Transboundary Environmental Assessment (EA) for Coastal Tijuana Wastewater Collection Improvement Projects

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Comisión Estatal de Servicios Públicos de Tijuana
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Section 1
Purpose and Need for Action

1.1 Introduction

The United States Environmental Protection Agency (EPA) administers the Border Environmental Infrastructure Fund (BEIF), which provides grant funding for water and wastewater infrastructure projects within 100 kilometers (km) of the international boundary between the United States (U.S.) and Mexico. EPA policy for use of border infrastructure funds requires the evaluation and certification of projects by the Border Environment Cooperation Commission (BECC) as a condition for grant award. As part of the BECC certification process, the proposed action must comply with both EPA National Environmental Policy Act (NEPA) regulations, as well as Mexican environmental regulations.

The purpose of this document is to comply with NEPA documentation requirements for the proposed federal action under consideration, which consists of expanding the public wastewater collection system in Tijuana, Baja California, Mexico, to serve areas that currently lack this service and rely on septic tanks, latrines or open discharges for their wastewater disposal.

1.2 Legal Framework

EPA has determined that it will follow the NEPA and EPA regulations for environmental impacts in the U.S. from projects located in the U.S. or Mexico (EPA 1997a). The EPA follows the U.S. Agency for International Development (AID) approach as summarized in Title 22 CFR Part 216.1-216.10 as guidance for assessing environmental impacts in Mexico. The AID regulations envision collaboration with affected countries to the maximum extent practicable in developing an EA. AID regulations authorize use of either a study prepared by an international body in which the U.S. is a participant, or a concise review of the relevant environmental issues, with appropriate documentation, as a substitute for an EA.

This Environmental Assessment (EA) was prepared using Council of Environmental Quality (CEQ) regulations 40 CFR Parts 1500-1508 and EPA regulations (40 CFR Part 6) as guidance. This EA documents the environmental consequences in the U.S. of the proposed federal action. In order to evaluate the environmental impacts of the proposed federal action in Mexico a separate Manifestación de Impacto Ambiental (MIA) was prepared for this project and submitted in June 2006 to the Secretariat of Environmental Protection of the state of Baja California. The project was authorized in the final resolution document No. SPA-TIJ3- 267/06 issued on October 19, 2006.

This EA is extensively based on information contained in the Potable Water and Wastewater Master Plan for Tijuana and Playas de Rosarito (CDM, 2003); the Environmental Assessment for the Potable Water and Wastewater Master Plan for Tijuana and Playas de Rosarito (CDM, 2003), and; the Manifestación de Impacto Ambiental (CDM, 2003) prepared for the Master Plan to comply with environmental review requirements of the Baja California State Ecology Department. Additional information was obtained from previous environmental impact statements and other sources, as referenced. A description of the project alternatives was provided by the Commisión Estatal de Servicios Públicos de Tijuana (CESPT), including projected flows, pipeline alignments, diameters, and wastewater treatment and effluent disposal methods.

Potential adverse and beneficial environmental impacts of the action alternatives, as well as the "no action" alternative are described in the EA. The document was prepared in general accordance with the BEIF Environmental Assessment Guidelines developed by BECC. It includes an evaluation of current conditions, and potential impacts including, but not limited to, near-term, long-term and cumulative. The main objective of this document is to describe transboundary impacts (i.e. impacts in the United States) associated with the alternatives evaluated in the planning documents previously described, although reference is also made to potential impacts in Mexico to the extent that they may influence effects in the U.S.

1.3 Project Location and Study Area

CESPT is responsible for providing water and sanitation service to the municipalities of Tijuana and Playas de Rosarito, which in the year 2005 had a combined population of approximately 1,484,005 according to the National Institute of Statistics, Geography and Informatics (INEGI, 2005, by its initials in Spanish). According to the Master Plan, the population of the service area by 2025 is projected to be 2,355,000.

The municipality of Tijuana in the State of Baja California is adjacent to the City of San Diego, California on the U.S.-Mexico border. The municipality of Playas de Rosarito is immediately south of Tijuana and is part of the larger metropolitan area.

The proposed action would provide wastewater service to two communities in southwestern coastal Tijuana. The El Monte and Granjas la Esperanza communities are located south of the U.S.-Mexican Border, approximately 4 miles (6.5 km) and 4.6 miles (7.5 km) respectively. These communities are located in the San Antonio de los Buenos and San Antonio del Mar basins and, thus, are outside of the Tijuana River watershed.

The study area for this EA is defined as the areas in the U.S. adjacent to the border that may be adversely affected by implementing the proposed actions in Mexico. The study area or the area that could be affected by implementing the proposed action was defined by the BECC to be limited to an area within a 6.2-mile (10 km) radius north of

the US-Mexican border which includes the Tijuana River and its estuary in the U.S. and coastal areas directly north of the border. Figure 1-1 shows the locations of the proposed action in relation to the area of interest.

1.4 Purpose and Need for Proposed Action

The CESPT is seeking certification from BECC for the expansion of the City's wastewater collection system to serve coastal areas that currently rely on septic tanks, latrines or open discharges for their wastewater disposal. BECC certification is required to become eligible for funding from the BEIF administered by the North American Development Bank (NADB). The purpose of the proposed action is to address environmental and public health risks associated with inadequate collection, treatment and disposal of wastewater.

The proposed action will protect public health by providing appropriate wastewater collection to about 2,700 residents that currently lack access to these services. The project will reduce or eliminate inappropriate wastewater disposal by providing collection and conveying flows to a wastewater treatment plant, resulting in improved environmental and sanitation conditions.

The proposed action would be implemented in the southwestern coastal area within the municipality of Tijuana and consists of 8 miles (13,262 meters) of wastewater collection (sewer) lines ranging in diameter from 8 to 15 inches (20 to 38 centimeters). Wastewater from Granjas la Esperanza would be treated at the existing San Antonio de Los Buenos wastewater treatment plant while wastewater from El Monte would be treated at the Tecolote La Gloria wastewater treatment plant currently under construction.

Table 1-1
Summary of Proposed Action

Proposed Action	Unserved Community	Population Served	Wastewater Generated (L/s)	Service Details
Wastewater Services	Granjas La Esperanza	1,462	0.068 MGD (2.98 L/s)	7,292 m sewer pipeline connecting to San Antonio de los Buenos WWTP
	El Monte	1,243	0.057 MGD (2.53 L/s)	5,970 m sewer pipeline connecting to Tecolote-La Gloria WWTP

1.5 Scope of Environmental Assessment

The purpose of this EA is to document and make public the potential transboundary environmental impacts that may arise from the implementation of the Proposed Action, the no action, or any other action alternative considered by CESPT to expand the coverage of the wastewater collection systems. As defined in CEQ regulations (§ 1508.25), the scope of this EA is limited to the transboundary environmental resources and services within the area of interest in the U.S. that may be affected by the no action

alternative or one of the action alternatives. This EA was prepared following the scope of work presented under BECC's "BEIF Environmental Assessment Guidelines" for Mexican environmental infrastructure projects for which BEIF funding is sought. The organization of this document follows that established by the BECC scope of work.

The following general topics are included in the scope of this EA:

- Description of Alternatives
- Environmental Setting
- Direct and Indirect Transboundary Impacts Analysis
- Cumulative Transboundary Impacts Analysis

1.6 Relevant Environmental Issues

In accordance with CEQ regulations (§ 1500.4 and § 1501.7) and BECC-BEIF environmental requirements, issues to be addressed relating to this proposed action, are the direct, indirect and cumulative transboundary impacts to land use, air quality, water resources, wetlands, biological resources, scenic, historic and cultural resources, noise, traffic, socio-economic and public health conditions and environmental justice.

Environmental and other issues relevant to all alternatives, including the Proposed Action, are discussed in greater detail in Sections 3 and 4. Environmental issues not relevant to the project are not discussed beyond this section, or are covered in minimal detail. Environmental issues and resources are identified as relevant or not relevant based on the possibility of any of the alternatives affecting that particular issue or resource. The following list of environmental and other issues was initially considered for inclusion in the detailed evaluation:

- Historic and Cultural Resources
- Geology
- Hazardous Waste
- Solid Waste
- Land Use
- Air Quality and Climate
- Noise
- Odor
- Water Resources
- Groundwater
- Biological Resources
- Floodplains
- Wetlands
- Coastal Resources
- National Landmarks
- Wild and Scenic Rivers
- Socioeconomics and Environmental Justice
- Public Health
- Municipal Services

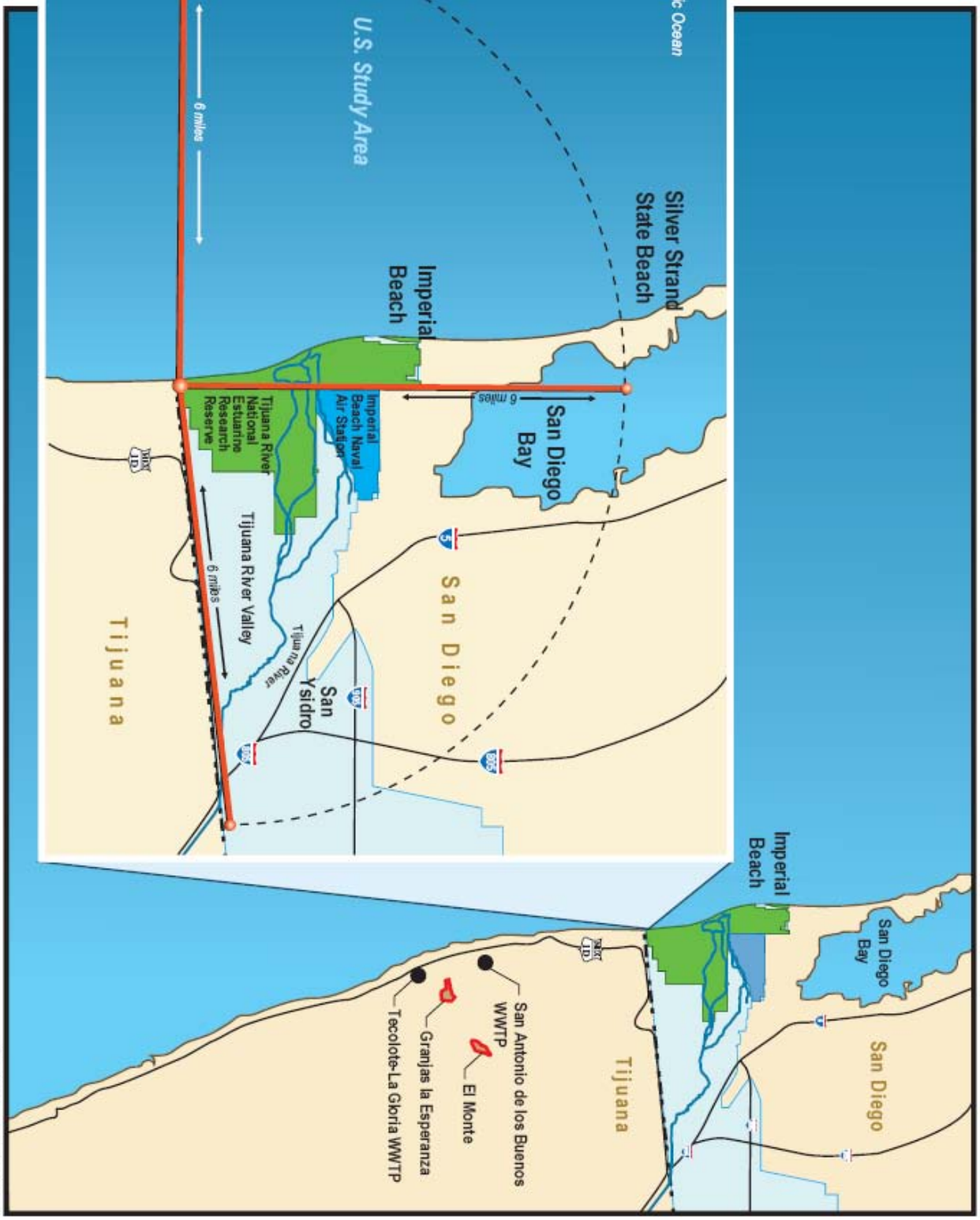

Figure 1-1 Area of Interest

The coastal communities of Tijuana are between 8 and 14 miles (13-23 km) south of the U.S.-Mexico international border. Many environmental resources, including groundwater and floodplains, in the U.S. would not be affected because of the projects' distance south of the border. Municipal services in Mexico would be improved by increasing the potable water services and collection coverage of the wastewater system, but municipal services in the U.S. would not be affected by any of the alternatives.

Many resources in the U.S. would not be affected because all construction activities for the project would occur in Mexico. There are no wild and scenic rivers in the U.S. study area that could be affected. The Tijuana River Estuary is a national natural landmark. It would not be directly affected because there is no construction in the U.S. Potential indirect effects could occur through changes in the Pacific Ocean's water quality along the U.S. coast. Effects to the Tijuana River Estuary are addressed in the water quality and biological resources analyses.

Any hazardous or solid waste produced during project construction would not affect the study area in the U.S. because all waste would remain, be handled, and disposed of in Mexico, according to applicable Mexican regulations. There would be no direct or indirect effects to U.S. landfills or hazardous waste sites from the project. Land use in Mexico may be affected if construction activities took place within areas not previously disturbed or currently in use, however much of the construction activity would take place on previously disturbed land. The project would not affect land use in the U.S. because the proposed action does not include construction in the U.S.

Construction activities that generate noise, dust and other air quality emissions would not affect the U.S. because of the distance of the construction sites to the U.S. Additionally; construction in Mexico would not affect historic and cultural resources and geology in the U.S. because of the distance to the U.S.-Mexico border.

