculation	36
7. AU frequency on 303 (d) List	
• 0% (not listed)	0
• 1-59%	1

Criteria Detailed and element	Points
• 60-69%	2
• 70-79%	3
• 80-89%	4
• 90% or more	5
Points to be considered in the percentage calculation	5
8. Priority Watersheds	
• No	0
• Yes	2
Points to be considered in the percentage calculation	2
9. Sensitive Natural Area (Ecological sensitive area)	
• None	0
• Proposed area for conservation according to Planning Board	2
• Designed Natural Reserve	4
• Designed Natural Reserve with Proposed area for conservation	6
Points to be considered in the percentage calculation	6
10. Water intake from AAA	
• None	0
• 1	2
• 2	4
• 3	6
• 4 or more	8
Points to be considered in the percentage calculation	8
11. Valuable Coral Reef Areas (Coastal Sensitive Area)	
AU do not drains to a valuable coastal area (No)	0
AU drains to a valuable coastal area (Yes)	5
Points to be considered in the percentage calculation	5
TOTAL POINT TO CALCULATE PRIORITY PERCENTAGE	84

Once the evaluation is completed for each one of the assessment unit; to summarize the priority order in which the AU will be address the following categories were established:

High Priority (H): are assessment units that have a ranking between 100 to 70 percentages (adjusted).

Moderate Priority (M): are assessment units that have a ranking between 70 to 32 percentages (adjusted)

Low Priority (L): are assessment units that have a ranking between 32 to 0 percentages (adjusted).

Others Consideration for Prioritization

Phosphorus impairments

Due to the fact that the nutrient criteria are much needed for rivers and stream as endpoint for developing TMDL, PREQB had intended to adopt rivers and streams nutrient criteria first. It is likely that the criteria will be adopted for all water of appropriate classes, islandwide.

PREQB amended the Puerto Rico Water Quality Standard Regulation (PRWQSR) to incorporate the new standards for Total Phosphorus and Total Nitrogen applicable to the rivers and streams of PR. It was adopted on August 19, 2014. Actually, PREQB is in the process of complete the development and adoption of the numeric nutrient criteria (TP and TN) for lakes/reservoirs.

The development of the Puerto Rico Nutrient Standard Plan (PRNSP) describes the approach to addressing nutrient over-enrichment, along with the plan to refine its current nutrient criteria in response to the USEPA requirements that states/territories adopt nutrient criteria for their waterbodies.

However, in addition to those AU identified by the priority system the following AU will be included as part of the priority watersheds for the parameter of Phosphorus:

Table 2: Additional AU due to Phosphorus Impairments

ASSESSMENT UNIT	CAUSES NAME
PRER14H	Phosphorus
PRSR67A	Phosphorus
PRSR68A1	Phosphorus
PRWR94A	Phosphorus

San Juan Bay Estuary System

The AU (PREE13A2) will be considered as priority, it's belongs to the San Juan Estuary System. This Estuary was designated in 1992 as part of National Estuary Program for which it's developed the Comprehensive Conservation and Management Plan (CCMP), to improved and maintain the integrity of the San Juan Bay Estuary and its designated uses.

Table 3: AU of the San Juan Bay Estuary System

AU ID	CAUSES OF IMPARMENTS
PREE13A2	Dissolve Oxygen , Ammonia, Oil and Grease, pH, Thermal Modification, Total Coliforms, Turbidity, NO ₂ +NO ₃ , Surfactants, Lead, Copper, Cyanide

Long-Term Priorities AU

The PREQB uses the river basins system for planning activities and implementation of restoration efforts. In order to achieve these efforts in a more effective manner, we have replaced the old system based on the segmentation of small portions of rivers and individual creeks by basin segmentation system that has been implemented since the 2006 reporting cycle. The non-contributions basins are those areas, contribute to the coastal shoreline instead of the inland waters. Under this system, each main river basin it is divided in assessment units that consist of complete sub-basins. The smaller river basins have been maintained as a single assessment unit or, at the most, it may be segmented in two assessment units. A total of 194 AU for rivers and streams water bodies; 18 AU for the lakes or reservoirs; and 62 for estuaries (Please refers to Table 4) are delimited in the inland water off Puerto Rico.

