



**Abstract  
of the  
Environmental Impact Statement  
project  
Aqueduct Rosarito - El Florido.**

**April 2014**

Study Elaborated by:



## INTRODUCTION

Environmental impact statement developed for NSC Water, S.A. de C.V. for Desalination Plant, Rosarito, B.C. being the legal representative Ismael Sánchez González residing in Street Boulevard Sanchez Taboada 10488 Zona Rio, CP 22320 Tijuana, B.C.

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## PROJECT OVERVIEW

The "Acueduct Rosarito - El Florido" is a project associated with another which is the principal, which involves the construction and operation of a desalination plant with a capacity of 4.4 m<sup>3</sup> / s, whose location is projected at Playas de Rosarito, Baja California in the adjoining vacant lot south of the CT President Juárez Federal Electricity Commission CFE.

Having said this, it is added to the pipeline, the subject of this study will aim to carry drinking water to be produced in the desalination plant to the point of delivery has been agreed with the State Commission of Public Services Tijuana (CESPT), which is located in the eastern end of the urban area of Tijuana, in the area known as El Florido.

Summarizing, the nature of the project covered by the present study is the construction and operation of a pipeline to transport drinking water, with a nominal capacity of 4.4 m<sup>3</sup> / s from Rosarito Beach to El Florido in the state of Baja California.

### Traced of the project and location

The projected aqueduct trace shown in Figure 1, part of the desalination plant in Rosarito Beach, is heading east through a series of roads, cross the federal (Rosarito Boulevard) Highway No. 1 for connecting with the Scenic Road Tijuana - Ensenada, which continues parallel to the point of intersection of this road, from which dates back approximately 14.8 km east along the dirt road accompanying easements TGN pipeline, the pipeline of PEMEX and the transmission lines of the CFE, crossing the hills until joining the Boulevard 2000, in which are internal central ridge to reach the area Florido, located 1.25 km after the road bridge Tijuana - Tecate, point leaving the central median of the Boulevard 2000 to follow a dirt road located in the El Gordo at the foot of the hill where the tanks are CESPT distribution, which surrounds rise to the point that is the same upgrade existing road (cleared area) so as to reach the point of delivery established by the Commission.

In the passage that follows the ridge line of the Boulevard 2000, there are three points at which the aqueduct must leave the ridge to continue parallel to it. This is the case of crossing the dry beaker of Abelardo Rodriguez, whose low background the aqueduct, where it remains under the shadow of the bridge to the opposite side boulevard, by the stroke of the aqueduct leaves the vessel to re-intern in the central ridge of the boulevard. The other two points where the line leaves the center strip of the Blvd 2000 are two bridges to access housing developments. The Table. Table 1 shows the construction of the line, in Annex D of the plane "with Box Construction Traced" is presented.



Figure 1, the aqueduct Trace Rosarito - El Florido

### Project dimensions

Being a linear underground project, the dimensions of the required surface are given by the width of the right of way and the stroke length is expressed by coordinate chainage box construction.

You have 2 different surface data required based on two different widths of right of way for this project, one is for the width of the right of way required to build the pipeline, ie, the necessary width for the machinery required for the earthmoving and pipeline management. The second gauge is the amount of the finished work, and is related to the area of respect for this work. The first width is 17 m, and the second is 10 m.

Additionally one must consider the surface of the pumping station (1,600 m<sup>2</sup>), the Relief Tank (400 m<sup>2</sup>), and the surface of the Control Station Pressure and Flow at the end of the Aqueduct (260 m<sup>2</sup>). Considering these widths to the right of way required for the project construction area is 50 +0360 ha, and as a right of final track 29 +5260 has

### Current land use and its adjacencies

For the city of Tijuana, according to the Urban Development Plan Population Center Tijuana 2010-2030, as seen in this picture, the trace continues for vacant land with current land use and housing potential. To reach the ridge of the Boulevard 2000. Land use near the Boulevard 2000 is residential and industrial.

**Table. 1, Table Construction**

Point	Kilometer	UTM mN	UTM mE	Elevation	Point	Kilometer	UTM mN	UTM mE	Elevation
1	0+000.00	3,581,118.3	493,960.4	20.0	82	18+177.67	3,587,046.6	509,487.6	173.0
2	0+151.08	3,581,157.9	494,106.2	20.0	83	18+302.85	3,587,136.3	509,574.9	163.6
3	0+175.64	3,581,182.1	494,102.1	20.0	84	18+480.80	3,587,263.4	509,699.4	158.3
4	0+297.72	3,581,266.6	494,190.3	20.0	85	18+546.57	3,587,306.3	509,749.2	158.3
5	0+756.03	3,581,076.3	494,607.3	24.4	86	18+646.23	3,587,367.5	509,827.9	165.8
6	0+805.01	3,581,093.9	494,653.0	25.9	87	18+719.89	3,587,405.8	509,890.8	160.6
7	1+423.84	3,581,704.8	494,554.6	36.6	88	18+767.89	3,587,431.2	509,931.6	157.8
8	1+465.08	3,581,710.7	494,595.4	38.0	89	18+905.45	3,587,484.4	510,058.4	152.2
9	2+008.81	3,581,812.4	495,129.6	65.4	90	18+929.34	3,587,479.1	510,081.7	153.4
10	2+111.05	3,581,842.9	495,227.1	71.8	91	19+012.86	3,587,508.9	510,159.7	141.0
11	2+142.57	3,581,861.2	495,252.8	74.2	92	19+048.35	3,587,510.9	510,195.2	125.0
12	2+680.05	3,582,102.5	495,733.1	88.8	93	19+528.59	3,587,636.7	510,658.6	120.0
13	2+738.05	3,582,098.1	495,790.9	92.9	94	19+594.74	3,587,659.2	510,720.9	120.3
14	2+914.62	3,582,176.1	495,949.3	100.0	95	19+621.80	3,587,676.8	510,741.4	120.5
15	3+099.28	3,582,265.3	496,111.0	99.9	96	19+689.12	3,587,698.5	510,805.1	124.1
16	3+280.93	3,582,337.9	496,277.5	99.8	97	19+710.91	3,587,716.3	510,817.7	124.4