The alternatives could affect surface water quality by changing wastewater discharges to the Pacific Ocean. Changes in coastal water quality could indirectly affect biological and coastal resources in the U.S. Terrestrial biological resources would not be directly affected because of the distance of the projects to the U.S. If water quality along U.S. beaches changes, the public health of swimmers and beach-goers could be affected. Additionally, if beaches are closed for public health reasons, recreation and tourism industries could be affected. The project would improve public health in Mexico, and because of frequent border crossings, this could reduce potential health threats to the U.S. The U.S. border region shares close economic ties with the Tijuana region. This border economy could improve if the proposed action is implemented. Environmental justice in the U.S. would not be an issue because construction activities that could affect low income and minority populations would not occur within the U.S.

In summary, hazardous and solid waste, land use, wild and scenic rivers, and municipal services in the U.S. study area would not be directly or indirectly affected by

the alternatives and therefore are not relevant for further detailed evaluation. Cultural resources, geology, groundwater, floodplains, and environmental justice are covered in the impacts evaluation to further assess potential indirect effects. Surface water resources and quality, biological resources, wetlands, coastal resources, socioeconomics, and public health may be relevant environmental resources and services are linked to the alternatives evaluation, and are assessed in greater detail in this EA. Also, potential indirect effects of construction activities on air quality and noise in the U.S. are analyzed in this EA.

1.7 Regulatory Drivers and Guidance

The US and Mexico have regulations to protect the environment and improve environmental quality. In addition, there are several international agreements between both countries aimed at increasing cooperation to address shared environmental issues and protect shared natural resources. Relevant international and US laws and regulations as they apply to the proposed project are described in Appendix A

Section 2
Description of Alternatives

This section describes alternatives to provide wastewater collection service to the southwestern coastal communities of El Monte and Granjas la Esperanza in the city of Tijuana. These areas currently lack adequate wastewater collection and treatment service and rely on open ditches or latrines for their wastewater disposal needs.

Action alternatives for two alternative wastewater conveyance alignments to the communities as well as the no action alternative are analyzed. A description of existing infrastructure and conditions is included in Section 2.1.

2.1 Existing Infrastructure

The majority of the residents of the city of Tijuana have access to sewer service. There are, however, some pockets in the city that still lack access to this service. CESPT plans to reach full coverage and thus is implementing sewer expansion projects such as those being assessed in this EA. In addition, CESPT has been implementing significant sewer system rehabilitation projects throughout its service area.

San Antonio De Los Buenos WWTP

The San Antonio De Los Buenos plant, built in 1987 and upgraded in 2003, has capacity to treat up 25 mgd (1,100 L/s) of Tijuana and Playas de Rosarito wastewater. The plant is located 9 miles (15 km) south of the border. It includes a pumping station, aeration and sedimentation ponds, chlorination system, sludge dewatering, electrical substation, offices, laboratory and a blower building. The plant discharges effluent into the Pacific Ocean. The existing capacity of the San Antonio de los Buenos WWTP is 25 mgd (1,100 L/s). The 2004 actual inflows were 23.5 mgd (1,029.5 L/s) and flows in 2007 have reached 32 mgd (1,424 L/s). It is expected that the influent to this plant will be reduced to within its capacity once the Japan Bank for International Cooperation (JBIC) wastewater treatment facilities start operations by the end of 2008.

The plant is located approximately 15 km (9 miles) south of the border and discharges a combination of treated wastewater and chlorinated-only wastewater directly into the ocean. The latter is a result of influent flows exceeding the plant capacity. It has been posed that the coastal currents in the region sometimes move from south to north (see description below), creating the possibility that some discharges from the San Antonio de Los Buenos Wastewater Treatment Plant may affect the quality of the water along the coastal US. Currently this plant together with the International WWTP provides treatment to all the wastewater generated in Tijuana.

By 2013, the wastewater generated by the population growth in the west area of Tijuana would exceed the capacity of the plant; therefore, additional treatment capacity would

be needed such as from a WWTP in the Alamar valley. Wastewater treatment facilities in the Alamar valley are still in the planning phase and therefore are not included in this analysis.

JBIC Facilities

Currently there are three wastewater treatment plants under construction, referred to as the JBIC facilities for their funding source, a loan from the Japan Bank for International Cooperation. Two of the plants, La Morita and Monte de los Olivos which start operations in 2008, will serve some areas in the Tijuana River watershed that currently have wastewater collection service and treatment, provided either at South Bay International Water Treatment Plant (SBIWTP) in San Diego, or at the San Antonio de los Buenos WWTP along the coast in Mexico. As a result flows will be reallocated in the system and the San Antonio de los Buenos WWTP capacity will be available to receive flows generated at Granjas la Esperanza. La Morita WWTP will provide advanced secondary treatment with a design capacity of 5.8 mgd (254 L/s.) WWTP expansion to 8.7 mgd (380 L/s) is anticipated. The Monte de los Olivos WWTP will provide advanced secondary treatment with a capacity of 10.4 mgd (460 L/s.) It will be constructed in two modules of 5.2 mgd (230 L/s) each.

Tecolote-La Gloria WWTP

The Tecolote-La Gloria WWTP is one of the three plants financed by the JBIC Credit. It is located south of the San Antonio de los Buenos WWTP. Figure 2-1 shows the Tecolote-La Gloria WWTP within the Tijuana coastal area. The plant should be operational in 2009 and it will have a treatment capacity of 8.7 mgd (380 L/s) and discharge effluent into the Pacific Ocean. The Tecolote-La Gloria WWTP will provide advanced secondary treatment using oxidation ditch activated sludge treatment process and include construction of two modules of primary and secondary treatment of 4.3 mgd (190 L/s). This would satisfy demands in its service area through the year 2025.

Table 2-1 summarizes the WWTP capacity and expected flows of the two WWTP serving the project communities.

Table 2-1
Wastewater Treatment Plants Serving Tijuana's Coastal Areas

WWTP	Design Capacity (MGD)	Expected Flows (MGD)							
		2007	2008	2009	2010	2015	2020	2025	Discharge
San Antonio de los Buenos [1]	25	32	20	21	22	14*	21*	25*	Ocean
Tecolote la Gloria	8.7	-	-	3.2	3.9	6.1	6.7	7.5	Ocean

[1] Assuming La Morita and Monte de los Olivos WWTP in operation
* Assuming Alamar WWTP in operation

2.2 No Action Alternative

The No Action Alternative defines future conditions in the project area if wastewater collection and treatment is not provided for the affected colonias in the coastal Tijuana area; it represents the "future without the project" condition. The planning period for this analysis is defined through 2025. The No Action Alternative includes wastewater treatment plants and associated collection systems that exist in 2008 or are authorized, funded projects.

2.2.1 Unserved Areas

The colonias El Monte and Granjas la Esperanza in the Tijuana coastal area do not have adequate wastewater treatment services and rely on septic tanks, latrines and open ditches to meet their wastewater disposal needs. Table 2-2 identifies the two (2) colonias being considered for this project and their population. Under the No Action Alternative, these colonias would continue without any wastewater collection services. Table 2-1 also shows expected wastewater generated from these areas.

Table 2-2
Areas Served by the Proposed Projects

Unserved Community	Current Population	Projected Population	Current Wastewater Flows Generated	Projected Wastewater Flows Generated
Granjas La Esperanza	1,462	1,903	0.068 mgd (2.98L/s)	0.089 mgd (3.88 L/s)
El Monte	1,243	1,693	0.058 mgd (2.53 L/s)	0.079 mgd (3.45 L/s)
Total	**2,705**	**3,596**	**0.12 mgd (5.51 L/s)**	**0.17 mgd (7.33 L/s)**

In addition to these colonias and their associated flows, there are other uncollected residential sewage flows that run into canyons and creeks and discharge untreated to the ocean. Those flows would be connected to the Tecolote-La Gloria wastewater treatment plant when it becomes operational in 2009. Under the No Action alternative the only wastewater discharged untreated to the ocean would be the 0.17 mgd (7.33 L/s) from the project areas.

2.3 Action Alternatives

There are two action alternatives for the proposed action, both consisting of the expansion of the wastewater collection systems to the unserved coastal areas. The action alternatives propose different pipeline alignments and pump stations that connect the unserved colonias (Granjas La Esperanza, and El Monte) to the wastewater treatment plants. The locations of the unserved areas and WWTP's are shown in Figure 2-1.

Under Action Alternative A (preferred), wastewater generated in Granjas La Esperanza would be delivered for treatment to the existing San Antonio de los Buenos (Punta Bandera) WWTP through a gravity line of approximate 5120 ft (1561 m). Wastewater from El Monte would be delivered by gravity to the Tecolote-La Gloria WWTP through a gravity line of approximate 2870 ft (875 m). Both WWTPs discharge effluent into the Pacific Ocean off the coast of Mexico.

Under Action Alternative B, wastewater generated in Granjas La Esperanza would be delivered at the Tecolote-La Gloria WWTP using a 4 HP lift station and a 6-inch (15 cm) pressurized line to convey the flows approximately 3600 ft (1097 m). Wastewater generated in El Monte would require two lift stations and two pressurized lines of 400 ft and 1940 ft (121 m and 590 m) to convey the flows to the Tecolote-La Gloria WWTP.

Figure 2-1 Project Setting

Both alternatives A and B are equal in terms of the population served and the wastewater flows generated and collected from both communities. Figures describing the location of Alternative A and Alternative B are presented in Appendix B.

2.3.1 Conveyance Alignment Alternative-A

The pipeline alignments in Alternative A would follow streets and roads in the colonias in which they are proposed. The collector lines in Granjas la Esperanza would flow by gravity to the San Antonio de los Buenos WWTP and the El Monte system would flow by gravity to the Tecolote La Gloria WWTP. Tables 2-3 and 2-4 summarize proposed pipelines for each of the unserved colonias. Table 2.2 describes total projected wastewater flows generated by Granjas la Esperanza and El Monte. As previously described, CESPT estimates that inflows to the SAB WWTP will be reduced after the construction of the La Morita and Monte de los Olivos WWTP, since these plants have been designed to relieve the peak flow conditions in San Antonio de los Buenos WWTP. Once these WWTPs come on-line in 2008, San Antonio de los Buenos would have capacity to treat the average annual and peak flows from Granjas la Esperanza.

Table 2-3 Collection System Service Details to Connect Unserved Colonias to SAB WWTP			
Unserved Community	**Number of Connections**	**Proposed Pipeline Length (ft/m) - Diameter (in)**	**Status of Trunk Line**
Granjas La Esperanza	348	Total – 23,920 ft (7,292 m) 511 ft (156 m) - 4" 18,290 ft (5,575 m) - 8" 5, 121 ft (1,561 m) - 15"	Constructed

Table 2-4 Collection System Service Details to Connect El Monte to Tecolote-La Gloria WWTP			
Unserved Community	**Number of Connections**	**Proposed Pipeline Length (ft /m) - Diameter (in)**	**Status of Trunk Line**
El Monte	296	Total – 19,580 ft (5,970 m) 16,715 ft (5,095 m) - 8” 2,870 ft (875 m) - 10”	Proposed

The Tecolote-La Gloria plant, with a capacity of 8.7 mgd (380 L/s), would have sufficient capacity in the short and long term to treat the average annual and peak flows from El Monte. Alternative A uses gravity flow, offering greater reliability and minimized energy need over the life of the facility.

2.3.2 Conveyance Alignment Alternative B

Alternative B represents a different wastewater conveyance alignment from each of the unserved colonias to the appropriate WWTP. The collector lines in Granjas la Esperanza would flow mostly by gravity, but the system would require a lift station with capacity of 0.09 mgd (3.9 L/s) that would lift the raw wastewater to the Tecolote la Gloria WWTP. For El Monte system, the pipeline alignments in Alternative B would follow streets and roads in the colonias in which they are proposed, and vary in their terminal routing from WW-Alternative A. The wastewater collection system would require two lift stations and their corresponding pressurized lines to convey the flows to the Tecolote La Gloria WWTP. Tables 2-5 summarizes proposed pipelines for each of the unserved colonias. Alternative B requires slightly less pipe but with use of lift stations has greater complexity and energy need.

Table 2-5 Collection System Service Details to Connect Unserved Colonias to Tecolote la Gloria WWTP			
Unserved Community	**Number of Connections**	**Proposed Pipeline Length (ft/m) - Diameter (in)**	**Status of Trunk Line**
Granjas La Esperanza	348	Total – 22,390 ft (6,825 m) 511 ft (156 m) - 4" 18,290 ft (5,575 m) -8" 3,589 ft (1,094 m) - 6"	Proposed
El Monte	296	Total – 19,100 ft (5,814 m) 16,715 ft (5,095 m) - 8” 2,359 ft (719 m) - 6”	Proposed

Section 3
Environmental Setting

The purpose of this section is to describe the environmental resources in the U.S. that could potentially be affected by the project alternatives described in Section 2. The description of the environmental setting focuses on environmental resources located within the U.S. near the U.S.-Mexico border. However, environmental resources in Mexico are also described in some instances when exists a direct correlation between resources in both countries (e.g. water resources, socioeconomic). Figure 1-1 depicts the area of interest.

The environmental setting in the vicinity of the border in the U.S. is characterized by a combination of industrial, agriculture, rural and open space land uses. Important features of this area include the Pacific Ocean; the Tijuana River National Estuarine Research Reserve and Imperial Beach Naval Air Station in the City of Imperial Beach; the Tijuana River Valley; and the communities of San Ysidro and other border areas within the City of San Diego. San Ysidro is the main urban border community in the U.S. within the study area. Across the border in Mexico lie highly urbanized portions of the city of Tijuana that extend fully to the international border.