Table 4: AU and water bodies size per Type of Water body

WATER BODY TYPE	ASSESSMENT UNITS	SIZES OF WATER TYPE
Rivers/Streams	194	5,052.8 miles
Lakes/Reservoirs	18	7,323 acres
Estuary	62	3,430.3 acres

After evaluated each one of the AU taking in consideration the criteria and the other considerations above mentioned the AU included in Table 5 are the long term priorities areas.

Integrated alternatives approaches

Following the alternatives approaches that will be considered to restore and protect impaired waterbodies.

1. Improve Monitoring Strategy

Parameters such as: Arsenic and Cyanide recently have changes in the water quality standard adopted in the PWQSR. Therefore a specific monitoring plan needs to be developed and implemented in each one of the AU that includes parameters such as: arsenic, cyanide in order to verify if the impairment persists and a restoration plan or TMDL is needed or identified those AU that comply with the water quality standard and therefore and needs to be delisted from the 303 (d) List.

2. Puerto Rico's Nutrient Plan

This document describes the approach to addressing nutrient over-enrichment, along with the plan to refine its current nutrient criteria in response to the USEPA requirements that states/territories adopt nutrient criteria for their waterbodies. This information will be used as the endpoint in the development of Nutrient TMDL.

3. TMDL development for Nutrient parameter

The amendment to the Regulation propitiates the moment to develop specific TMDLs for TP, in the assessment that even with the previous standard were exceeding the standard of the parameter of TP. Also the Regulation amended, leads properly identify the assessment units that are (in the top) in the first places in the priority list to develop TMDLs for TP.

The final outcome will be gather data to identified those AU that accomplished the parameters and therefore support the delist candidate assessment unit from the list 303 (d).

4. Modifying the Assessment Protocol for the Implementation of the Aquatic Life Criteria in Reservoirs of Puerto Rico

- a. Currently all the lakes in PR are included in the list 303 (d) for the parameter of Dissolved Oxygen (DO). The modification of the protocol implementation for aquatic life will promote the identification of those lakes that under the current protocol do not comply with the parameter of DO. The main objectives are:

- i. Assess and identify with greater certainty the lakes that really are impacted by dissolved oxygen.
- ii. Develop an appropriate strategy to restore the lakes/reservoirs identified that are impaired for DO.

5. Integrating Other Programs

a. Puerto Rico Non- Point Source Management Program

- i. This program has among its main objectives integrate the agencies that are partners in the protection, restoration and management of the environment and natural resources. In addition to integrating all areas of work of the EQB in the effort to work in a unified way, considering the priority areas identified, the intention is to integrate to other agencies in this effort.
- ii. Those waters having a high priority (highest priority ranking) will refer to the corresponding PREQB WQA Divisions: ESCD, LEPCD and UICD in order that they can implement their regulatory programs in a strategically effort. Also, the priority will be share with partnerships so they can include it as part of their work plans and thus can direct their efforts (programs, incentives, technical assistance, and outreach activities) to address the highest priority for these waters (please refers to Figure 1).

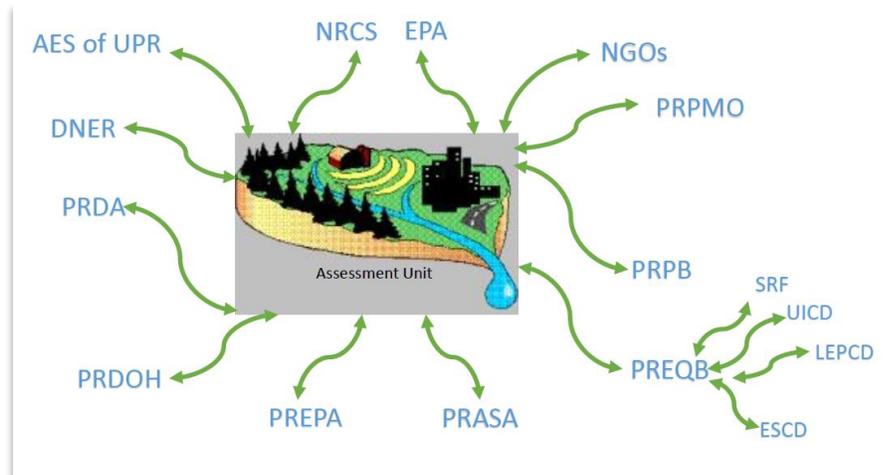


Figure 1: Federal and State Programs, and partners working together

- iii. This strategy: (1) will enhance the strategically coordinated integration of the permit systems, (2) will enhance coordination and improve efficiency,