Point	Kilometer	UTM mN	UTM mE	Elevation	Point	Kilometer	UTM mN	UTM mE	Elevation
17	4+018.75	3,582,671.9	496,935.4	133.0	98	19+780.73	3,587,749.9	510,878.9	126.9
18	5+043.17	3,583,135.3	497,849.0	180.5	99	19+873.75	3,587,799.5	510,957.6	126.1
19	5+095.81	3,583,154.3	497,898.1	180.7	100	19+973.34	3,587,861.4	511,035.6	122.5
20	5+357.70	3,583,256.0	498,139.4	200.2	101	20+279.67	3,588,046.3	511,279.9	130.7
21	5+396.11	3,583,293.5	498,147.9	200.2	102	20+487.83	3,588,170.0	511,447.3	139.0
22	5+718.54	3,583,443.3	498,433.4	200.9	103	20+526.88	3,588,191.0	511,480.2	140.0
23	5+987.45	3,583,560.4	498,675.5	189.1	104	20+630.39	3,588,236.1	511,573.4	140.0
24	6+326.16	3,583,720.3	498,974.1	200.1	105	20+684.74	3,588,256.0	511,623.9	140.0
25	7+209.30	3,584,128.1	499,757.5	170.1	106	20+782.06	3,588,281.8	511,717.8	140.0
26	7+294.12	3,584,210.9	499,775.7	177.4	107	21+146.64	3,588,360.6	512,073.7	159.0
27	7+357.06	3,584,268.6	499,801.0	178.8	108	21+313.80	3,588,395.9	512,237.2	166.3
28	7+524.31	3,584,419.2	499,873.7	179.6	109	21+433.38	3,588,430.4	512,351.6	176.7
29	7+749.55	3,584,572.8	500,038.4	179.9	110	21+493.97	3,588,452.5	512,408.0	184.3
30	7+818.63	3,584,614.2	500,093.7	179.9	111	21+556.67	3,588,478.4	512,465.1	194.9
31	8+324.06	3,584,793.0	500,566.4	199.6	112	21+626.62	3,588,510.8	512,527.1	200.5
32	8+356.50	3,584,776.5	500,594.3	199.8	113	21+898.68	3,588,636.5	512,768.4	163.0
33	8+524.86	3,584,632.2	500,681.2	225.6	114	22+107.66	3,588,732.4	512,954.1	197.4
34	8+753.08	3,584,520.9	500,880.4	242.8	115	22+413.98	3,588,896.8	513,212.6	156.8
35	9+439.27	3,584,688.9	501,545.7	296.3	116	22+694.17	3,589,049.1	513,447.8	140.0
36	10+252.76	3,584,887.9	502,334.5	322.6	117	22+862.96	3,589,142.6	513,588.3	140.0
37	12+166.99	3,585,638.7	504,095.3	331.2	118	23+010.41	3,589,213.8	513,717.4	139.8
38	12+218.13	3,585,612.3	504,139.1	334.4	119	23+125.72	3,589,261.3	513,822.5	139.8
39	12+336.85	3,585,617.1	504,257.7	328.3	120	23+347.11	3,589,354.5	514,023.3	139.9
40	12+880.15	3,585,544.2	504,796.1	302.5	121	23+422.61	3,589,390.9	514,089.4	139.9
41	13+346.97	3,585,478.9	505,258.3	300.2	122	23+824.92	3,589,605.1	514,430.0	140.0
42	13+391.02	3,585,490.5	505,300.8	300.0	123	24+603.40	3,589,997.9	515,102.1	140.1
43	13+462.27	3,585,484.3	505,371.8	299.6	124	25+005.41	3,590,199.5	515,449.9	148.5
44	13+521.15	3,585,489.7	505,430.5	299.6	125	25+094.88	3,590,257.1	515,518.3	147.8
45	13+547.67	3,585,484.6	505,456.5	299.7	126	25+181.49	3,590,322.0	515,575.8	146.0
46	13+563.91	3,585,476.6	505,470.7	299.8	127	25+264.71	3,590,392.3	515,620.3	146.4
47	13+593.09	3,585,449.1	505,480.2	299.9	128	25+324.07	3,590,445.1	515,647.5	145.5
48	13+668.59	3,585,413.6	505,546.9	301.0	129	25+376.89	3,590,494.3	515,666.6	143.6
49	13+696.77	3,585,408.0	505,574.5	300.8	130	25+459.05	3,590,574.1	515,686.0	140.0
50	13+781.48	3,585,401.9	505,659.0	301.2	131	25+543.76	3,590,658.5	515,693.5	141.0
51	13+921.47	3,585,377.7	505,796.9	301.1	132	25+609.51	3,590,724.2	515,691.0	143.2
52	14+046.19	3,585,384.3	505,921.4	299.9	133	25+681.94	3,590,795.8	515,679.6	145.5
53	14+197.83	3,585,410.4	506,070.8	299.8	134	25+729.95	3,590,841.8	515,666.1	147.0
54	14+318.01	3,585,425.5	506,190.0	303.9	135	25+772.67	3,590,881.5	515,650.2	148.2