Topographic features include the relatively flat alluvial plain of the Tijuana River with tributary canyons and hillsides extending up into Mexico. The Tijuana River and the Pacific Ocean are the most notable hydrologic features of the area. Biological resources range from the diverse flora and fauna of the Tijuana River estuary to scrub habitats adjacent to the estuary. Climate and meteorological influences include the cool semiarid steppe climate of the area with warm dry summers, mild winters, and ocean breezes. The air quality is generally characterized as being fair to good, although the San Diego Air Basin (SDAB) is in nonattainment with federal standards for ozone (SDAPCD, 2005)

3.1 Climate, Air Quality, and Noise

The area of influence for this project would, in general, include the SDAB, although only those areas directly adjacent to the international border would be subject to potential localized air quality impacts such as those related to dust or odors arising from the construction and operation of wastewater infrastructure in Mexico.

3.1.1 Climate

The climate in San Diego County is influenced by the Pacific Ocean and its high-pressure systems, which result in dry, warm summers and mild, occasionally wet winters. The normal wind pattern throughout the County is predominantly westerly to northwesterly (i.e., blows predominantly towards the east and southeast) (City of San

Diego Metropolitan Wastewater Department (MWWD), 1996). This pattern is occasionally disrupted by the Santa Ana wind conditions, during which offshore winds blow pollutants out to the ocean, resulting in clear days. If the Santa Ana conditions are combined with a low pressure system in Baja California, a pollutant laden air mass is drawn southward from Los Angeles and Orange Counties to produce some of the highest levels of air pollution found in the SDAB.

During the winter, afternoon temperatures vary from 60 ^{o}F to 80 ^{o}F, summer temperatures range from 80°F to 100°F. The average annual precipitation in the area is 9.5 inches, falling predominantly from November through April (CH2M HILL, 1998).

3.1.2 Air Quality

Ambient Air Quality Standards

The federal Clean Air Act (CAA) of 1970 and the CAA Amendment in 1977 required the adoption of national ambient air quality standards (NAAQS) for sulfur dioxide (SO2), carbon monoxide (CO), nitrogen dioxide (NO2), hydrocarbons, ozone (O3), particulates of less than 10 microns in size (PM10) and lead (Pb). In addition, the California Air Resources Board (CARB) has established state standards that are generally more restrictive than the NAAQS, and include sulfates, hydrogen sulfide (H2S), vinyl chloride, and visibility reducing particles (Table 3-1).

Table 3-1
State and Federal National Ambient Air Quality Standards
Maximum Concentration Averaged Over Specific Time Period

Pollutant	State Standard	Federal Standard
Oxidant (Ozone)	0.09 ppm (180 ug/m^3) 1hr	0.12 ppm (235 ug/m^3) 1hr
Carbon monoxide	9.0 ppm (10 mg/m^3) 8hr	9.0 ppm (10 mg/m^3) 8 hr
Carbon monoxide	20 ppm (23 mg/m^3) 1hr	35.0 ppm (40mg/m^3) 1hr
Sulfur dioxide	0.04 ppm (105 mg /m^3) 24hr	0.03 ppm (80 mg /m^3) annual average
Nitrogen dioxide	0.25 ppm (470 mg/m^3) 1hr	0.053 ppm (100 mg/m^3) annual average
Lead	1.5 mg/m^3 30-day average	1.5 mg /m^3 calendar quarter
Suspended particulate matter (PM_{10})	50 mg /m^3 24 hr 20 mg /m^3 Annual Arithmetic Average	150 mg /m^3 24 hr* 50 mg /m^3 Annual Arithmetic Average**

Source: California Air Resources Board (CARB), 2005a
* Not to be exceeded more than once per year
** Not to exceed 50 mg/m^3 for a three year average

A common expression of ambient air quality is the number of days air pollution levels exceed the federal and state standards shown in Table 3-1. Table 3-2 shows the annual number of days that pollutants exceeded the state and federal ambient air quality standards in the SDAB during 2000 to 2004.

Table 3-2
Summary of Air Quality Data for the San Diego Air Basin

Pollutant		Number of Days Over Standard				
		2000	2001	2002	2003	2004
Ozone	Federal	0	2	0	1	1
	State	24	29	15	23	12
Carbon Monoxide	State and Federal	0	0	0	0	0
Sulfur dioxide	State and Federal	0	0	0	0	0
Nitrogen dioxide	State and Federal	0	0	0	0	0
Lead	State and Federal	***	***	***	***	***
Particulates (PM_{10})*	Federal Annual Arithmetic Average (ug/m^3)	no	no	yes*	yes*	yes*
	Federal 24-Hour	no	no	no	no**	no
	State Annual Arithmetic Average (ug/m^3)	yes	yes	yes	yes	yes
	State 24-Hour	yes	yes	yes	yes	yes
Particulates ($PM_{2.5}$)*	Federal Annual Arithmetic Average (ug/m^3)	yes	yes	yes	yes	no
	Federal 24-Hour Concentration	yes	no	no	no**	yes
	State Annual Arithmetic Average (ug/m^3)	yes	yes	yes	yes	yes

Source: San Diego Air Pollution Control District (SDAPCD, 2004).
*Exceeding only at the Otay Mesa Monitoring location
**Unusually high levels due to wild fires in 2003. Data without wildfires shows no exceedances.
*** Data not available, however, SDAB is designated as an attainment area for lead

Ozone

Ozone is produced as the end result of a chain of chemical reactions that produce a photochemical smog from hydrocarbon emissions. This combined with climatological and meteorological factors have made it difficult to control ozone concentrations in the SDAB. As a result the SDAB currently has a federal ozone designation of non attainment, and state ozone designation of "serious" non attainment (CARB, 2005).

Particulates

The SDAB is in attainment with the federal standards for both PM10, and PM2.5, but is currently listed in non-attainment status with the state for both standards (CARB, 2005b). The state standards have been difficult to meet due to natural particulate matter sources and the area's dry climate (SDAPCD, 2004).

Local air pollution sources from within the area of influence (i.e., from sources within the U.S.) include vehicular air pollution on Interstate 5 and the more developed pockets along the border such as around the border crossing; and aircraft operations associated

with Brown Field and the Imperial Beach Naval Auxiliary Landing Field; and general urban activities within.

3.1.3 Noise

The area of influence with respect to noise is limited to those areas in the U.S. that are immediately adjacent to the international boundary.

Due to the highly urbanized nature of Tijuana near the international border and the existing noise environment throughout much of the urbanized area immediately adjacent to the border within the U.S., the study area is characterized primarily by vehicular noise from car and truck travel, commercial aircraft noise from operations at the Aeropuerto de Tijuana, and general urban activities. Local noise sources from within the area of influence include vehicular noise on Interstate 5 and local roads, aircraft operations associated with Brown Field and the Imperial Beach Naval Auxiliary Landing Field, and general urban activities within the more developed pockets along the border such as around the border crossing stations. Ambient noise levels are estimated to range from approximately 45 decibels A-weighted (dBA) in remote undeveloped areas to over 70 dB near freeways and highly urbanized areas.

Noise Standards
The City of San Diego established noise ordinances that regulate construction and operation noise levels on specific types of land uses. Although these noise ordinances do not apply to activities occurring outside of the U.S., they provide a reasonable basis for evaluating the significance of potential noise impacts associated with the proposed action. Ordinance 59.5.0404 states that construction noises may not exceed 75 decibels equivalent sound level (dB Leq) between 7:00 A.M. and 7:00 P.M. in residential areas. Operational noise levels (established in Ordinance 59.5.0401) vary by land use type, and are lower during the nighttime. Residential uses range from 45 dB Leq to 60 db Leq, commercial ranges from 60 dB Leq to 65 dB Leq, and industrial uses have a limit of 75 dB Leq (Recon, 1994).

Sensitive Noise Receptors
Sensitive noise receptors typically include residential development, schools, and hospitals. Under certain conditions, habitat areas can also be considered to be sensitive receptors, such as when noise levels exceed 60 dBA in nesting areas for least Bell's vireo (Vireo bellii) and California gnatcatcher(Polioptila californica californica) during the respective breeding seasons. Federal regulatory guidelines establish the following breeding seasons for these two species: February 15 through August 30 for the least Bell's vireo, and April 10 through July 31 for the California gnatcatcher.

In general, the presence of such receptors is limited to the western portion of the area of influence. Rural residential development occurs in and near the Tijuana River estuary.

Residential subdivisions occur to the north of the Tijuana River between Dairy Mart Road and Interstate 5, as does a public school located southwest of the Interstate 5/Via de San Ysidro interchange. With the exception of areas immediately adjacent to Interstate 5, the area of influence east of Interstate 5 is generally undeveloped or is occupied by non-sensitive uses such as agricultural or industrial/business park development.

3.2 Floodplains

The Tijuana River valley consists mainly of a broad floodplain surrounded by urban development. Flooding is a major issue on the U.S. side in the lower Tijuana River valley (SDSU, 2000). The 100-year and 500-year Tijuana River floodplain limits in the study area are shown on the U.S. Federal Emergency Management Agency (FEMA) Federal Insurance Administration on Flood Insurance Rate Maps (FIRM) 06073C2161 F, 06073C2162 F, and 06073C2166. A 100-year flood has a 1 percent chance of occurring in any given year, while a 500-year flood has a 0.2 percent chance of occurring in any given year.

3.3 Wetlands

The Tijuana River National Estuarine Research Reserve and the Tijuana River Valley portion of the study area include one of the largest and most important wetland systems in San Diego County and Southern California. The estuary supports extensive salt marsh and saltpan habitats. Significant efforts are being made to eliminate pollution, restore wetlands, and reintroduce endangered species into this environmentally sensitive area. The City of San Diego's Multiple Species Conservation Program (MSCP) proposes to preserve these areas and their natural habitats. The County of San Diego is acquiring land for the development of a regional park in the Tijuana River Valley (SDSU, 2000).

3.4 Coastal Zones

The coastal zone boundaries as delineated by the California Coastal Commission are shown on the Local Coastal Program Status Map dated July 1, 2005. Per the California coastal Act of 1976, any development activities within the coastal zone boundary must be approved by either the Coastal Commission or the local government. None of the actions proposed, as described in Section 2, will be within the coastal zone in the U.S. as defined by the California Coastal Commission.

3.5 Water Resources

3.5.1 Surface Water

Tijuana River
The only hydrologic basin that drains directly from Mexico into the U.S. is the Tijuana River basin. Flows in the river consist typically of a combination of natural runoff, effluent discharges upstream in Tecate and fugitive flow resulting from water and wastewater leaks. The U.S. and Mexico have signed treaties in which Mexico has agreed to intercept the flow of the Tijuana River during the dry season for its eventual transport to a wastewater treatment plant located in Mexico. During the rainy season, however, the Tijuana River flow is allowed to continue into the U.S. and to discharge into the estuary whenever the flow exceeds 11.4 mgd (500 L/s). It is important to point out that the proposed alternatives are not within the Tijuana River watershed and do not affect Tijuana River flows.

Pacific Ocean
The Pacific Ocean along the coast of San Diego is also within the area of influence of the proposed action. Ocean water quality in the vicinity of the international border may be affected by surface runoff and by discharges from wastewater plants. A brief description of these treatment plants is provided below.

San Antonio De Los Buenos WWTP
The San Antonio de los Buenos plant, built in 1987 and upgraded in 2003, has capacity to treat up 25 mgd (1,100 L/s) of Tijuana wastewater. The plant includes a pumping station, aeration and sedimentation ponds, chlorination system, sludge dewatering, electrical substation, offices, laboratory and a blower building. The plant discharges effluent into the Pacific Ocean.

The plant is located approximately 9 miles (15 km) south of the border and discharges a combination of treated wastewater and chlorinated-only wastewater directly into the ocean, the latter as a result of influent flows exceeding the plant capacity. It has been posed that the coastal currents in the region sometimes move from south to north (see description below), creating the possibility that some discharges from the San Antonio de Los Buenos Wastewater Treatment Plant may affect the quality of the water in the San Diego Bay in the U.S.

South Bay International Water Treatment Plant
The South Bay International Water Treatment Plant (SBIWTP) is located in San Diego and treats wastewater from Tijuana at an "advanced primary" level. The SBIWTP discharges into the bay through an underwater ocean outfall pipe (i.e., the South Bay Ocean Outfall – SBOO), which helps to dilute effluent entering the ocean and to reduce

environmental impacts. However, this plant does not meet U.S. quality standards on several parameters, among them toxicity. There are plans to provide secondary level treatment located immediately adjacent to the existing primary WWTP in the U.S.

Tecolote-La Gloria WWTP
The Tecolote-La Gloria WWTP is one of the three plants being financed by the Japanese Credit. The plant should be operating by 2009. It will have a treatment capacity of 8.7 mgd (380 L/s) and discharge effluent directly into the Pacific Ocean.

The Tecolote-La Gloria WWTP will provide advanced secondary treatment using oxidation ditch- activated sludge technology. The plant capacity of 8.7 mgd (380 L/s) includes construction of two modules of primary and secondary treatment of 4.3 mgd (190 L/s). This would satisfy demands through the year 2025.