(3) will improve communications among federal, state agencies and NGOs involved in non-point source management, (4) will identify cooperative activities, (5) will evaluate and promote guidance, and (6) will coordinate programs of federal and local agencies and NGOs to better utilize existing resources. The main goal will be:

1. Disseminate the priorities list of the PREQB so that it can be integrated into the decision-making of the related agencies and launch a concerted effort integrated in the priority areas.
2. Elaborate a most complete list with the protection and restoration projects or actions conducted in the priority areas.

b. Partnerships Project

i. San Juan Bay Estuary System

1. Assessment Protocol for Conducting Outfall Reconnaissance Inventory of San Juan Estuary Bay Watershed.

- a. The scope of work basically is the identification of illicit discharge outfalls in a sizeable, highly dense populated watershed characterized in a significant portion by the lack of adequate sewage management infrastructure can be particularly challenging. The proposed screening protocol is based on guidelines established by USEPA for detection of illicit discharges. Field screening crews will inventory *all* recognizable outflows along the stream banks of the stream network of the SJBE. No distinction will be established *a priori* regarding the nature of the existing outfalls (i.e., pluvial, industrial, sewage). Field screening will be conducted during the “dry” season (as recommended by EPA guidelines) to avoid “dilution” from runoff or groundwater sources. Each identified outfall will be catalogued into a relational database linked to a GIS system. A final color coded classification will be assigned to each outfall as follows: unlikely (green); confirmed suspect (red), and initially evident (black). The field screening efforts will be complemented with a stream water quality assessment component to support watershed restoration efforts once the project is completed. The goal of this subcomponent of the proposal is to identify *critical* contributing subbasins (i.e., “hot zones”) that should receive highest priority in

future watershed restoration projects. A sampling strategy will be established based on a subbasin delineation assemblage. To further document the existence of sewer cross contamination the study will include a *rotational sampling scheme* of selected major sub-basins in the San Juan Bay Estuary watershed under high flow (storm events) conditions.

Long-term Priorities 2016 - 2022 AUs

Table 5 shows the long term vision AU's 2016-2022 with its corresponding alternative approaches.

Table 5: Long-term Priorities 2016 - 2022 AUs

WATER BODY NAME	AU ID	CAUSES OF IMPAIRMENTS	AREA	SQ miles	Approach
RIO GURABO	PRER14G1	Copper (0530), Cyanide (0720), Total Coliforms (1700), Turbidity (2500)	32512.22173	50.800346	1, 5a
RIO CAONILLAS	PRNR7C1	Arsenic (0510), Cyanide (0720)	23524.998676	36.75781	1, 5a
RIO GRANDE DE LOIZA	PRER14A2	Cyanide (0720), Pesticides (0200), Total Coliforms (1700), Turbidity (2500)	26498.345459	41.403665	1, 5a
RIO CAGUITAS	PRER14I	Cyanide (0720), Surfactants (0400), Thermal Modifications (1400), Total Coliforms (1700), Turbidity (2500)	12019.471726	18.780425	1, 5a
RIO LA PLATA	PRER10A1	Cyanide (0720), Turbidity (2500)	6762.208267	10.56595	1, 5a
RIO CIBUCO	PRNR9A	Cyanide (0720), Total Coliforms (1700), Turbidity (2500)	14250.254207	22.266022	1, 5a
RIO GRANDE DE LOIZA	PRER14A1	Copper (0530), Cyanide (0720), Low Dissolved Oxygen (1200), Turbidity (2500)	10851.784356	16.955913	1, 5a
RIO ESPIRITU SANTO	PRER16A	Copper (0530), Cyanide (0720), Lead (0550), Low Dissolved Oxygen (1200), pH (1000), Surfactants (0400), Turbidity (2500)	15760.761314	24.62619	1, 5a