Point	Kilometer	UTM mN	UTM mE	Elevation	Point	Kilometer	UTM mN	UTM mE	Elevation
55	14+396.95	3,585,406.5	506,266.6	298.5	136	25+857.48	3,590,958.6	515,615.0	150.5
56	14+449.97	3,585,378.1	506,311.4	295.0	137	25+973.03	3,591,063.1	515,565.7	153.2
57	14+501.57	3,585,367.9	506,362.0	289.2	138	26+045.33	3,591,124.9	515,528.2	155.2
58	14+557.38	3,585,375.4	506,417.3	281.2	139	26+111.61	3,591,176.7	515,486.7	157.0
59	14+612.18	3,585,410.5	506,459.4	274.9	140	26+182.64	3,591,225.9	515,435.5	159.2
60	14+652.65	3,585,436.0	506,490.8	271.3	141	26+251.43	3,591,266.7	515,380.2	159.7
61	14+682.47	3,585,441.9	506,520.0	268.6	142	26+298.45	3,591,289.7	515,339.2	160.0
62	14+797.77	3,585,425.0	506,634.1	255.7	143	26+359.90	3,591,315.2	515,283.2	161.8
63	14+840.54	3,585,406.8	506,672.8	251.5	144	26+419.97	3,591,333.2	515,225.9	164.6
64	14+925.44	3,585,466.8	506,732.8	251.4	145	26+812.81	3,591,440.3	514,848.0	179.3
65	15+033.76	3,585,536.1	506,816.0	240.3	146	26+870.94	3,591,457.1	514,792.3	178.9
66	15+110.73	3,585,579.1	506,879.9	240.1	147	26+926.90	3,591,477.3	514,740.1	172.1
67	15+196.95	3,585,623.9	506,953.5	240.0	148	26+989.03	3,591,508.1	514,686.2	168.0
68	15+305.37	3,585,672.1	507,050.7	239.9	149	27+037.14	3,591,536.3	514,647.2	163.7
69	15+567.06	3,585,776.5	507,290.7	239.9	150	27+108.69	3,591,605.9	514,630.8	159.0
70	15+775.15	3,585,856.0	507,483.0	240.9	151	27+185.29	3,591,671.0	514,590.3	151.5
71	15+890.44	3,585,896.1	507,591.0	239.9	152	27+287.58	3,591,759.6	514,641.5	153.6
72	15+993.35	3,585,923.1	507,690.3	239.8	153	27+431.67	3,591,848.6	514,754.8	164.7
73	16+264.33	3,585,983.4	507,954.5	243.5	154	27+509.09	3,591,919.4	514,786.1	162.9
74	16+604.06	3,586,056.7	508,286.2	259.0	155	27+559.36	3,591,961.5	514,813.6	160.8
75	16+685.98	3,586,080.4	508,364.7	259.6	156	27+882.23	3,592,160.8	515,067.6	153.8
76	16+792.33	3,586,126.7	508,460.4	258.7	157	28+157.39	3,592,333.1	515,282.1	157.3
77	16+941.95	3,586,214.2	508,581.8	243.4	158	28+932.30	3,592,800.0	515,900.6	167.2
78	17+369.34	3,586,462.5	508,929.6	220.5	159	29+137.08	3,592,739.4	516,096.2	218.4
79	17+457.20	3,586,519.7	508,996.3	216.3	160	29+183.32	3,592,712.2	516,133.6	226.1
80	17+563.85	3,586,594.5	509,072.4	200.0	161	29+308.15	3,592,594.9	516,176.3	240.2
81	17+838.54	3,586,796.7	509,258.3	192.0					

## **LINKAGE WITH APPLICABLE LAWS ON ENVIRONMENTAL AND, IF ANY, WITH LAND USE REGULATION**

In preparing this section planning documents ordering the area where the project is located were consulted. According to the Planning Act of the State of Baja California, the documents are legally valid:

- National Development Plan 2013 - 2018 (PND)
- Ecological Management Plan of the State of Baja California (POEBC) 2009-2013.
- Ecological Coastal Corridor Tijuana-Rosarito-Ensenada Regional Program of Urban Development and Tourism (COCOTREN)
- Municipal Urban Development Plan of Playas de Rosarito. 2011-2013
- Municipal Development Plan 2011-2013 Tijuana
- Urban Development Program Center of Tijuana Population 2010-2030
- National Development Plan of the State of Baja California 2008 – 2013

In addition to legislation, regulations, ordinances and environmental regulations

### **Sectoral information**

The 2013-2018 National Development Plan (NDP), competitive economy and generating jobs strategy mentioned in 4.4.3. "To strengthen national climate change policy and environmental care for the transition to a competitive, sustainable, resilient and low-carbon."

The NDP regarding the water sector strategy mentioned in 4.4.2 "... Ensure sufficient water of suitable quality for human consumption and ensure food security, development and strengthen the technical and financial capacity of utilities to provide better services. "

The National Development Plan 2013-2018 (PED) on "Sustainable Regional Development mentioned in 3.3.2 Desalination axis" Achieving the planning and implementation of projects to desalinate seawater to integrate new sources of supply as a sustainable vision for the benefit of the towns"

The Municipal Development Plan 2011-2013 Playas de Rosarito, BC (PMDPR) relating to sustainable urban development and quality of life, mentions that... urban policy and land management, which aim the urban modeling city sustainably, planning and development of infrastructure, services and public works.

The Plan of the State Ecological Planning (POEBC), specifically with regard to Resource Water Chapter 2 ... "addresses the diagnosis of environmental variables highlighting the problems associated with the current and future availability of water, its treatment and reused ".

The Municipal Development Plan 2011-2013 Tijuana, within its comprehensive Social Development Strategy component mentioned 2.1.1.2 Improving the quality of life of marginalized sector that due to population and urban growth so fast ... one of their biggest challenges of the municipal government is to maximize the use and utilization of existing infrastructure and services

Given the characteristics of the project under study is conclusive that its objectives are deeply linked with the guidelines described in the preceding paragraphs, and is useful to note that the success of this project will result in a substantial increase in the availability of drinking water, which will enhance the opportunities for growth, economic and social development of the region.