Rosarito Plants
Rosarito, located 18 miles (30 km) south of the border, has two secondary wastewater treatment plants discharging directly to the Pacific Ocean –Rosarito and Rosarito Norte. The Rosarito Norte WWTP with capacity of 4.8 mgd (210 L/s), provides secondary treatment using activated sludge technology. The plant was recently updated with funds from the JBIC. There is an anticipated upgrade for the Rosarito I WWTP from 1.4 to 3.2 mgd (60 L/s to 120 L/s). The upgrade will provide secondary treatment through the oxidation ditch-activated sludge technology. Rosarito I discharges to the Pacific Ocean through the Huahuatay submarine discharge.

The currents found along the coast of California are controlled mainly by the offshore, southward-flowing California current, which consists of a (1) broad southerly current that flows near the edge of and beyond the continental shelf, (2) an undercurrent flowing northerly under the southern current, and (3) coastal countercurrents flowing northerly at the surface and near surface (CDM, 2003). The California current varies in position and intensity based on the season, shifting onshore during the spring and summer. The northward flowing countercurrent is found at a depth of 90 feet (27 meters) and flows from Baja California to northern California, bringing warm, high salinity Equatorial Pacific water. There is an equatorial coastal flow that occurs with the northerly undercurrent from early spring to fall caused by wind stresses. Once the wind stresses subside (September) a broad northward surface current called the Davidson current begins to develop approximately 62 miles (100 km) offshore. The dynamics of the flows are influenced by the interactions of the coastal currents within the California system and the seasonal upwelling events that bring cool, dense water to the surface (CDM, 2003).

Modeling of the flow patterns found the principal pattern to be a relatively uniform long shore flow north and south along the coastline, and a recurring eddy with counterclockwise circulation south of Point Loma of varying intensity found anywhere

from 6.2 to 9.3 miles (9.92 to 14.88 km) offshore and roughly 10.6 miles (16.96 km) alongshore (CH2M HILL, 1998).

Marine Water/Sediment Quality

The City of San Diego performs monthly compliance monitoring for the SBOO. The sampling area extends from the tip of Point Loma southward to Punta Bandera, Baja California, Mexico, and from the shoreline seaward to a depth of 200 feet (61 meters). Monthly mean data for water temperature, salinity, density, pH, transmissivity (XMS), dissolved oxygen (DO), and chlorophyll a are presented in Table 3-3 (City of San Diego, 2004).

Table 3-3
Monthly Mean Values of Selected Water Quality Parameters during 2004*

Month	Temp (°C)	Density (□/□)	Salinity (ppt)	D.O. (mg/L)	pH	Chlor (□g/L)	XMS (%)
Jan	13.8	24.84	33.20	8.4	8.1	4.2	83
Feb	13.8	24.83	33.19	8.6	8.2	4.4	80
Mar	14.2	24.66	33.09	7.8	8.1	3.7	75
Apr	16.7	24.16	33.14	6.9	8.2	3.9	79
May	16.7	24.26	33.29	6.6	8.2	3.1	75
Jun	18.9	23.85	33.43	7.9	8.2	5.1	76
Jul	18.4	24.03	33.50	8.0	8.2	6.0	80
Aug	20.1	23.54	33.44	7.7	8.2	2.3	87
Sep	22.2	22.97	33.44	7.1	8.2	1.4	87
Oct	17.4	24.09	33.26	8.5	8.1	1.8	87
Nov	18.2	23.75	33.08	7.7	8.1	2.0	76
Dec	15.7	24.44	33.20	7.9	8.1	1.3	85

Source: City of San Diego, 2004
*These measurements were taken at the surface (<2 m depth).

Results showed that physical and chemical parameters reflect a seasonal pattern. During the winter, increased surf and wind conditions result in a mixed water column with little thermal stratification. Around April, conditions change due to an intrusion of cold water followed by a warming of surface waters, causing the water column to become well stratified. Summer and fall were marked by a shallow, seasonal thermocline most pronounced between 13 and 30 feet (4 and 9 meters) (City of San Diego, 2002).

Fecal coliform samples at shore stations ranged from an annual average of 12 Colony Forming Units (CFU)/100 mL to 4,089 CFU/100 mL in 2006. Highest coliform levels were detected at stations near the mouth of the Tijuana River. Data indicate that the wastewater plume from the SBOO rarely reached the surface waters in 2006. Most elevated bacterial counts that indicate contamination near the surface occurred in January, March, April, June and October during periods of rainfall or when turbidity

plumes from the Tijuana River or Los Buenos Creek reached the stations (City of San Diego 2006).

The water quality characteristic in the vicinity of the SBOO is a result of both oceanographic events and input from point and non-point anthropogenic sources. Physical and chemical parameters were largely affected by stormwater inputs and oceanographic conditions (City of San Diego, 2002).

Sources of bacterial contamination found along the shoreline adjacent to the SBOO may include effluent from the South Bay International Wastewater Treatment Plant; effluent from the San Antonio de los Buenos wastewater treatment plant (and the chlorinated-only wastewater that by-passes the plant); input from the Tijuana River; and coastal storm drain outlets. The coliform concentrations found offshore were highly variable and ranged between 6 and 4,070 CFU/mL (City of San Diego, 2002). The City of Imperial Beach regularly monitors for bacterial contamination. Beaches in the vicinity were closed due to bacterial contamination and sewage flows from the Tijuana Estuary for a total of 85 days in 2005 and 56 days in 2006 (County of San Diego Department of Environmental Health, 2006).

The waste plume from the SBOO typically remains offshore and at depth, due to the thermal stratification found during most of the year. The plume does surface occasionally under non-stratification conditions. Due to the numerous anthropogenic inputs, it is difficult to make a clear distinction between water quality changes caused by the SBOO and other sources. In general, shoreline sources of contamination tend to affect the nearshore waters. Monitoring results from the City of San Diego 2001 study suggest that discharge from the SBOO does not affect the shoreline and remains at the bottom near the diffuser (City of San Diego, 2002).

Sediments surrounding the SBOO were generally found to be fine sands with a mean particle size of 2.3 phi (phi = -log2 (size in mm)). Higher concentrations of most trace metals and organic compounds were found in finer sediments, but those concentrations found near the SBOO were low when compared to the entire southern California continental shelf. Aluminum, chromium, copper, iron, manganese, zinc, and arsenic were found at all stations. Other contaminants were seen only occasionally; derivatives of the chlorinated pesticide DDT were detected at three monitoring stations, and PCB compounds were present at one station (City of San Diego, 2002).

3.5.2 Groundwater

Groundwater in the lower Tijuana River Valley occurs in the following three zones: (1) beneath Nestor Terrace north of the valley, (2) in the alluvial fill underlying the Tijuana River valley, and (3) in the San Diego Formation beneath the alluvium. Of the three, the alluvium fill has been most used and studied (CH2M HILL, 1998). The aquifer in this

area is unconfined and can potentially store up to 65,000 acre-feet of water. The aquifer rests atop a bedrock surface and, on the average, consists of 50 to 90 feet (15 to 27 meters) of sand and silt overlying 10 to 35 feet (3 to 11 meters) of interbedded layers of gravel and sand, which are tapped by production wells (MWWD, 1996). The primary source of aquifer recharge appears to be the Alamar River, which originates in the coastal San Ysidro Mountains and confluences with the Tijuana River. Other likely sources of recharge are winter rainfall (particularly on undeveloped land north of the border and in Alamar Valley), water line leakage in Tijuana, and discharge from surrounding sedimentary bedrock terraces. Recharge to the alluvial aquifer from the Tijuana River surface flow is more prominent in the U.S. than Mexico, since the Tijuana River is a concrete lined channel from the international border to Rodriguez reservoir. The primary aquifer discharge zone is the Pacific Ocean (USDOE, 2003).

Historically, groundwater consumption was related to potable water extraction for export and agricultural use. The high levels of pumping during the 1950s resulted in a lowering of groundwater levels of 23 to 30 feet (7 to 9 meters). By the 1960's, groundwater levels had dropped below sea level, allowing highly saline groundwater and seawater to flow into the water (Recon, 1994).

Several factors, including imported irrigation water, reduced pumping due to degraded groundwater quality, and the abandonment of farming activities have contributed to the decline in groundwater usage since 1952 (MWWD, 1996). This has allowed groundwater levels to recover to within 0 to 15 feet (0 to 4.5 meters) of the ground surface (CH2M HILL, 1998). There is currently no known extraction of groundwater from the Tijuana River basin in the U.S. for any purpose except limited agricultural use (MWWD, 1996). Groundwater extraction in the Tijuana River valley north of the international border was 1,500 acre-feet per year (DWR, 2006).

Goundwater Quality

Currently, the quality of groundwater in the basin is characterized by high levels of total dissolved solids and sodium chloride, which prevents the use of groundwater for salt-sensitive crops. Water quality has been rated generally inferior for domestic use due to high sulfate and fluoride concentrations. In addition, it was rated inferior for irrigation purposes because of high electrical conductivity, high chloride levels, and a high percentage of sodium (Recon, 1994). Table 3-4 shows a summary of water quality data collected by the U.S. Department of Energy for the Groundwater Flow Model for the Tijuana River Basin Project.

The following information regarding sources that may alter ground water quality was taken directly from the report prepared by the U.S. Department of Energy titled "Conceptual Model for the Tijuana River Aquifer Southwest Border Project" dated September 2002. Several factors have attributed to the poor quality of groundwater in the Tijuana River valley, including the following:

Table 3-4
Groundwater Data Collected for the Groundwater Flow model for the Tijuana River Basin Project[2]

Constituent	**Na**	**K**	**Ca**	**Mg**	**Cl**	**SO_4**	**Alk[1]**	**DO**	**Fe**	**pH**	**Sr**	**TDS**
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Minimum Concentration	154	3.04	83.6	25.3	174	135	161	0.47	0.0044	6.79	0.45	858
Maximum Concentration	1940	15.9	486	257	2310	4120	789	5.49	18.7	8.19	3.76	9030
Average Concentration	**511.5**	**7.33**	**199.9**	**87.8**	**768.6**	**524**	**416.8**	**1.96**	**2.41**	**7.23**	**1.62**	**2413**

Source: USDOE, 2003
[1] Alkalinity as mg/L of $CaCO_3$.
[2] Samples collected by DOE personnel at 31 well locations, from IBWC wells in the USA and from municipal water wells in Mexico. Samples collected from Aug 26-30, 2002.
Note: Alk = alkalinity; Ca = calcium; Cl = chloride; DO = dissolved oxygen; Fe = Iron; K = potassium; Mg = magnesium; Na = sodium; pH = measure of H^+ ions in solution; SO_4 = sulfate, TDS = total dissolved solids; Sr = strontium.

- **Rainfall:** In industrial areas such as the Tijuana Basin, rainfall is typically slightly acidic (pH 5.5-6) as a result of sulfide emissions and subsequent oxidation to sulfate. Rainfall probably also contains seawater chemicals from sea spray near the ocean margin. As rainfall infiltrates through the saline soils in the Tijuana Valley, additional salts are dissolved in the groundwater (USDOE, 2002).

- **Tijuana River Recharge:** Recharge to the alluvial aquifer from the Tijuana River occurs mostly during high water stages. Although most of the river water recharging the aquifer is relatively low in TDS, it often contains anthropogenic contamination including metals (e.g., copper, lead, and zinc) from industrial effluents and municipal waste (e.g., nitrogen and organic carbon compounds) discharged from the City of Tijuana. Recharge from Tijuana River losses is most prominent in the U.S. because the river is concrete-lined in Mexico (USDOE, 2002).

- **Municipal Discharges:** Ground water chemistry in the alluvial aquifer may also be affected by direct recharge from pipes and drains in the City of Tijuana; this recharge is relatively low in dissolved salts, but high in industrial or municipal contaminants. The Colorado River is the main water source for Tijuana, and likely has a TDS concentration of about 500 mg/L (USDOE, 2002).

- **Ocean Water Intrusion**: Beneath the Pacific Ocean for a distance of about 1 mile inland from the coast, ground water in the Tijuana alluvium has the composition

of ocean water (TDS = 34,000). During the 1960s, the alluvial aquifer was pumped at high flow rates, resulting in further intrusion of the ocean water. Similarly, extensive pumping or injection of reclaimed water in the Lower Tijuana River Valley could cause substantial changes in groundwater salinity due to ocean intrusion (USDOE, 2002).

- **Localized Sources:** Hydrothermal activity causes additions of hydrogen sulfide and other constituents to groundwater in the San Diego Formation below the Nestor terrace (Izvicki, 1985). Hydrothermal water may locally modify ground water in the alluvium. Recharge from septic systems, leaking storage tanks, and other small sources of water can locally alter ground water composition (USDOE, 2002).

- **Chemical Evolution:** Several processes may take place within the aquifer that can modify the chemistry of ground water from its original composition. Dissolved chemicals can be added or removed by precipitation and dissolution of minerals. An example of a process that commonly occurs is the addition of carbon dioxide to infiltrating water caused by plant respiration in the root zone. This process causes pH to decrease which leads to dissolution of carbonate minerals. Ion exchange can alter the ratios of dissolved ions in the ground water. Ion exchange takes place at the surfaces of clay and oxide minerals by exchanging one ion for another. A common example is the exchange of calcium for sodium. Adsorption of metals is another common process that can alter the ground water chemistry (USDOE, 2002).

3.6 Biological Resources

Biological resources in the study area could be indirectly affected by construction activities in Mexico that occur in the vicinity of biological resource within the Tijuana River and Estuary that affects the habitat of migratory bird or marine species.

Much of the study area has been developed and contains extensive amounts of disturbed habitat. The following is a description of the vegetation and wildlife within specific areas of concern, including the Tijuana Estuary. A description is also provided for migratory wildlife, and federal and state endangered species.

