

## SJBEP Water Quality Volunteers Monitoring Program

Restoration, Sustainability, and Health of the Caño Martín Peña Workshop USEPA Region 2-ORD June 9, 2017 By Dr. Jorge Bauzá-Ortega Science Director



### Cuenca del Estuario de la Bahía de San Juan

OCÉANO ATLÁNTICO



### WATER QUALITY MONITORING VOLUNTEER PROGRAM





## Since 2008, the SJBEP Water Quality Monitoring Program:

- Provided opportunity to more than 400 volunteers.
- An Approved Quality Assurance Project Plan.
- Provided data to the PREQB for the 305(b)/303(d) Water Quality Assessment Integrated Report and other agencies, academia, stakeholders, etc.
- Supported students in their instigations and projects.
- Being used by Federal and State agencies in their decision making process.



## The water quality measured parameters

are: Temperature ✓ Conductivity Turbidity Secchi depth ✓ Total organic carbon ✓ Dissolved oxygen Total nitrogen ✓ Nitrite & Nitrate ✓ Total phosphate Chlorophyll BOD Turbidity Fecal coliform Enterococus







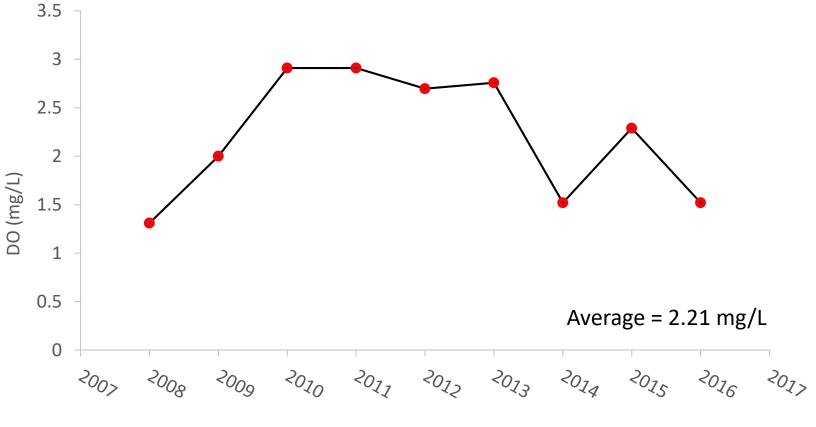






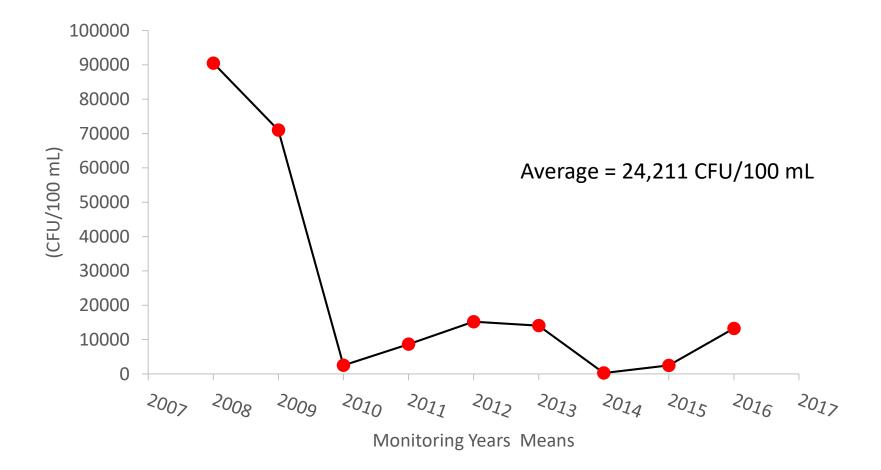
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	A	B	С	D	E	F	G	H		J	K	L	М	N	
1		Hydrolab (	Quanta												
2		Temp.		°C	31	31.8	32.7	30.8	30.5	30.7	30.63	30.28	30.6		
3		DO		mg/L	6.82	15.14	8.32	1.71	4.53	6.46	6.85	3.88	0.29		
4		DO		(%)	98.5	227.9	122.5	23.9	65.3	101	108.7	6.16	4		
5		Specific Conductance			21.7	19.7	20	21.9	31.9	47.5	48.3	36.6	39.4		
6		Salinity		pps	13.77	11.87	12.4	13.3	19.4	31.4	31.66	23	21.7		
7		Turbidity		NTU	0.9	6.3	1.7	1.8	2.1	2.8	2.4	14.2	32		_
8		pН			7.55	8.62	7.95	7.22	7.37	7.9	8	7.7	7.4		
9		Sechi Depth		meters	Bottom Depth	0.75	1	1.545	1.79	1.19	0.8925	0.47	0.36		_
10		First t			N/A	0.7	1	1.54	1.74	1.21	0.88	0.465	0.385		_
11		Second			N/A	0.8	10-25	1.55	1.84	1.17	0.905	0.475	0.335		-
12 13		Start Ti		am/pm	12:07 12:13	12:40 13:00	12:35 12:38	12:20 12:25	12:00 12:03	11:30 11:45	11:11 11:20	10:10 10:15	10:30		-
13		End Ti	me	am/pm	12:13	13:00	12:30	12:25	12:03	11:45	11:20	10:15	10:45		
	Α	В	С	D	E	F	G	Н		J	K	L		N	N
1	Results Re	ported by	EQ Lab	on June 2	, 2008.										
2															
3								Monitoring Stations Results				_			
4	Date	Paramenter		Method		Units	MDL Limit	LT1	LT2	LT3	CS1	CS2	PLE		
5	5/20/2008	Oil & G	Grease	EPA	1664 A	mg/L	1.4	1.5	2	1.4	1.4	3			
6		Ammonia		EPA	\$350.1	mg/L	0.10	BDL	0.13	0.24	0.15	0.17			
7		Nitrate & Nitrite,tota		al EPA			0.01	BDL	BDL	0.05	BDL	0.03			
8		Total Phosphorus		EPA 365.3		mg/L	0.010	0.019	0.087	0.075	0.115	0.139			
9		TOC		EPA	EPA 415.1		0.500	2.160	3.240	3.330	4.040	2.760			
10		Chlorophyll		SM 1	SM 10200 H		0.100	2.780	3.350	4.220	6.250	4.130			
11		Turbidity		SM	SM 2130 B		0.05	4.53	2.29	4.73	2.5	2.02			
12		BOD		SM 5210 B		mg/L	1	14	9	5	6	2			
13		Coliform-Fecal		SM	SM 9222 D		2	18	210	1600	11	130			
14		Fecal Enterococcu		5 SM 9230 C		CFU/100mL	10	<10	<10	340	<10	<10			
15			Number					1209706	1209707	1209708	1209709	1209710			
16															
17				CS1,CS	S2: Suarez	Channel	MDL: Min	imum deteo	ction Level						
18															