## **CHARACTERIZATION OF ENVIRONMENT AND ENVIRONMENTAL DIAGNOSIS**

The planned location for the pipeline within the conurbation Tijuana - Rosarito Beach. The aqueduct across town Rosarito before crossing the low mountains to the Blvd 2000, continuing parallel to the ridge down to the water treatment plant El Florido, in the city of Tijuana.



Sierra, an area comprising 80% of the total area of the state and includes the municipality of Tijuana, most of the towns of Tecate, Rosarito and Ensenada beaches and about 25% from Mexicali.

### Floral composition

The coastal scrub of Baja California and California states, having represented several types of partnerships; Alexrod (1978) (cited by Delgadillo, 1997) establishes a (regional) geographical name calling similar to the area where they are because each has several communities that differ in composition, exposure and other factors such as successional relations, local weather name.

What over distribution from the border to El Rosario, will find that this type of vegetation is manifested and difference in various associations according to their component taxa, so Delgadillo (1997) classify the coastal scrub succulent kind in BC according to the dominant species by way of series: Series Agave, Simmondsia Series Series Series Ambrosia Stenocereus

This author acknowledges that although these species occur more prominently in some areas than in others, the dominance of one of these genera and species is relative. It also notes that the presence of one of these taxa as the dominant species does not necessarily imply that some associations with the other three species are not present in each series.

For the present case series is the corresponding series Agave coastal scrublands, while Agave shawii manifested as dominant, is also accompanied by Simmondsia chinensis, Erigonum fasciculatum, miserable Euphorbia californica Artemis. (Delgadillo 1997)

### Current status of the vegetation.

The degree of disturbance that has vegetation cover within the ZE is very dramatic because of its characteristics and location of the stroke. Because the trace lines will parallel pipeline and power lines CFE vegetation is mostly ruderal. In the adjacent areas ruderal vegetation with patches of coastal scrub. The use of surrounding land is agricultural, residential, so we can say that the eurozone is denatured. In the glass Flood Abelardo L. Rodríguez significant vegetation cover is provided. The riparian vegetation is present. To complement the information and include a list of the species present in the study area where the aqueduct "Rosarito - El Florido" was located, was a journey along the route of the project. For more detail in Annex F photographic report of the stroke occurs.

The results are presented below in the list of species present in the vicinity of the aqueduct "Rosarito - El Florido"

Species  
*Eriogonum fasciculatum*  
*Rhus integrifolia*  
*Simmondsia chinensis*  
Cylindropuntia sp.  
Baccharis sp.  
*Haploppapus sp*  
*Yucca schidigera*  
*Euphorbia misera,*  
*Artemisa californica*  
*Salix sp*  
*Tamarix sp*

Quadrants of 20 x 20 meters to determine the vegetation cover and abundance of species within each quadrant were performed. The show was to list the species present and count the total number of organisms of each identified species.

For sample 3 and 4, the quadrants were performed in the vicinity of the line where the aqueduct passed since the stroke is devoid of vegetation. Samples 1 and two were in the glass Flood Abelardo L. Rodríguez.

### Fauna present in the study área

To complement and describe in detail the fauna in the study area a list of vertebrates of Northern California Mediterranean region was performed, the present work aims to make an updated vertebrates present in the Northern Region List California Mediterranean (NRCM), with the aim of contributing to the knowledge of this group of chordates, which allows the planning and implementation of projects of social and economic development, in conjunction with the protection and conservation of the regional fauna.

Detailed knowledge of the number of species present in a geographical area is crucial to the implementation of measures and programs for the use, protection and conservation biology. The faunal lists have proven to be very useful as a reference (Jones, et al., 1992), they represent basic information for making decisions about technical basis of this natural resource. However, the knowledge and use of biodiversity not only depend on the availability of biological inventories, but also on the accuracy and comprehensiveness of these same.

Northwestern Baja California is under the influence of the California Current, which gives it a Mediterranean climate with plant communities as chaparral, scrub and mesic forests in the highlands (Delgadillo, 1998). This region is known for its high species diversity and floristic endemism (Oberbauer, 1999; Arriaga et al, 2000.). However, when it comes to knowledge of vertebrates, there is widespread ignorance of the species present in the region (Mellink, 2002).

A review of the species of vertebrates (amphibians, reptiles, birds and mammals) recorded in the California Mediterranean region, specifically in the northern portion located between the cities of Tijuana and Ensenada was performed, considering its potential distribution and local records. For this purpose, a comprehensive review and compilation of literature consists of scientific papers, theses, books and technical reports was made.

To complement the work of staff and seek information from field, was held on July 18, 2013 visit surveys along the proposed aqueduct Rosarito-El Florido transect. Table 2.

**Table 2, Recording sites in vertebrate transect-El Florido Rosarito, BC**

Location	Latitude	Longitude	Altitude
Sitio 1	32.469768°	-116.82903°	221 m
Sitio 2	32.425245°	-116.88848°	100 m
Sitio 3	32.399605°	-116.99501°	199 m
Sitio 4	32.405926°	-116.94252°	294 m

Note: The coordinate system used was WGS84, NAD 27.

As a result of the survey visit were recorded in field 33 vertebrate species represented by three classes, 11 orders, 24 families and 33 genera. The detailed survey exercise in ZI results are presented in Table 3.