3.6.1 Vegetation

Vegetation within Tijuana Estuary

Portions of the Tijuana River Valley, as it extends west from the international border to the Pacific Ocean support a variety of biological resources. For the most part, the portion of the River Valley located between the international border and Dairy Mart Road is devoid of notable biological resources due to a combination of factors including the channelization of the Tijuana River in the eastern portion of this segment, current

development, and past and present agricultural and mining activities. Areas west of Dairy Mart Road and north of Monument Road include pockets of dense riparian habitat that support a variety of bird species and are high in habitat value. The subject area is interspersed with agricultural, equestrian, mining, and rural residential uses, but, overall, is still rich in wildlife values. The most notable area of biological resources is the Tijuana Estuary, which extend approximately 3 miles (4.8 km) east from the Pacific Ocean. The Tijuana Estuary is an essential breeding, feeding, and nesting ground, providing an important stopping place on the Pacific Flyway for over 370 bird species (SDSU, 2000).

The Tijuana Estuary is part of the National Estuarine Research Reserve (NERR) System and is classified as a Coastal Plain Estuary. Several different habitats occur within the Estuary including, but not limited to, sand dunes and beaches, open tidal channels and mudflats, salt marshes (low, middle, and high); fresh-brackish marshes dominated by bullrushes and cattails, and upland riparian habitats. The Estuary includes cordgrass (Spatina foliosa), pickleweed (Salicornia spp.), saltwort (Batis maritima), shoregrass (Monanthochloë littoralis), and the endangered salt marsh bird's beak (Cordylanthus maritmus maritimus).

Along the western side of Dairy Mart Road there are several areas of southern cottonwood-willow riparian forest that are known to support breeding habitat for the Least Bell's Vireo, a state and federally listed endangered species (MWWD, 1996). Such breeding territory includes the area immediately north of the intersection of Monument Road and Dairy Mart Road.

Habitat suitable for infrequent use by the California gnatcatcher (Polioptila californica californica), a federally listed threatened species, occurs south of the intersection of Monument Road and Dairy Mart Road (MWWD, 1996).

3.6.2 Wildlife

Wildlife within Tijuana Estuary

The Tijuana estuary also is home to more than 370 species of birds, of which about 320 are migratory, included four federally listed endangered birds: the light-footed clapper rail (Rallus longirostris levipes), the California least tern (Sterna antillarum browni), the least Bell's vireo (Vireo bellii pusillus), and the California brown pelican (Pelecanus occidentalis californicus). Occasional visitors include peregrine falcons (Falco peregrinus), bald eagles (Haliaeetus leucocephalus), and golden eagles (Aquila chrysaetos). The Estuary is used for staging and wintering by a variety of waterfowl and shorebirds, with more than 20 species occurring regularly along the sandflats and mudflats. The Estuary also supports a small mammal population, including mice, California ground squirrels and rabbits. At least 20 species of fish reside in the small

tidal creeks and channels of the estuary, and large populations of crabs, rove beetles, tiger beetles, and wandering skippers can be found as well.

Migratory Species
According to the "Manifestación de Impacto Ambiental" of the Tijuana and Playas de Rosarito Water and Wastewater Master Plan (CDM, 2003), 127 species of birds occur on the Baja Californian peninsula of Mexico, particularly in the general area of the Master Plan. Of these species, all except six are included on the list of migratory birds recognized by the U.S. Migratory Bird Treaty Act (MBTA). Of the 121 species, thirty-seven are listed as threatened or endangered by the U.S. federal Endangered Species Act.

3.6.3 Federal and State Threatened and Endangered Species

Table 3-5 presents a list of Federal and State threatened and endangered species for the Imperial Beach quad, according to the California Department of Fish and Game sources. Species listed for the Imperial Beach quad have the potential to occur in the vicinity of the Tijuana River, the Estuary, or along the coast.

Table 3-5
List if Threatened and Endangered Species in Imperial Beach Quad

Scientific Name	Common Name	Federal Status	California Status
Rallus longirostris levipes	light-footed clapper rail	Endangered	Endangered
Charadrius alexandrinus nivosus	western snowy plover	Threatened	None
Sterna antillarum browni	California least tern	Endangered	Endangered
Polioptila californica californica	coastal California gnatcatcher	Threatened	None
Vireo bellii pusillus	least Bell's vireo	Endangered	Endangered
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None	Endangered
Perognathus longimembris pacificus	Pacific pocket mouse	Endangered	None
Branchinecta sandiegonensis	San Diego fairy shrimp	Endangered	None
Streptocephalus woottoni	Riverside fairy shrimp	Endangered	None
Eryngium aristulatum var. parishii	San Diego button-celery	Endangered	Endangered
Ambrosia pumila	San Diego ambrosia	Endangered	None

Table 3-5
List if Threatened and Endangered Species in Imperial Beach Quad

Deinandra conjugens	Otay tarplant	Threatened	Endangered
Ornithostaphylos oppositifolia	Baja California birdbush	None	Endangered
Phacelia stellaris	Brand's phacelia	Candidate	None
Acanthomintha ilicifolia	San Diego thorn-mint	Threatened	Endangered
Pogogyne nudiuscula	Otay Mesa mint	Endangered	Endangered
Navarretia fossalis	spreading navarretia	Threatened	None
Rosa minutifolia	small-leaved rose	None	Endangered
Cordylanthus maritimus ssp. maritimus	salt marsh bird's-beak	Endangered	Endangered
Fremontodendron mexicanum	Mexican flannelbush	Endangered	Rare
Orcuttia californica	California Orcutt grass	Endangered	Endangered
Orcuttia californica	California Orcutt grass	Endangered	Endangered
Source: California Department of Fish and Game - http://imaps.dfg.ca.gov/viewers/cnddb_quickviewer/			

3.7 Cultural Resources

In the general vicinity of the study area, the cultural resources in the U.S. are within Native American reservations including Campo, La Posta, and parts of the Cuyapaipe and Manzanita. These cultural resources will not be affected because there are no project alternatives that involve development activities within the U.S.

3.8 Socioeconomics

The population of the Municipality of Tijuana in 2005 was estimated by INEGI at 1,410,700, and is projected to reach 2,636,594 by the year 2030 (CDM, 2003). Economic activity in Tijuana revolves around the service (or tertiary) sector, mainly commerce and tourism. In 1998, 56 percent of the economically-active population of the area was employed in this sector. In 1998, 18 percent of the people employed in the tertiary sector worked in commercial activities, while 29 percent were employed in tourism (CDM, 2003).

The secondary or industrial sector also contributes to the economic activity of the area, although at a smaller level than the tertiary sector. The main activity of this sector is the

export-oriented industry, commonly referred to as maquiladoras, which has played a major role in the economic growth of Tijuana in recent years.

According to the "Economic Impacts of Wait Times at the San Diego – Baja California Border"(SANDAG, 2006) over 60 million people cross the San Diego County – Baja California border annually. Approximately half of these trips are for shopping and recreation, while approximately 10 million trips per year are made to and from work. In addition, 730,000 trucks cross this border annually from Mexico.

Given the high interrelationship between people in Tijuana and San Diego, public health issues on one side of the border may impact residents on the other side. Improving sanitary and environmental conditions and public health conditions in Tijuana would be beneficial to San Diego County.

3.9 Topography and Geology

Topographic features include the relatively flat alluvial plain of the Tijuana River with tributary canyons and hillsides extending up into Mexico. The study area is composed of flat marine terraces comprised of conglomerate and other sedimentary rocks that are dissected by steep-sided valleys. Severe erosion has left few remnants of upland areas in the western area (SDSU, 2000).

Section 4
Environmental Consequences

This section describes the environmental consequences of the no action and proposed action alternatives to provide wastewater service to the two coastal Tijuana colonias under consideration, Granjas la Esperanza and El Monte. The environmental consequences considered include the direct, indirect, and cumulative impacts, specifically to environmental resources in the U.S. CEQ regulations §1508.8 define direct impacts as impacts caused by the action and occuring at the same time, and indirect impacts as impacts caused by the action and occuring at a later time or are farther removed in distance.

Cumulative impacts are defined as the impacts of an alternative when combined with impacts of past, present, or reasonable foreseeable future actions undertaken by any agency or person. Planned actions for the medium and long term with similar impacts to the project's alternatives are included in the cumulative impacts analysis. Other projects in communities in the vicinity of Tijuana or on the Tijuana River could also potentially produce cumulative effects when combined with the proposed action alternatives, particularly other water, wastewater and sanitation projects.

The description of impacts focuses on the area of concern in the U.S. (see Figure 1-1). This section describes potential impacts separately for each of the alternatives considered. All types of potential effects (e.g. beneficial, adverse) are identified for each resource (e.g. air, water). Cumulative impacts are discussed as a whole for each alternative.

The following sections describe potential impacts of the no action alternative and the two action alternatives to expand wastewater services to coastal Tijuana colonias: Granjas La Esperanza, and El Monte. Section 2 describes the alternatives in detail.

4.1. Potential Impacts of No Action Alternative

Under the No Action Alternative, wastewater services would not be provided for the currently unserved communities of Granjas La Esperanza, and El Monte in the coastal areas of Tijuana. As summarized in Section 2, the population to be served is estimated at 3,596. Under the No Action Alternative these residents will continue generating wastewater that is disposed of in open ditches and latrines. These residents will generate an estimated 7.33 L/s of wastewater in the future or 0.17 million gallons per day (mgd) that would be released into Tijuana's environment without adequate treatment.

The No Action Alternative includes wastewater treatment plants and associated collection systems that existed in 2007 or are authorized, funded projects. The environmental consequences of the authorized and funded WWTP and collection system projects are considered in the cumulative impacts of the alternatives. Additionally, the analysis recognizes that construction will occur under the No Action Alternative to facilitate development in both the U. S. and Tijuana; however, this construction is not associated with the proposed action to provide wastewater services to the communities in Tijuana. Therefore, construction activities are not considered in the No Action Alternative analysis, but are discussed in the cumulative analysis.

Table 4-1 presents a summary of transboundary environmental impacts resulting from the No Action Alternative. It is important to note that the No Action Alternative would have more adverse effects to resources in Tijuana because of the environmental and public health risks associated with inadequate collection, treatment and disposal of wastewater in Tijuana. The following impact discussions focus on resources within the U.S. Because of the shared border, the proposed actions could affect U.S. resources. The following impact discussions focus on resources within the U.S.

Table 4-1
Summary of Impacts to the United States Resulting from the No Action Alternative

Air Resources (air quality, noise, odor)	No Impact
Water Resources (surface water, groundwater, water quality)	Less than significant
Floodplains	No Impact
Wetlands	No Impact
Biological Resources	Less than significant
Cultural Resources	No Impact
Coastal Resources	No Impact
Socioeconomics/Public Health	Less than significant
Topography and Geology	No Impact
Cumulative Impacts	Less then significant

4.1.1 Air Resources

There would be no direct or indirect impacts to the U.S. air resources as a result of the No Action Alternative. Under the No Action Alternative, construction activities to provide wastewater services to the coastal Tijuana communities would not occur. These communities would remain unconnected to the wastewater system; therefore, dust or particulate matter emissions associated with construction activities would not be released. There would be no transboundary effects to air quality under the No Action Alternative.

There would be no direct or indirect impacts on noise generation because construction activities would not take place.

Offensive odors may result near the unserved areas as a result of inadequate wastewater disposal and treatment. Odors would not likely reach the U.S. because of the distance to the border (over 8 miles) and coastal wind patterns. Therefore, there would be no impact to air resources under the No Action Alternative.

4.1.2 Water Resources

The No Action Alternative would result in the continued disposal of untreated wastewater to the environment, particularly to surface water courses near the unserved areas. As previously indicated, it is estimated that the unserved coastal communities will generate about 7.33 L/s (0.17 mgd) of raw wastewater in the future. A portion of this wastewater will reach the environment in coastal areas of Tijuana. Remaining raw wastewater is subject to evaporation or infiltration. A portion of this flow released into the environment could reach the Pacific Ocean approximately 8-14 miles (13-23 km) south of the U.S./Mexico border.

Raw wastewater discharges to the ocean would increase concentrations of bacteria, BOD (biological oxygen demand), nutrients, toxic constituents, and metals in the areas of discharge. Combined with stormwater runoff, the raw wastewater could contribute to degradation of coastal water quality in southwestern Tijuana.

Indirect impacts to U.S. coastal waters could occur if ocean currents carry contaminants north past the international border. Ocean currents in this region typically experience a southward flow regime, although there are some exceptions in which the ocean currents flow northward or overall weak current conditions cause a plume to spread in both directions (Ocean Imaging, 2002). During these times, untreated discharges from Tijuana may reach U.S. waters; however, considering the distance of over 8 miles to the border, the relatively low discharge flow, natural attenuation and dilution, and the effects on the U.S. water quality of other less distant sources, such as the Tijuana River, the South Bay International WWTP, San Diego's South Bay Water Reclamation Facility,

and San Diego's Point Loma WWTP, the potential impact of the No Action Alternative on surface water resources and water quality in the U.S. would be less than significant.

Groundwater

Groundwater may be adversely affected in localized areas in Tijuana near latrines and along surface water courses where untreated wastewater is discharged. In addition, there might be indirect adverse impacts to coastal water resources as a result of groundwater flow to the ocean. Because of the distance of the communities to the U.S. border and the slow-moving nature of groundwater, groundwater resources in the U.S. would not be directly or indirectly affected by the No Action Alternative.

4.1.3 Floodplains

Floodplains in Tijuana or the U.S. would not be affected under this alternative because no construction would take place. There would be no dredging or filling of material within the floodplain limits. The No Action Alternative would not have any direct or indirect impacts to U.S. floodplains.