### Caño Martín Peña Dissolved Oxygen

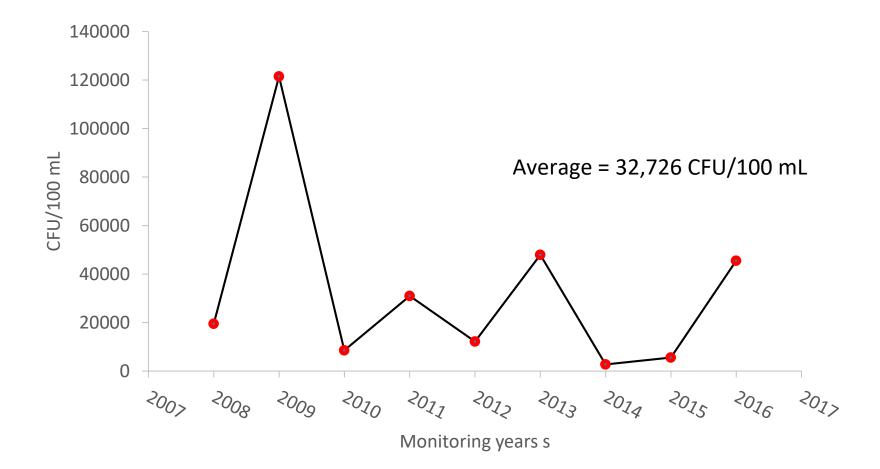


**Monitoring Years** 

### Caño Martín Peña Fecal Enterococcus



### Caño Martín Peña Fecal Coliform



# Water Quality Index/Score Card Guidelines

- Provides a convenient means of summarizing complex water quality data and facilitating its communication to a general audience.
- The water quality index is a number between 0 (worst water quality) and 100 (best water quality).
- The numbers are divides into five (5) descriptive categories to simplify presentation.

ÍNDICE DE CALIDAD DE AGUA	DESCRIPCIÓN	CALIFICACIÓN
95-100	EXCELENTE: la calidad del agua se encuentra protegida. La condición del cuerpo de agua se acerca a condiciones prístinas y natu- rales.	Α
80-94	BUENO: la calidad del agua se encuentra protegida. El cuerpo de agua exhibe un grado de contaminación menor y con poca frecuencia.	В
65-79	REGULAR: la calidad del agua es usualmente protegida. El cuerpo de agua ocasional- mente exhibe niveles de con- taminación.	С
45-64	MARGINAL: la calidad del agua está poco protegida. El cuerpo de agua se encuentra frecuentemente amenazado y contaminado.	D
0-44	POBRE: la calidad del agua no está protegida. El cuerpo de agua se encuentra constan- temente amenazado y con- taminado.	F