**Table 3, Registered in the path of the transect Vertebrates Rosarito-El Florido**

Order	Family	Species	Common name	Site			
				1	2	3	4
<b>Reptiles</b>							
Squamata	Phrynosomatida	<i>Sceloporus occidentalis</i>	Cachora				
		<i>Urosaurus nigricaudus</i>	Lagartija de copla negra	•	•		
		<i>Uta stansburiana</i>	Lagartija común	•			
<b>Aves</b>							
Anseriformes	Anatidae	<i>Anas platyrhynchos</i>	Pato altiplanero				•
Accipitriformes	Cathartidae	<i>Cathartes aura</i>	Aura común	•			•
	Accipitridae	<i>Buteo jamaicensis</i>	Halcón cola roja				
Guiformes	Rallidae	<i>Fulica americana</i>	Gallareta americana				•
Charadriiformes	Charadriidae	<i>Charadrius vociferus</i>	Chorlito tildío				
Columbiformes	Columbidae	<i>Columba passerina</i>	Tortolita pechipunteada	•			

Order	Family	Species	Common name	Site				
				1	2	3	4	
Passeriformes	Tyrannidae	<i>Zenaida macroura</i>	Huilota	•				
		<i>Sayornis saya</i>	Papamoscas llanero		•		•	
	Lanidae	<i>Lanius ludovicianus</i>	Alcaudon verdugo	•				
	Corvidae	<i>Corvus corax</i>	Cuervo				•	
	Alaudidae	<i>Passer domesticus*</i>	Gorrión pecho negro	•	•	•		
	Mimidae	<i>Mimus polyglottus</i>	Cenzontle aliblanco	•		•		
	Emberezidae	<i>Pipilo maculatus</i>	Toquí moteado	•		•		
		<i>Aimophila ruficeps</i>	Gorrión bigotudo	•		•		
		<i>Spizella atrogularis</i>	Gorrión barba negra	•				
		Icteridae	<i>Agelaius phoeniceus</i>	Tordo sargento				•
			<i>Molothrus ater</i>	Tordo cabeza café				•
			<i>Tyto alba</i>	Lechuza de campanario			•	
	Stingiformes	Tytonidae	<i>Athene cunicularia</i>	Tecolote enano, tecolotito llanero	•			
<i>Geococcyx californianus</i>			Correcaminos				•	
Trochilinae		<i>Calypte costae</i>	Colibrí coronivioleta desértico	•				
Falconidae		<i>Falco peregrinus</i>	Halcón peregrino	•				
<b>Mamíferos</b>								
Lagomorpha	Leporidae	<i>Lepus californicus</i>	Liebre	•	◇		◇	
		<i>Sylvilagus sp.</i>	Conejo	◇	◇		◇	
Rodentia	Sciuridae	<i>Spermophilus beecheyi</i>	Ardilla terrestre	•				
	Muridae	<i>Neotoma lepida</i>	Rata de campo				◇	
	Geomyidae	<i>Thomomys bottae</i>	Topo o tuza	◇	◇		◇	
Carnívora	Felidae	<i>Lynx rufus</i>	Gato montes			◇		
	Canidae	<i>Urocyon cinereoargenteus</i>	Zorra gris			◇		
		<i>Canis latrans</i>	Coyote			◇	◇	

Note: the black dots correspond to direct records (observations) and diamonds correspond to indirect registers (footprints, feces, nests).

Joined to the north of the Mediterranean Region California a total of 228 vertebrate species represented eight amphibian species, 29 reptile species, 142 bird species and 49 mammal species. By comparison between the composition of vertebrates recorded in the study area and recorded in the peninsular portion of Baja California, this represents 50% of amphibians (16 species in total for the state) and 41% of reptiles (70 species) as Grismer (2002a and 2002b). 31% of birds (458 species in total) as Grinnell and Miller (1944); Erickson et al. (2001); Howell (2001); Howell et al. (2001) and Conabio (2013) and 55% of mammals (89 species), Martínez Gallardo (2011).

Of all the species recorded in the study area vertebrates, 41 enlisadas find yourself under some category of risk according to NOM-059-SEMARNAT-2010. Which correspond to 17 Endangered species, 22 Subject to Special Protection and two Endangered. These latter two species are the bald eagle (*Haliaeetus leucocephalus*) and the meteorite california (*Microtus californicus*). According to the Red List of the International Union for Conservation of Nature (IUCN), the tricolor thrush (*Agelaius tricolor*) are Endangered (NT), while the plains plover (*Charadrius montanus*), the Bell vireo (*Vireo bellii*) and longnose bat (Mexican *Choeronycteris*) are listed as Near Threatened (NT). While only one species, the peregrine falcon (*Falco peregrinus*), is listed in Appendix II of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES).

During the field trip a total of 33 species were recorded, representing 14.4% of total recorded for the study area (228 spp) species. This low species richness can be attributed to: 1) the limited sampling effort invested and 2) the modification and loss of habitat observed in the study area during the course of prospecting.

Finally, considering the strong anthropic impact observed along the transect Rosarito-El Florido manifested in the loss and fragmentation of habitat, it is estimated that the impact caused by the installation of the

aqueduct on vertebrates in the region will be minimal. However, it is recommended that during the construction of the aqueduct maneuvers to avoid and / or reduce the deterioration of riparian or mesic (streams and creeks) areas, considering the importance of these sites for vertebrates in the region (Yoakum et al. , 1987; Coria, 1997).

#### **IDENTIFICATION, DESCRIPTION AND EVALUATION OF ENVIRONMENTAL IMPACTS**

The process of identifying environmental impacts arising from the project under study was the set of 25 impacts presented as summarized in Table 4. Immediately the methodology used in the identification process is described.

The following table lists the 25 impacts identified in each case the identification code, name or description of the impact simple, activity or project activities that would give rise to this impact is presented, and the attribute of Environmental System that would be listed affected by the impact.

Note 1 - All activities are preceded by a number. If this number is 1.00.00 group, the activity is the engineering stage of the project, if the group is 2.00.00, activity corresponds to developmental stages including site preparation and construction, if the number is group 3.00.00, then the activity corresponds to the operation stage of the project.