4.1.4 Wetlands

Wetlands in the U.S. would not be affected by the No Action Alternative. As discussed under Section 4.1.1.2, raw wastewater discharges would likely not have a significant impact on U.S. coastal water, and thus indirect impacts would not be anticipated on wetlands such as the Tijuana River Estuary.

4.1.5 Biological Resources

Under the No Action Alternative, construction actions related to the proposed action would not occur. There would not be any direct impacts to vegetation and wildlife communities in Tijuana or the U.S., including federal or state threatened and endangered species in the U.S., as a result of construction. A potential indirect impact on U.S. biological resources relates to migratory species that may travel between areas in Tijuana and the U.S.

Under the No Action Alternative, raw wastewater would continue to affect streams and coastal areas in Tijuana. Effects on migratory bird habitat in coastal Tijuana communities would likely be minor as the project area is highly developed and offers little bird habitat.

Raw wastewater discharges to streams and the Pacific Ocean have the potential to adversely affect aquatic life in Tijuana. Discharges from coastal Tijuana would not usually reach coastal waters of the U.S. because of the distance and the natural southward flow of currents in the Pacific Ocean. During times of northward current

flow, discharges from Tijuana may reach U.S. waters but would experience natural attenuation and dilution given the considerable distance to the border. Therefore, raw wastewater from Tijuana would not indirectly or directly affect coastal vegetation, wildlife, and fish.

4.1.6 Cultural Resources

The No Action Alternative would not affect cultural resources in Tijuana or in the U.S. Construction activities related to the proposed action would not occur; therefore, there would not be any direct or indirect impacts to cultural or archaeological resources.

4.1.7 Coastal Resources

The No Action Alternative would not directly or indirectly affect coastal resources in Tijuana or in the coastal zone boundary of the U.S. There would be no construction activities that occur within a coastal zone to adversely affect these resources.

4.1.8 Socioeconomics and Public Health

Under the No Action Alternative, the socioeconomic conditions of the area would not change compared to existing conditions. The No Action Alternative would not improve the standard of living of the residents of unserved areas in southwestern coastal Tijuana, nor directly affect the standard of living of residents of the U.S. Frequent border crossings for tourism and industry would continue and the economic and personal ties that are common across the border would not be affected under the No Action Alterative.

The No Action Alternative could have direct and indirect impacts on U.S. public health. Without adequate wastewater collection systems in coastal Tijuana, there is the potential to affect localized water distribution lines through infiltration and inflow, as well as water bodies, including the Pacific Ocean, and groundwater resources. Public health in coastal Tijuana would be negatively affected by the No Action Alternative, as exposure to raw sewage in open canals and potential contamination of potable water supplies are both pertinent health risks. This could have direct impacts to U.S. public health as U.S. residents frequently visit Tijuana. U.S. residents may be exposed to contamination through water consumption or direct contact in the ocean. Indirect impacts could occur if U.S. residents that got sick from exposure to raw sewage in Tijuana and spread disease in the U.S. upon their return. Due to the frequency of U.S.-Mexico border crossing, the public health in the U.S. is at risk under the No Action Alternative, although effects would not likely cause any major health problems for the U.S.

The No Action Alternative would not have any indirect impacts to recreation and tourism at U.S. beaches because ocean currents tend to experience a southward flow

regime and contaminants from these coastal Tijuana's raw sewage discharges would not reach U.S. beaches. Therefore, visitation to beaches would not decline as a result of raw sewage discharges from the unserved areas. Section 4.1.2 further discusses impacts to U.S. coastal waters.

Environmental justice refers to equitable rights to healthy environmental conditions for poor and minority populations relative to other populations. Most populations in the U.S. rely on an adequate supply of potable water and sanitary disposal and treatment of wastewater for all households. The No Action Alternative would not affect any environmental justice populations in the U.S. The decision to be made on the proposed action is how to provide wastewater service to currently unserved communities in coastal Tijuana, and thus will not affect water and wastewater services to U.S. residents.

4.1.9 Topography and Geology

The No Action Alternative would not directly or indirectly affect topography or geology in Tijuana or the U.S. because no construction of the proposed action would take place.

4.1.10 Cumulative Effects

The cumulative analysis considers the environmental effects of the No Action Alternative and other past, present, or reasonably foreseeable future actions that could have similar impacts. Projects undertaken by any agency or person outside of the control of the lead agency are included in the cumulative condition. For this analysis, the cumulative condition includes planned and authorized wastewater treatment facilities, including the Japanese Credit plants and other water, wastewater and sanitation projects in communities in the vicinity of the Tijuana Watershed. The cumulative condition also includes general municipal development within the border region. The analysis evaluates the incremental contribution the proposed action would have to cumulative effects.

The Tijuana border region is rapidly growing. This population growth would require significant development for housing and public services. Additionally, the manufacturing industry is dominant in this region and will likely continue to grow.

Operation of the Japanese credit plants would provide additional wastewater services to meet growing demands in Tijuana. This would improve environmental resources within Tijuana, including water quality and biological resources. Any associated construction activities in Tijuana would need relevant mitigation. CESPT is currently constructing a project that would discharge approximately 16.7 mgd (733 L/s) by the year 2025 of treated effluent from La Morita and Monte de los Olivos WWTP into the Pacific Ocean off Mexico's coast by the year 2025.

Besides, the projects mentioned above, the Rosarito Norte, Rosarito I and Tecolote la Gloria WWTP will discharge into the Pacific Ocean approximately 13.8 mgd (610 l/s) all together by the year 2025. These additional discharges could affect water quality of coastal areas of the U.S.; however, the No Action Alternative would have no contribution to these impacts. Additional wastewater services provided by the Japanese credit plants would improve public health and the general economy of the region under the cumulative condition. Furthermore, the la Morita and Monte de los Olivos WWTP will reduce the inflow in the San Antonio de los Buenos WWTP by approximately 12 mgd (525 L/s) since they will capture the wastewater generated in the Matanuco Norte and El Florido basins, which is currently treated at the SAB and International WWTPs.

The No Action Alternative would not include any construction to connect identified communities in Tijuana to the wastewater system. Therefore, it would not contribute to a general improvement in municipal and sanitary services in the project area. The No Action Alternative would not result in any cumulative impacts to the U.S.

4.2 Potential Impacts of Alternative A (Preferred)

Alternative A proposes construction of pipelines to connect the Tijuana coastal communities of Granjas La Esperanza and El Monte to wastewater collection and treatment systems. The two communities are estimated to generate about 0.17 mgd (7.33 L/s) in wastewater flows in the future. Wastewater flows of 0.079 mgd (3.45 L/s) from El Monte would be treated at the Tecolote La Gloria WWTP while wastewater flows of 0.089 mgd (3.88 L/s) from Granjas la Esperanza would be treated at San Antonio de los Buenos WWTP. This section describes potential direct and indirect environmental impacts on the U.S. of Alternative A.

Table 4-2 presents a summary of the transboundary environmental impacts resulting from implementation of Alternative A. Given that no adverse impacts are anticipated, mitigation measures are not necessary.

Table 4-2
Summary of Impacts to the United States
Resulting from Alternative A

Air Resources (air quality, noise, odor)	No Impact
Water Resources (surface water, groundwater, water quality)	Beneficial Impact
Floodplains	No Impact

Table 4-2 (Cont….)
Summary of Impacts to the United States
Resulting from Alternative A

Wetlands	No Impact
Biological Resources	Beneficial Impact
Cultural Resources	No Impact
Coastal Resources	No Impact
Socioeconomics/Public Health	Beneficial Impact
Topography and Geology	No Impact
Cumulative Impacts	Less than significant

4.2.1 Air Resources

Construction activities could have direct effects to air resources in and around the project area. The proposed wastewater infrastructure in Alternative A would generate noise, dust, and construction equipment exhaust during the construction phase. These emissions would be terminated after construction is complete.

Site preparation and construction activities would result in the emission of sulfur oxides, nitrogen oxides, hydrocarbons, carbon monoxide, and particulate matter from equipment exhaust, and particulate matter from fugitive dust. These emissions would be generated from earthwork activities (i.e. grading, trenching/excavation, filling, etc.) and from major hauling operations, if necessary, to remove excavated material or to bring in supplies. Of particular potential concern would be nitrogen oxide emission, which are a precursor to ozone and are associated with diesel engine exhaust.

Air resources in the U.S. would not be directly or indirectly affected by the proposed action. The San Diego Air Basin is in nonattainment status for State ambient air quality standards for ozone and PM emissions. Construction of the proposed action would take place approximately 8-14 miles (13-23 km) south of the U.S./Mexico border, and noise, dust, and exhaust emissions would not be perceived in the U.S. The air quality in the U.S. border region is more likely to be affected by more local sources than areas in southwestern coastal Tijuana. Construction activities for this alternative are temporary and the associated emission would tend to disperse towards the southeast, away from the U.S., based on the prevailing wind patterns of the area.

The construction activities associated with these alternatives are not in close enough proximity for noise levels to exceed U.S. standards. Based on construction equipment mix and activity level associated with construction of general wastewater infrastructure, construction activity noise levels at 50 feet would be approximately 84 dBA for site clearing, 87 dBA for excavation, 83 dBA for construction, and 82 dBA for finishing (MMWD, 1996). Based on standard noise drop-off rate of 6 DB per doubling of distance, the highest noise level (87 dBA for excavation activities) would naturally attenuate to 75 dBA – the level recognized by the City of San Diego's Noise Ordinance as the maximum acceptable level for construction noise in residential areas – at a distance of 200 feet. This noise level would fall well within the limits of Tijuana and would not result direct or indirect noise impacts within the U.S.

During the operational phase, Alternative A would result in a reduction of odors arising from the inadequate disposal of raw wastewater. This alternative would be beneficial to the residents of the unserved areas during the operational phase. However, the odor impact on the U.S. would be negligible because of the substantial distance of the projects.

4.2.2 Water Resources

Alternative A would prevent the discharge of raw wastewater to nearby latrines and open ditches, which could have an impact on local groundwater and ultimately the Pacific Ocean. Under this alternative, the Tecolote La Gloria WWTP discharge would be increased by the incremental flows of 0.079 mgd (3.45 L/s) from El Monte. The San Antonio de los Buenos WWTP discharge would be increased beyond the No Action alternative by incremental flows of 0.089 mgd (3.88 L/s) from Granjas la Esperanza. It is estimated that 0.17 mgd (7.33 L/s) of untreated wastewater in total would be appropriately collected and treatment at the Tecolote La Gloria and San Antonio de los Buenos WWTPs, thus improving water quality in surface water streams and the ocean in the southwestern coastal Tijuana area. The WWTPs would discharge treated effluent in the ocean. The natural dilution of the effluent in the ocean water would prevent any harm to U.S. coastal resources.

The beneficial impact of the Alternative A in reducing raw wastewater discharges would not be significantly perceived in the U.S. given typical ocean current patterns in the region, the distance of the effluent discharge points to the U.S., and the natural dilution of effluent that would occur before any effluent may reach the U.S.

This alternative could improve groundwater resources by reducing the infiltration of raw wastewater into the groundwater basin. These beneficial effects would not likely be realized in the U.S.

4.2.3 Floodplains

Floodplains would not be directly or indirectly affected under Alternative A because no construction would take place in the U.S. No transboundary impacts to floodplains would result from this alternative.

4.2.4 Wetlands

Wetlands in the U.S. would not be directly or indirectly affected by Alternative A due to their substantial distance from the project areas. Effluent discharges by the WWTPs would not affect wetlands in the Tijuana River Estuary. Alternative A would cause no transboundary impacts to wetlands.

4.2.5 Biological Resources

Alternative A includes the construction of sewer lines along existing streets in previously disturbed areas. Habitat and biological resources in Tijuana may not be affected by construction activities. Because no construction is proposed in the U.S., there would be no direct impacts to biological resources in the U.S. from construction activities.

Conditions for biological resources along surface streams in Tijuana, where untreated wastewater is currently flowing, would be improved, as well as for aquatic life in the ocean near the current discharge points for untreated wastewater. This could result in indirect benefits to biological resources in the coastal waters of the U.S. However, the proposed action would be 8-14 miles (13-23 km) south from the U.S.-Mexico border; therefore, potential indirect beneficial impacts that may be observed in the aquatic biological resources in the U.S. would be marginal.

A potential impact on U.S. biological resources relates to migratory species that may travel between areas in Tijuana and the U.S. Effect to migratory bird habitat in Tijuana due to construction activities would likely be minor as the project area is highly developed. Additionally, reduction of raw wastewater flows in surface waters could improve migratory bird habitat. Therefore, potential impacts to migratory birds would be less than significant.

4.2.6 Cultural Resources

Because there is no proposed construction in the U.S., there would be no direct or indirect impacts to U.S. cultural resources.

4.2.7 Coastal Resources

Because there is no proposed construction in the U.S., there would be no impacts to areas within the coastal zone boundary under Alternative A.

4.2.8 Socioeconomics and Public Health

Alternative A would eliminate the discharge of raw wastewater to nearby latrines and open ditches, reducing the potential contamination of localized water distribution lines

through infiltration and inflow. The alternative also would reduce the potential contamination of local water bodies, including the Pacific Ocean and groundwater resources. This alternative would have direct and indirect benefits to the region's economy and public health conditions.

Public health in coastal areas of Tijuana would be positively affected by the proposed action because it would reduce exposure to raw sewage in open ditches and contamination of potable water supplies, which are both pertinent health risks. The improvement of sanitary conditions within the coastal Tijuana vicinity would promote better overall public health conditions in the area. The region's economy could improve because workers in Tijuana are healthier, which could lead to more productivity, and the region could attract more tourism because potential health threats to visitors would be reduced.