WATER BODY NAME	AU ID	CAUSES OF IMPAIRMENTS	AREA	SQ miles	Approach
RIO LA PLATA	PRER10A3	Cyanide (0720), Low Dissolved Oxygen (1200), Turbidity (2500)	12896.790193	20.151235	1, 5a
TÚNEL	PRNR7A3	Cyanide (0720)	19822.753445	30.973052	1, 5a
RIO LA PLATA	PRER10A5	Arsenic (0510), Copper (0530), Cyanide (0720), Lead (0550), Mercury (0560), Surfactants (0400), Turbidity (2500)	23893.320027	37.333313	1, 5a
RIO GUAYNABO	PRER12B	Cyanide (0720), Total Coliforms (1700), Turbidity (2500)	12590.494231	19.672647	1, 5a
RIO CULEBRINAS	PRWR95A	Arsenic (0510), Copper (0530), Cyanide (0720), Lead (0550), Pesticides (0200), Surfactants (0400), Total Coliforms (1700), Turbidity (2500)	30592.920494	47.801438	1, 5a
LAKE LA PLATA	PREL110A1	Arsenic (0510), Cyanide (0720), Low Dissolved Oxygen (1200), Phosphorus (0910)	7938.7658	12.404322	3, 4, 5a
LAKE GUAJATACA	PRNL3A1	Low Dissolved Oxygen (1200)	5824.294966	9.100461	3, 4, 5a
RIO TURABO	PRER14J	Arsenic (0510), Copper (0530), Cyanide (0720), pH (1000), Surfactants (0400), Turbidity (2500)	19006.0409	29.696939	1, 5a
RIO VALENCIANO	PRER14G2	Arsenic (0510), Copper (0530), Cyanide (0720), Surfactants (0400), Turbidity (2500)	12200.5404	19.063344	1, 5a

WATER BODY NAME	AU ID	CAUSES OF IMPAIRMENTS	AREA	SQ miles	Approach
RIO GRANDE DE ARECIBO	PRNR7A2	Copper (0530), Cyanide (0720), Lead (0550), Pesticides (0200), Total Coliforms (1700), Turbidity (2500)	22446.225457	35.072227	1, 5a
RIO GRANDE DE ARECIBO	PRNR7A1	Copper (0530), Cyanide (0720), Low Dissolved Oxygen (1200), Turbidity (2500)	7207.74912	11.262108	1, 5a
RIO CIALITO	PRNR8B	Cyanide (0720), Total Coliforms (1700), Turbidity (2500)	10776.451776	16.838206	1, 5a
RIO GRANDE DE MANATI	PRNR8A1	Copper (0530), Cyanide (0720), Turbidity (2500)	14214.337007	22.209902	1, 5a
RIO ROSARIO	PRWR77C	Cyanide (0720), Pesticides (0200), Turbidity (2500)	15356.703909	23.99485	1, 5a
RIO LA PLATA	PRER10A4	Cyanide (0720), Turbidity (2500)	4187.745159	6.543352	1, 5a
RIO HUMACAO	PRER33A	Copper (0530), Cyanide (0720), Lead (0550), Surfactants (0400), Total Coliforms (1700), Turbidity (2500)	14678.023253	22.934411	1, 5a
LAKE LOIZA	PREL14A1	Copper (0530), Lead (0550), Low Dissolved Oxygen (1200), Turbidity (2500)	7928.060628	12.387595	3, 4, 5a
RIO GRANDE DE AÑASCO	PRWR83A	Cyanide (0720), Low Dissolved Oxygen (1200), Turbidity (2500)	32194.001763	50.303128	1, 5a

WATER BODY NAME	AU ID	CAUSES OF IMPAIRMENTS	AREA	SQ miles	Approach
LAKE DOS BOCAS	PRNL17A1	Arsenic (0510), Copper (0530), Cyanide (0720), Low Dissolved Oxygen (1200), pH (1000), Surfactants (0400)	10734.480607	16.772626	3, 4, 5a
RIO BAIROA	PRER14H	Phosphorus	5005.816097	7.821588	3
RIO GUAYANILLA	PRSR67A	Phosphorus	16090.163506	25.14088	3
RIO YAUCO	PRSR68A1	Phosphorus	20519.523795	32.061756	3
RIO GUAYABO	PRWR94A	Phosphorus	8200.426277	12.813166	3
SAN JUAN BAY ESTUARY SYSTEM	PREE13A2	Dissolve Oxygen, Ammonia, Oil and Grease, pH, Thermal Modification, Total Coliforms, Turbidity, NO ₂ +NO ₃ , Surfactants, Lead, Copper, Cyanide	16626.02176	25.978159	5b