**Table 4, List of Impacts**

<i>Núm</i>	<i>C.I.</i>	<i>Name</i>	<i>Activities</i>	<i>Attribute</i>
1	A-16	Issue PST to engage in transportation of materials, personnel, etc., On dirt during construction	2.01.02-excavation and cleaning 2.01.03-removal and management of the organic layer 2.02.01-Demolition, Removal and disposal of asphalt 2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to the base of support 2.02.04-Laying the pipeline 02.02.06-Formwork 2.02.09-paving with asphalt 02.02.14-Foundations	Air Quality
2	A-17	Issue PST while performing earthwork activities and storage areas of terrigenous material	2.01.02-excavation and cleaning 2.01.03-removal and management of the organic layer 2.02.01-Demolition, Removal and disposal of asphalt 2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to the base of support 2.02.07-Fill and compaction 2.02.08-Establishment of the organic layer 02.02.11-drilling pilot tunnel 02.02.12-Widened pilot tunnel 02.02.14-Foundations	Air Quality
3	A-18	Combustion gas emissions from the use of heavy machinery and transport equipment that consumes diesel	2.01.02-excavation and cleaning 2.01.03-removal and management of the organic layer 2.02.01-Demolition, Removal and disposal of asphalt 2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to the base of support 2.02.04-Laying the pipeline 02.02.06-Formwork 2.02.07-Fill and compaction 2.02.08-Establishment of the organic layer 2.02.09-paving with asphalt 2.02.10-location rig 02.02.11-drilling pilot tunnel 02.02.12-Widened pilot tunnel	Air Quality

Núm	C.I.	Name	Activities	Attribute
			02.02.13 Laying the pipe	
			02.02.14-Foundations	
			Electro-2.2.15 Installation	
			02.02.16-tightness test and physical integrity of the pipeline	
4	A-15	Contribution to climate change	3.00.00-stage operation	Air Quality
5	B-11	Preservation of regional aquifers	3.00.00-stage operation	Performance aquifers
6	B-12	Changing the flow conditions of surface waters due to construction activities.	2.02.02-Cortes, excavation and disposal of excess material	Flow conditions
7	B-15	Pollution discharge to the environment, the wastewater generated by sanitation workers during construction	2.02.03-take and hauling of material to the base of support	
			2:03:02-installation of camps	Water Quality
8	PB-06	Soil contamination due to the irresponsible disposal of construction waste	2.00.00-Development Stage	Soil Biochemistry Viability
9	PB-05	Management lubricants and waste during maintenance of heavy equipment used in construction	2.03.01-Generation, handling and disposal of solid, liquid and air emissions	Soil Biochemistry Viability
10	C-21	Exploiting bank of materials	2.02.03-take and hauling of material to the base of support	Grade Erosion
11	D-02	Impact on wildlife when land is despalman with thick vegetation	2.01.02-y Desmonte despalme	threatened Species
12	D-03	Rescued species and seed bank of species affected by the excavation cleaning terrain	2.01.01-Identification, rescue and seed collection	wild vegetation
13	E-03	Noise emission during construction	2.01.02-excavation and cleaning	noise
			2.01.03-removal and management of the organic layer	
			2.02.01-Demolition, Removal and disposal of asphalt	
			2.02.02-Cortes, excavation and disposal of excess material	
			2.02.03-take and hauling of material to the base of support	
			2.02.04-Laying the pipeline	
			02.02.06-Formwork	
			2.02.07-Fill and compaction	
			2.02.08-Establishment of the organic layer	
			2.02.09-paving with asphalt	
			2.02.10-location rig	
			02.02.11-drilling pilot tunnel	
			02.02.12-Widened pilot tunnel	
			02.02.13 Laying the pipe	

Núm	C.I.	Name	Activities	Attribute
14	G-08	Increased public sector income in respect of the investment in the project	02.02.14-Foundations Electro-2.2.15 Installation 02.02.16-tightness test and physical integrity of the pipeline 2.00.00-Development Stage	Government Revenue
15	G-10	Economic income through wages, contracts and procurement for the construction of the aqueduct	2.00.00-Economic Development Phase Stability-stage operation	Economic Stability
16	C-11	Waste generation office	2.03.02-Installation camps	Soil Biochemistry Viability
17	C-22	Change in land use	1.00.00-Step Engineering	Land Use
18	C-23	Elimination of putting mulch down in erosion risk in building the aqueduct	2.02.07-Fill and compaction	Grade Erosion
19	B-13	Discharge of waste water used in hydrostatic testing of the aqueduct	02.02.16-tightness test and physical integrity of the pipeline	Water Quality
20	B-14	Sludge generation by tunneling activities	02.02.11-drilling pilot tunnel	Water Quality
21	F-04	Availability of drinking water	02.02.12-Widened pilot tunnel	utilities
22	G-04	The new availability of drinking water provides economic stability and growth potential of the region	3.00.00-stage operation	Economic Stability
23	G-05	Increased public sector income in taxes buy / sell water generated by the desalination plant.	3.00.00-stage operation	Government Revenue
24	F-06	Water availability guarantees social welfare of the region.	3.00.00-stage operation	Social welfare
25	PB-30	New availability of Potable Water	3.00.00-stage operation	Availability of resources

## PREVENTIVE MEASURES AND MITIGATION OF ENVIRONMENTAL IMPACTS

A way to index and to facilitate access to the information presented below, the Table5 presents a brief description of the mitigation measures proposed or preventing negative impacts identified for each project under study. The table includes the number of impact according to the assigned sequence in the previous chapter, so you can go to the information in that table with the characterization of impacts.