The proposed action could result in indirect transboundary benefits to U.S. public health and the border economy. There are frequent border crossing between the U.S. and the Tijuana region. Public health in the U.S. could improve because U.S. visitors to Tijuana would not be exposed to raw sewage from the unserved areas. The border economy could also indirectly benefit as a result of better overall health conditions in Tijuana. The potential health threat associated with traveling to Tijuana would be reduced and more U.S. residents may choose to cross the border. This could increase economic activity in the border region of the U.S.

Environmental justice populations, including low-income populations and minorities, in the U.S. would not be affected by the proposed action. The decision to be made on the proposed action is how to provide wastewater service to currently unserved communities in coastal Tijuana, and thus will not affect water and wastewater services for populations in the U.S.

4.2.9 Topography and Geology

Because there is no proposed construction in the U.S., there would be no direct or indirect transboundary impacts to topography and geology.

4.2.10 Cumulative Effects

Operation of the Japanese credit plants would provide additional wastewater services to meet growing demands in Tijuana. This would improve environmental resources within Tijuana, including water quality in streams, the Tijuana River, and other waterways and biological resources, by reducing raw wastewater discharges. Additional wastewater services would also improve public health and the general economy of the region under the cumulative condition. CESPT is currently constructing a project that would discharge treated effluent from the Japanese credit plants into the Pacific Ocean off Mexico's coast. Effluent discharge flow from the La Morita and Monte de los Olivos plants into the ocean would be a maximum of 16.7 mgd (733 L/s) by the year 2025. Besides the projects mentioned above, the Rosarito Norte, Rosarito I and Tecolote la Gloria WWTP will discharge into the Pacific Ocean

approximately 13.8 mgd (610 L/s) all together by the year 2025. These additional discharges could affect water quality of coastal areas of the U.S. Additional effluent discharged into the ocean as a result of connecting the coastal communities would not be of sufficient quantity to affect U.S. coastal resources under the cumulative condition.

On the other hand the la Morita and Monte de los Olivos WWTP will reduce the inflow to the San Antonio de los Buenos WWTP by approximately 12 mgd (525 L/s) since they will capture the wastewater generated in the Matanuco Norte and El Florido basins, which is currently treated at the SAB and International WWTPs.

The Alternative A would provide wastewater services to two additional communities in Tijuana. Therefore, it would further reduce raw wastewater discharges into the environment under the cumulative condition. Water resources and biological resources would improve from better water quality in waterways. Incremental cumulative impacts to the U.S. coast would be less than significant. The border economy could benefit from improved public services and health in the Tijuana region. This could provide small beneficial transboundary impacts to the U.S. under the cumulative condition.

4.3 Potential Impacts of Wastewater Alternative B

Alternative B is identical to Alternative A in the areas and number of people served as well as the flow of wastewater collected. The difference between the two action alternatives is described in Section 2 and Tables 2-3, 2-4 and 2-5. In this alternative both colonias discharge to the Tecolote-la Gloria WWTP. Table 4-3 presents a summary of the transboundary environmental impacts resulting from Alternative B. Given that no adverse impacts are anticipated, mitigation measures are not necessary.

Table 4-3
Summary of Impacts to the United States
Resulting from Alternative B

Air Resources (air quality, noise, odor)	No Impact
Water Resources (surface water, groundwater, water quality)	Beneficial Impact
Floodplains	No Impact
Wetlands	No Impact
Biological Resources	Beneficial Impact
Cultural Resources	No Impact
Coastal Resources	No Impact
Socioeconomics/Public Health	Beneficial Impact

Topography and Geology	No Impact
Cumulative Impacts	Less than Significant

4.3.1 Air Resources

Construction activities which will be more extensive than alternative A, because of pipe lengths and equipment requirements, could have direct effects to air resources in and around the project area. The proposed wastewater infrastructure in Alternative B would generate noise, dust, and construction equipment exhaust during the construction phase. These emissions would be terminated after construction is complete. Construction activities would be similar to those described for Alternative A.

Air resources in the U.S. would not be directly or indirectly affected by the proposed action. The air quality in the U.S. border region is more likely to be affected by more local sources than areas in Tijuana. Construction activities for this alternative are temporary and the associated emission would tend to disperse towards the southeast, away from the U.S., based on the prevailing wind patterns of the area.

The construction activities associated with these alternatives are not in close enough proximity for noise levels to exceed U.S. standards. This noise level would fall well within the limits of Tijuana and would not result direct or indirect noise impacts within the U.S.

During the operational phase, Alternative B would result in a reduction of odors arising from the inadequate disposal of raw wastewater. The alternative would be beneficial to the residents of unserved areas during the operational phase. However, the odor impact on the U.S. would be negligible because of the substantial distance of the projects.

4.3.2 Water Resources

Alternative B would prevent the discharge of raw wastewater to nearby latrines and open ditches, which have an impact on local groundwater and ultimately the Pacific Ocean. It is estimated that 7.33 L/s (0.17 mgd) of untreated wastewater would be appropriately collected and treated at the Tecolote La Gloria WWTP thus improving water quality in surface water streams and the ocean in the Tijuana area. The WWTPs would discharge treated effluent in the ocean. The natural dilution of the effluent in the ocean water would prevent any harm to U.S. coastal resources.

The beneficial impact of the Alternative B in reducing raw wastewater discharges would not be significantly perceived in the U.S. given typical ocean current patterns in the region, the distance of the effluent discharge points to the U.S., and the natural dilution of effluent that would occur before any effluent may reach the U.S.

This alternative could improve groundwater resources by reducing the infiltration of raw wastewater into the groundwater basin. These beneficial effects would not likely be realized in the U.S.

4.3.3 Floodplains

Floodplains would not be directly or indirectly affected under Alternative B because no construction would take place in the U.S. No transboundary to floodplains would result from this alternative.

4.3.4 Wetlands

Wetlands in the U.S. would not be directly or indirectly affected by Alternative B due to their substantial distance from the project areas. Effluent discharges by the WWTPs into the Pacific Ocean would not affect wetlands in the Tijuana River Estuary. Alternative B would cause no transboundary impacts to wetlands.

4.3.5 Biological Resources

Alternative B includes the construction of sewer lines along existing streets in previously disturbed areas. It also includes the construction of pressurized lines to reach the treatment plants in non-urban areas which have been affected by farming and other activities. Habitat and biological resources in Tijuana may not be affected by construction activities. Because no construction is proposed in the U.S., there would be no direct impacts to biological resources in the U.S. from construction activities.

Conditions for biological resources along surface streams in Tijuana where untreated wastewater is currently flowing would be improved, as well as for aquatic life in the ocean near the current discharge points for untreated waste water. This could result in indirect benefits to biological resources in the coastal waters of the U.S. However, the proposed action would be 8-14 miles (13-23 km) south from the U.S.-Mexico border; therefore, potential indirect beneficial impacts that may be observed in the aquatic biological resources in the U.S. would be marginal.

A potential impact on U.S. biological resources relates to migratory species that may travel between areas in Tijuana and the U.S. Effect to migratory bird habitat in Tijuana due to construction activities would likely be minor as the project area is highly developed. Additionally, reduction of raw wastewater flows in surface waters could improve migratory bird habitat. Therefore, potential impacts to migratory birds would be less than significant.

4.3.6 Cultural Resources

Because there is no proposed construction in the U.S., there would be no impacts to cultural resources. Construction activities in Tijuana resulting in ground shaking or increased particulate matter are at a far enough distance from the border and would not affect U.S. cultural resources.

4.3.7 Coastal Resources

Because there is no proposed construction in the U.S., there would be no impacts to areas within the coastal zone boundary under Alternative B.

4.3.8 Socioeconomics

Alternative B would eliminate the discharge of raw wastewater to nearby latrines and open ditches, reducing the potential contamination of localized water distribution lines through infiltration and inflow. The alternative also would reduce the potential contamination of local water bodies, including the Pacific Ocean and groundwater resources. This alternative would have direct and indirect benefits to the region's economy and public health conditions.

Public health in coastal areas of Tijuana would be positively affected by the proposed action because it would reduce exposure to raw sewage in open ditches and contamination of potable water supplies, which are both pertinent health risks. The improvement of sanitary conditions within the coastal Tijuana vicinity would promote better overall public health conditions in the area. The region's economy could improve because workers in Tijuana are healthier, which could lead to more productivity, and the region could attract more tourism because potential health threats to visitors would be reduced.

The proposed action could result in indirect transboundary benefits to U.S. public health and the border economy. There are frequent border crossing between the U.S. and the Tijuana region. Public health in the U.S. could improve because U.S. visitors to Tijuana would not be exposed to raw sewage from the unserved areas. The border economy could also indirectly benefit as a result of better overall health conditions in Tijuana. The potential health threat associated with traveling to Tijuana would be reduced and more U.S. residents may choose to cross the border. This could increase economic activity in the border region of the U.S.

Environmental justice populations, including low-income populations and minorities, in the U.S. would not be affected by the proposed action. The decision to be made on the proposed action is how to provide wastewater service to currently unserved communities in coastal Tijuana, and thus will not affect water and wastewater services for populations in the U.S.

4.3.9 Topography and Geology

Because there is no proposed construction in the U.S, there would be no direct or indirect transboundary impacts to topography and geology.

4.3.10 Cumulative Effects

Operation of the Japanese credit plants would provide additional wastewater services to meet growing demands in Tijuana. This would improve environmental resources within Tijuana, including water quality in streams, the Tijuana River, and other

waterways and biological resources, by reducing raw wastewater discharges. Additional wastewater services would also improve public health and the general economy of the region under the cumulative condition.

CESPT is currently is construction a project that would discharge treated effluent from the Japanese credit plants into the Pacific Ocean off Mexico's coast. Effluent discharge flow from the La Morita and Monte de los Olivos plants into the ocean would be a maximum of 16.7 mgd (733 L/s) by the year 2025. Besides, the projects mentioned above, the Rosarito Norte, Rosarito I and Tecolote la Gloria WWTP will discharge into the Pacific Ocean approximately 13.8 mgd (610 l/s) all together by the year 2025. These additional discharges could affect water quality of coastal areas of the U.S. Additional effluent discharged into the ocean as a result of connecting the coastal community would not be of sufficient quantity to affect U.S. coastal resources under the cumulative condition.

On the other hand the la Morita and Monte de los Olivos WWTP will reduce the inflow in the San Antonio de los Buenos WWTP by approximately 12 mgd (525 L/s) since they will capture the wastewater generated in the Matanuco Norte and El Florido basins, which is currently treated at the SAB and International WWTPs .

Additional construction would occur in Mexico and in the U.S. in the future to facilitate commercial and residential development, including the construction of other wastewater treatment facilities. These activities could temporarily reduce air quality by dust and exhaust emissions, increase noise levels, and deteriorate water quality by runoff into nearby streams from the construction site. Best Management Practices would be implemented during construction to reduce these effects. Additional development under the cumulative condition would improve Tijuana's economy by generating jobs and more economic activity. A better economy in Tijuana could promote more relations with U.S. businesses and attract more visitors to the region. Cumulative effects to these resources under the No Action Alternative would be less than significant.

The Alternative B would provide wastewater services to additional communities in Tijuana. Therefore, it would further reduce raw wastewater discharges into the environment under the cumulative condition. Water resources and biological resources would improve from better water quality in waterways. Incremental cumulative impacts to the U.S. coast would be less than significant. The border economy could benefit from improved public services and health in the Tijuana region. This could provide small beneficial transboundary impacts to the U.S. under the cumulative condition.

Section 5
List of Acronyms

ACHP	Advisory Council on Historic Preservation
AHPA	Archeological and Historic Preservation Act
ALK	Alkalinity
BECC	Border Environment Cooperation Commission
BEIF	Border Environment Infrastructure Fund
BOD	biological oxygen demand
Ca	Calcium
CAA	Clean Air Act
CARB	California Air Resources Board
CDM	Camp Dresser & McKee Inc.
CEQ	Council on Environmental Quality
CESPT	Commisión Estatal de Servicios Públicos de Tijuana
CFU	Colony Forming Units
CFR	Code of Federal Regulations
Cl	Chloride
CO	Carbon monoxide
CWA	Clean Water Act
dB	decibels
dB Leq	decibels equivalent sound level
dBA	decibels A-weighted
DFG	Department of Fish and Game
DO	Dissolved Oxygen

EA	Environmental Assessment
EID	Environmental Information Document
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
Fe	Iron
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FNSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
H+	Ions in solution
H2S	Hydrogen Sulfide
HC	Hydrocarbons
Hr	hour
IBC	International Boundary Commission
IBEP	Integrated Border Environmental Plan
IBWC	International Boundary and Water Commission
in	inches
INEGI	Instituto Nacional de Estadística Geographía e Informática
K	Potasium
km	Kilometer
L/s	Liters per Second
m	Meters

m3	Cubic meters
MBTA	Migratory Bird Treaty Act
Mg	Magnisium
mg/l	Milligrams per liter
mgd	Million gallons per day
MIA	Manifestación de Impacto Ambiental
ml	Milliliters
ml/l	Milliliters per liter
Mm-1	Inverse megameters
MSCP	Multiple Species Conservation Program
MWWD	Metropolitan Wastewater Department
Na	Sodium
NAAQS	National Ambient Air Quality Standards
NADB	North American Development Bank
NAFTA	North American Free Trade Agreement
NERR	National Estuarine Research Reserve
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO2	Nitrogen Dioxide
NOM	Norma Oficial Mexicana
NPS	National Park Service
O3	Ozone
Pb	Lead
pH	Measure of acidity
PM10	Particulate matter under 10 microns

ppm	Parts per million
SBIWTP	International Water Treatment Plant
SBOO	South Bay Ocean Outfall
SDAB	San Diego Air Basin
SDSU	San Diego State University
SHPO	State Historic Preservation Officer
SO2	Sulfur dioxide
SO4	Sulfate
Sr	Strontium
TDS	Total Dissolved Solids
µg/m3	Micrograms per cubic meter
US	United States
USC	United States Code
USDOE	United States Department of Energy
USFWS	US Fish and Wildlife Service
USIBWC	United States International Boundary and Water Commission
XMS	Transmissivity
W	water alternatives
WA	Wilderness Act
WTP	Water Treatment Plant
WW	Wastewater
WWTPs	Wastewater Treatment Plants

Section 6
List of Agencies Consulted

The following agencies were contacted by letter. Comments received are summarized in the following table.