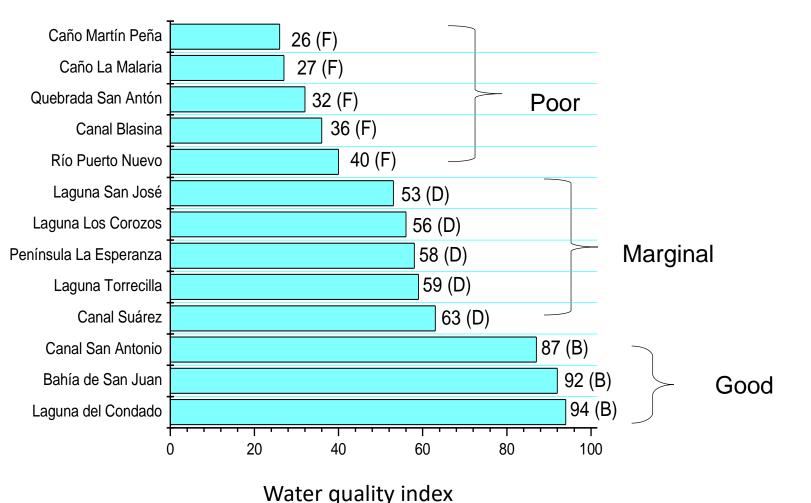
## Water Quality Index/Score Card Guidelines

- Developed by the British Columbia Ministry of Environment, Lands and Parks\*.
- The Index incorporates 3 elements:
  - Scope: The number of variables not meeting water quality objective.
  - Frequency: The number of times these objectives are not met.
  - Amplitude: The amount by which the objectives are not met.

Parámetro de calidad de agua	Valor objetivo
Oxígeno disuelto	4 mg/
Turbidez	10 NTU
Transparencia del agua (profundidad Secchi)	1 metro
Aceites y grasas	1 mg/L
Nitrógeno total	1 mg/L
Nitratos y nitritos	0.5 mg/L
Fósforo total	0.5 mg/L
Carbón orgánico total	5 mg/L
Clorofila a	5 mg/L
Demanda biológica de oxígeno	5 mg/L
Coliformes fecales (media geométrica)	200 CFU*/100 ml
Enterococcus (media geométrica)	35 CFU*/100 ml

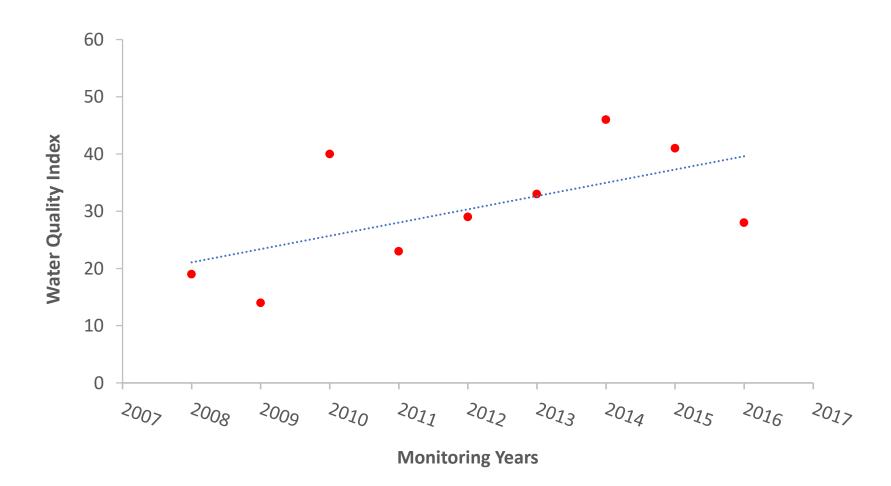
\*Canadian Water Quality Guidelines for the Protection of Aquatic Life, 2001.

## SJBE Water Quality Index & Scores



Water bodies

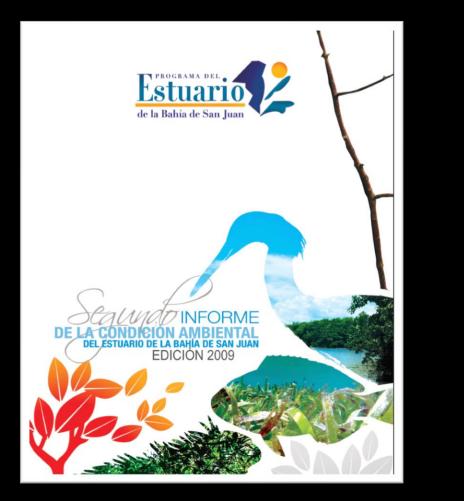
#### Caño Martín Peña Water Quality Index Trend

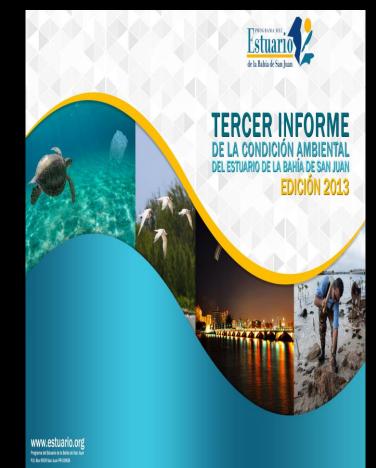


We need to Restore Water Circulation & Improve Sanitary Infrastructure = Caño Martín Peña Restoration



# Next State of the Bay report coming in 2017.





### **MUCHAS GRACIAS !**

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