**Table 5, Prevention and Mitigation Measures Proposed**

<i>Núm</i>	<i>Activities</i>	<i>Name</i>	<i>Action</i>
1	2.01.02-excavation and cleaning 2.01.03-removal and management of the organic layer 2.02.01-Demolition, Removal and disposal of asphalt 2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to the base of support 2.02.04-Laying the pipeline 02.02.06-Formwork 2.02.09-paving with asphalt 02.02.14-Foundations	Issue PST to engage in transportation of materials, personnel, etc., On dirt during construction	<ul style="list-style-type: none"> <li>• Soak the roads with recycled water</li> <li>• Keep movement of vehicles at low speed.</li> <li>• Ensure that the transported material is covered with tarps</li> </ul>
2	2.01.02-excavation and cleaning 2.01.03-removal and management of the organic layer 2.02.01-Demolition, Removal and disposal of asphalt 2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to the base of support 2.02.07-Fill and compaction 2.02.08-Establishment of the organic layer 02.02.11-drilling pilot tunnel 02.02.12-Widened pilot tunnel 02.02.14-Foundations	Issue PST while performing earthwork activities and storage areas of terrigenous material	<ul style="list-style-type: none"> <li>• Soak material stacks</li> <li>• Cover the material with tarps during storage and transport,</li> <li>• Suspend the activities of terrigenous material handling during episodes of strong wind</li> </ul>
3	2.01.02-excavation and cleaning 2.01.03-removal and management of the organic layer 2.02.01-Demolition, Removal and disposal of asphalt 2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to the base of support 2.02.04-Laying the pipeline 02.02.06-Formwork	Combustion gas emissions from the use of heavy machinery and transport equipment that consumes diesel	<ul style="list-style-type: none"> <li>• Maintain machinery and utilize technologies that make more efficient combustion, a way to minimize greenhouse gas emissions and reduce the consumption of diesel</li> </ul>

Núm	Activities	Name	Action
	2.02.07-Fill and compaction 2.02.08-Establishment of the organic layer 2.02.09-paving with asphalt 2.02.10-location rig 02.02.11-drilling pilot tunnel 02.02.12-Widened pilot tunnel 02.02.13 Laying the pipe 02.02.14-Foundations Electro-2.2.15 Installation 02.02.16-tightness test and physical integrity of the pipeline		
4	3.00.00-stage operation	Contribution to climate change	<ul style="list-style-type: none"> <li>Minimize the electricity demand by specifying efficient pumping equipment ensuring their proper maintenance</li> </ul>
6	2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to the base of support	Changing the flow conditions of surface waters due to construction activities.	<ul style="list-style-type: none"> <li>Integrate engineering aqueduct, hydraulic analysis of runoff to ensure that contractors perform the project under way to ensure that the effects of the rains undesirable consequences due to blockage of natural water runoff will.</li> <li>Integrate work in overseeing the ongoing review of this aspect, particularly during the wet season.</li> </ul>
7	2:03:02-installation of camps	Pollution discharge wastewater sanitation workers during construction	<ul style="list-style-type: none"> <li>Hiring toilet installation and maintenance services for the same company to ensure a professional management</li> </ul>
8	2.00.00-Development Stage	Soil contamination due to the irresponsible disposal of construction waste	<ul style="list-style-type: none"> <li>Minimize generation volumes</li> <li>Segregate waste by material type</li> <li>Collect the residue stream to produce adequate volumes of collection</li> <li>Identify alternatives for reuse or gathering places</li> <li>Dispose of hazardous waste in accordance with the provisions of regulation</li> </ul>
9	2.03.01-Generation, handling and disposal of solid, liquid and air emissions	Management of waste lubricants and maintenance of heavy equipment used in construction	<ul style="list-style-type: none"> <li>Ensure proper management of waste generated residual hydrocarbons maintenance of heavy machinery</li> </ul>

Núm	Activities	Name	Action
10	2.02.03-take and hauling of material to the base of support	Exploiting bank of materials	<ul style="list-style-type: none"> <li>Use solely material fully authorized banks</li> </ul>
11	2.01.02-y Desmonte despalme	Impact on wildlife when land is despalman with thick vegetation	<ul style="list-style-type: none"> <li>Develop, register and implement a program for the Protection of Wildlife whose purpose is to establish and control the actions that must be performed to achieve the desired level (and agreed with the authority) to protect wildlife.</li> <li>Program implementation will require contractors in charge of clearing the areas where endangered species can be found, have a responsibility in this respect, trained to the location, identification and management of endangered species of organisms</li> </ul>
13	2.01.02-Excavation and cleaning 2.01.03-removal and management of the organic layer 2.02.01-Demolition, Removal and disposal of asphalt 2.02.02-Cortes, excavation and disposal of excess material 2.02.03-take and hauling of material to support base-2.02.04 Laying the pipeline 02.02.06-Formwork 2.02.07-Fill and compaction 2.02.08-Establishment of the organic layer 2.02.09-paving with asphalt 2.02.10-location rig 02.02.11-drilling pilot tunnel 02.02.12-Widened pilot tunnel 02.02.13 Laying the pipe 02.02.14-Foundations 02.2.15 Installation Electro 02.02.16-tightness test and physical integrity of the pipeline	Noise emission during construction	<ul style="list-style-type: none"> <li>Limit noise dayshift</li> </ul>
16	2.03.02-Installation camps	Waste generation office	<ul style="list-style-type: none"> <li>segregation, recycling and reuse</li> </ul>
17	1.00.00-Step Engineering	The selection of the aqueduct stroke could be cause for land use changes	Stroke the selection so that it is not necessary to cause a change in land use.

Núm	Activities	Name	Action
			<p>This condition can be achieved starting from the basis that it is an underground project during its operation stage presence will have an imperceptible effect out of water transport to involve the target areas.</p> <p>To ensure that no change in land use will occur should this project based on the following criteria:</p> <ul style="list-style-type: none"> <li>• Making the right of way to other linear infrastructure projects such as gas pipelines, electric transmission lines, roads.</li> <li>• Prevent Stroke surfaces use natural vegetation, and if this is inevitable at some point, implement the rehabilitation of soil and vegetation to completion of construction land use remains the same.</li> </ul>
18	2.02.07-Fill and compaction	Elimination of putting mulch down in erosion risk in building the aqueduct	<ul style="list-style-type: none"> <li>• Create, record and implement a conservation program of the Organic Layer Soil Protection and Reforestation Disassembled zones whose purpose is to establish the actions and controls that should be made to achieve the desired level (and agreed with the authority) protection the soil from rain and wind erosion, by applying the necessary measures for the preservation of topsoil, and the restoration of the organic layer.</li> <li>• Contractors must have a responsible for this aspect, specializing in the management of natural resources</li> </ul>
19	02.02.16-tightness test and physical integrity of the pipeline	Discharge of waste water used in hydrostatic testing of the aqueduct	<ul style="list-style-type: none"> <li>• The discharge must adhere to the specifications in the NOM-002-SEMARNAT-1996, which sets limits that are subject to discharges of wastewater to municipal sewage systems</li> </ul>
20	02.02.11-drilling pilot tunnel 02.02.12-Widened pilot tunnel	Sludge generation by tunneling activities	<ul style="list-style-type: none"> <li>• It should formulate specific programs for the management and disposal of the sludge that is to be produced in each of the points to be constructed by tunneling.</li> <li>• It should integrate special authorization procedure for</li> </ul>



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<i>Núm</i>	<i>Activties</i>	<i>Name</i>	<i>Action</i>
			handling drilling muds so that there is a clear responsibility of the person authorizing these functions. <ul style="list-style-type: none"><li>• A touch who perform authorization of these tasks will be important to ensure that the management will be given to the sludge will not cause violation of the regulations concerning the discharge of wastewater and waste management and that no damage will be caused to neighbors or environmental effects.</li><li>• The sludge generated will be disposed at approved sites.</li><li>• Logs shall be used where the Responsible Drilling, sludge characteristics and place of discharge are included.</li></ul>

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## ENVIRONMENTAL FORECASTING AND IF EVALUATION OF ALTERNATIVES

Of all identified impacts are presented in Chapter V, are only those that can only be mitigated, which will determine the environmental footprint of the project. Below is a discussion of the impact Nonpreventable occurs and therefore have some residual effects in the environment. They are grouped so as to facilitate understanding of their importance:

- a. During construction, the following impacts may only be mitigated:
  - Issue the following air pollutants:
    - PST or during movement activities, and terrigenous material warehouse
    - PST activities or during transport of materials and equipment to construction
    - or combustion gases by the use of heavy machinery that consumes diesel
  - Noise emission during construction

All these impacts can control and monitor the points of generation, thereby ensuring that its effects are minimized and that alterations are insignificant, they have cut temporary, low extension, or they do not affect the quality of life in the neighborhood. These impacts will cease when the construction of the plant is completed.

### Environmental Monitoring Program

For environmental project management, program implementation and strategies for environmental management of the project is proposed. These strategies are:

Para la administración ambiental del proyecto, se propone la implementación del programa o estrategias para el manejo ambiental del proyecto. Estas estrategias son:

- a) The Environmental Protection Program for the Development Stage (PPAED)

As part of the program, a set of specifications for conducting ongoing audits of environmental performance, to be conducted by third party with, and they will confirm that the purpose of project management is in close engagement with the environmental objectives are integrated.

*Program*

### **The Environmental Protection Program for the Development Stage**

*Objectives*

In its first phase, the PPAED be the complete list of specifications for environmental management should be to secure the General Contractor and all Subcontractors.

The list of specifications referred to above, will join the pack information of the tender, warning the contestants that the winning bidder must have a guarantee or insurance to comply with these conditions, having the expectation that if necessary, held responsible procurement necessary to correct any aspect of environmental compliance or be warned and turned away. Also notice that compliance with environmental obligations will be required as part of the authorization of advance estimates. Finally, the contestants will be noted that the successful bidder shall at all times subject to audits of environmental compliance to which should meet with staff trained in the subject and the documentary evidence available.

During construction, ensure responsible environmental auditing contract with a qualified firm, whose responsibility will be to provide continuous monitoring of environmental compliance for the general contractor and its subcontractors are subject specifications. The office also being checked to monitor the environmental specifications of PAEE.

The environmental audit firm shall report immediately to the Project Manager to find any significant or serious failure. Monthly draw up a technical report of the findings in the audit of the month, in time they can be used for the administrative management of the

estimates of progress of the work.

The office will prepare a report every six months detailing how it has complied with the environmental specifications of the project. This report is delivered PROFEPA and SEMARNAT.

*Responsible*

The Project Manager is the one who will notice the proper implementation of this program, but for execution hire an environmental audit despite showing sufficient capacity to audit the contractor and subcontractors experience.

### **Conclusions**

There are now large industrial parks, and housing developments, without feasibility for development by the inability to compromise CESPT facing water delivery these projects demand. The development pressure imposed on the limited water resources, has resulted in this region are paid prices higher water in the global context.

This project aims to solve what is probably the biggest problem facing the region to accommodate the economic development that society demands. For years it was anticipated that the future implied seawater desalination, the future in our present so far, the commitment is now to rise to the height that involves the development of this project in a way that your environment is properly inserted.

Based on the balance environmental impacts vs economic and social impacts, the conclusion to recommend the project, ensuring emphasize the obligation to implement programs and measures to protect the environment that will ensure excellent environmental performance during the completion of this project, and achieve a low ecological costs and benefits that this project will generate.