Agency	**Agency Contact**	**Summary of Comments**
USFWS	Steve Thompson USFWS	No Comments Provided
National Park Service	Pacific West Information Center San Francisco, CA	No Comments Provided
Natural Resources Conservation Service	Lincoln E. "Ed" Burton USDA Lyng Service Center	No Comments Provided
CA Department of Fish and Game	Mr. Banky Curtis Habitat Conservation Division	No Comments Provided
Regional Water Quality Control Board	Mr. David Barker San Diego Regional Water Quality Control Board	No Comments Provided
California Air Resources Board	California Air Resources Board Headquarters Building Sacramento, CA	No Comments Provided
California Office of Historic Preservation	California Office of Historic Preservation Sacramento, CA	No Comments Provided
California Coastal Commission	California Coastal Commission San Francisco, CA	No Comments Provided
San Diego County	Mr. Mark McPherson San Diego County Land and Water Quality Management Division	No Comments Provided
IBWC	Gilbert Anaya International Boundary and Water Commission United States Section	No Comments Provided
Comisión Internacional de Limites y Aguas	Carlos Peña, Jr. Acting Division Engineer	The development of the projects would help protect and improve conditions along the coast.

Section 7
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Appendix A

International Agreements

The BECC BEIF Environmental Assessment Guidelines identify and describe the following five major bilateral agreements between Mexico and the U.S. related to environmental protection:

- The 1889 International Boundary Convention
- The Water Treaty of 1944
- The 1983 La Paz Agreement (or Border Environmental Agreement)
- The 1992 Integrated Border Environmental Plan (IBEP)
- The 1994 North American Free Trade Agreement (NAFTA)

"The 1889 International Boundary Convention established the International Boundary Commission (IBC). The Water Treaty of 1944 replaced the IBC with the International Boundary and Water Commission (IBWC) and granted the U.S. Section of the IBWC enhanced authority to address water quality, conservation, and use issues within the U.S. All international border and water treaties with respect to Mexico are coordinated through the IBWC. "

"The IBWC was created by the governments of the U.S. and Mexico to apply the provisions of various border and water treaties and settle differences arising from such applications through a joint international commission. IBWC coordinates the exchange of information between the U.S. and Mexico for all program activities that involve watersheds or aquifers crossing into Mexico. The IBWC jurisdiction extends along the U.S./Mexico International Border, and inland into both countries where international border and water projects may exist. The IBWC has encouraged and coordinated the establishment of cooperative relationships with federal, state, and local agencies, both in the U.S. and Mexico, in carrying out its border projects and activities."

The 1944 Treaty also specifies the way in which water rights of the Rio Grande, from Fort Quitman in Texas to the Gulf of Mexico, are allotted. In summary, the Treaty states that all of the water reaching the Rio Grande from the San Juan and Alamo Rivers belongs to Mexico, as wells as two thirds of the flow from the Conchos, San Diego, San Rodrigo, Escondido, and Salado rivers and Las Vacas Arroyo. Flows not-allotted by the treaty are equally owned by both countries.

The "Agreement for the Protection and Improvement of the Environment in the Border Area", known as La Paz Agreement, was signed in 1983. The main objective of the Agreement is to protect, improve, and conserve the environment of the border area. The La Paz Agreement defines the border region as the area lying 100 km (62 miles) to the north and south of the U.S./Mexico International Border. In 1992, the IBEP was

released, and building on this, the Border XXI Program increased the scope of concern to include environmental health and natural resources issues.

"As part of NAFTA, a bilateral agreement was signed to address the deficiencies in water and wastewater infrastructure in the border area. A second environmental agreement negotiated to augment NAFTA is the 1994 U.S./Mexico Agreement Concerning the Establishment of a BECC and a NADB (BECC-NADB Agreement). The BECC-NADB Agreement targets certain environmental problems in the border region to remedy international border environmental or health problems. The BEIF was created by NADB and EPA to make environmental infrastructure projects affordable for communities throughout the U.S./Mexico border region by combining grant funds with loans or guaranties for projects that would otherwise be financially unfeasible."

U.S. National Environmental Policy Act of 1969

NEPA was passed in 1969 "to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment." NEPA requires all federal agencies to prepare Environmental Information Documents (EIDs), EAs and/or Environmental Impact Statements (EISs) to assess environmental impacts from project alternatives.

The purpose of NEPA is "to declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality."

According to NEPA, it is the continuing responsibility of the federal government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate federal plans, functions, programs, and resources.

NEPA, as amended in 1970, requires federal agencies to: (a) utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment; (b) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by Title II of this Act, which will ensure that presently un-quantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations; (c) include in every recommendation… a detailed statement on the environmental impact of the Proposed Action; any adverse environmental effects which cannot be avoided should the proposal be implemented; alternatives to the Proposed Action; the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and; any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented.

U.S. Air Regulations

The Clean Air Act (CAA) was enacted in 1970 to address air pollution at the federal level. The CAA requires the EPA administration to set national ambient air quality standards and emission standards. Furthermore, the act established auto emission standards. Prior to the passage of the CAA, regulations for air quality control were defined and enforced at the state level. The CAA still allows states to have more stringent standards than those required by the federal government.

The CAA was amended in 1977. The amendment relaxed auto emission standards, and established provisions for the deterioration of areas. The CAA was further amended in 1990. The 1990 Clean Air Act provides for interstate commissions on air pollution control, which are to develop regional strategies for cleaning up air pollution. The 1990 Clean Air Act includes other provisions to reduce interstate air pollution. The CAA also acknowledges that air pollution moves across national borders, and the law addresses pollution that originates in the U.S. and reaches Canada and Mexico.

The 1990 CAA Amendment also created the framework for the creation of a permit program for large point sources of air contaminants.

The CAA requires federal actions to conform to any state implementation plan approved or promulgated under Section 110 of the Act. For EPA actions, the applicable conformity requirements specified in 40 CFR Part 51, Subpart W; 40 CFR Part 93, Subpart B; and the applicable state implementation plan must be met. Under the Federal Rule on General Conformity, 40 CFR Part 93, a conformity determination is required only when emissions occur in a non-attainment area. Much of the work necessary to carry out the Clean Air Act is delegated to the states.

Mexican Air Regulations

Two air quality regulations and two noise regulations relevant to this EA have been incorporated into the Normas Oficiales Mexicanas, or Mexican Official Regulations:

- *Límites Máximos Permisibles de Emisiones para Vehículos con Gasolina,* or Maximum Permissible Emission Limits for Vehicles Using Gasoline (NOM-041-SEMARNAT-1999)

- *Límites Máximos Permisibles de Emisiones para Vehículos con Diesel,* or Maximum Permissible Emission Limits for Vehicles Using Diesel (NOM-045-SEMARNAT-1996)

- *Límites Máximos Permisibles de Emisión de Ruido de Vehículos Automotores,* or Maximum Permissible Emission Limits for Noise from Motor Vehicles (NOM-080-SEMARNAT-1994)

- *Emisiones de Ruido de Fuentes Fijas,* or Noise Emissions from Fixed Sources (NOM-081-SEMARNAT-1994)

U.S. Water Quality Regulations

The Clean Water Act (CWA) established the basic structure for regulating discharges of pollutants into the waters of the U.S. It gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for contaminants of concern in surface waters. The Act made it unlawful for any person to discharge a pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by non-point source pollution.

Mexican Water Quality Regulations

There are five water quality regulations relevant to this EA in the Normas Oficiales Mexicanas, or Mexican Official Regulations:

- *Limites Máximos Permisibles de Contaminantes en las Descargas de Aguas Residuales en Aguas y Bienes Nacionales*, or Maximum Permissible Limits of Contaminants in Wastewater Discharges into National Waters and Natural Resources (NOM-001-SEMARNAT-1996)

- *Límites Máximos Permisibles de Contaminantes Para las Aguas Residuales Tratadas que se Reusen en Servicios al Público*, or Maximum Permissible Limits of Contaminants for Treated Wastewaters that are Reused in Services to the Public (NOM-003-SEMARNAT-1997)

- *Límites Permisibles de Calidad y Tratamiento a que Debe Someterse el Agua Para su Potabilización,* or Permissible Quality and Treatment Limits for Potable Water (NOM-127-SSA1-1994)

- *Vigilancia y Evaluación del Control de Calidad del Agua Para Uso y Consumo Humano Distribuida por Sistemas de Abastecimiento Público,* or Monitoring and Evaluation of Quality Control of Water for Human Use and Consumption through Public Supply Systems (NOM-179-SSA1-1998)

- *Requisitos Sanitarios que Deben Cumplir los Sistemas de Abastecimiento de Agua para Uso y Consumo Humano Públicos y Privados,* or Sanitary Requirements to Which Public and Private Water Supply Systems for Human Use and Consumption Must Comply (NOM-012-SSA1-1993)

U.S. Biological Resource Regulations

The Endangered Species Act (ESA), 16 USC 1536 et seq., protects threatened and endangered plants and animals and their habitats. The U.S. Fish and Wildlife Service (USFWS) of the Department of the Interior implement the ESA at a national level. California Department of Fish and Game (DFG) implements the California ESA. DFG maintains a list of special status species within the state.

The law prohibits any action, administrative or real, that results in a "taking" of a listed species, or adversely affects habitat. Likewise, import, export, interstate, and foreign commerce of listed species are all prohibited.

In the context of this study, the ESA must be observed for any potential impacts to terrestrial habitat in the U.S. resulting from construction activities, as well as impacts to aquatic habitat resulting from changes in water quality.

Mexican Biological Resource Regulations

The Norma Oficial Mexicana, or Mexican Official Regulation having to do with protection of species is NOM-059-SEMARNAT-2001. The regulation includes a list of native Mexican species, and their status as either endangered, threatened, afforded special protection, or likely to be extinct. Of the 569 amphibians, birds, fungi, invertebrates, mammals, fish, plants, and reptiles listed, 104 are endangered, 164 are threatened, 10 are considered probably extinct, and the rest are afforded special protection.

Federal Cross-Cutting Laws and Regulations

This EA addresses the following laws within its scope as well.

National Natural Landmarks - The Secretary of the Interior is authorized to designate areas as National Natural Landmarks for listing on the National Registry of Natural Landmarks pursuant to the Historic Act of 1935, 16 U.S. Code (USC) 461 et seq. In conducting the environmental review of the Proposed Action, EPA is required to consider the existence and location of natural landmarks, using information provided by the National Park Service (NPS) pursuant to 36 CFR 62.6(d). The Tijuana River Estuary is a National Natural Landmark.

Cultural Resources Data - The Archeological and Historic Preservation Act (AHPA) of 1974, 16 USC 469 et seq. provides for the preservation of cultural resources if an EPA activity may cause irreparable loss or destruction of significant scientific, prehistoric, or archeological data. In accordance with the AHPA, the responsible official or the Secretary of the Interior is authorized to undertake data recovery and preservation activities.

Cultural Resources - The National Historic Preservation Act (NHPA), as amended, 16 SC. 470, directs federal agencies to integrate historic preservation into all activities which either directly or indirectly involving land use decisions. The NHPA is administered by the NPS, the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and each federal agency. Implementing regulations include 36 CFR Part 800: Regulations of the Advisory Council on Historic Preservation Governing the NHPA Section 106 Review Process. Section 106 of the NHPA requires federal agencies to take into consideration the impact that an action may have on historic properties which are included on, or are eligible for inclusion on, the National Register of Historic Places. The Section 106 review process is usually

carried out as part of a formal consultation with the SHPO, the ACHP, and other parties, such as Indian tribes, that have knowledge of, or a particular interest in, historic resources in the area of the undertaking.

Wetlands Protection - EO 11990, "Protection of Wetlands" of 1977, requires federal agencies conducting certain activities to avoid, to the extent possible, adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands, if a practicable alternative exists. Discharge of dredge or fill material into wetlands and other waters of the U.S. are also regulated under Section 404 of the Clean Water Act.

Floodplain Management - EO 11988, "Floodplain Management" of 1977, requires federal agencies to evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, any adverse effects associated with the direct and indirect development of a floodplain.

Coastal Zone Management Act - The Coastal Zone Management Act, 16 USC 1451 et seq., requires that federal agencies in coastal areas be consistent with approved State Coastal Zone Management Programs, to the maximum extent possible. If an EPA action may affect a coastal zone area, the responsible official is required to assess the impact of the action on the coastal zone.

Fish and Wildlife Protection - The Fish and Wildlife Coordination Act, 16 USC 661 et seq., requires federal agencies involved in actions that will result in the control or structural modification of any natural stream or body of water for any purpose, to take action to protect the fish and wildlife resources that may be affected by the action.

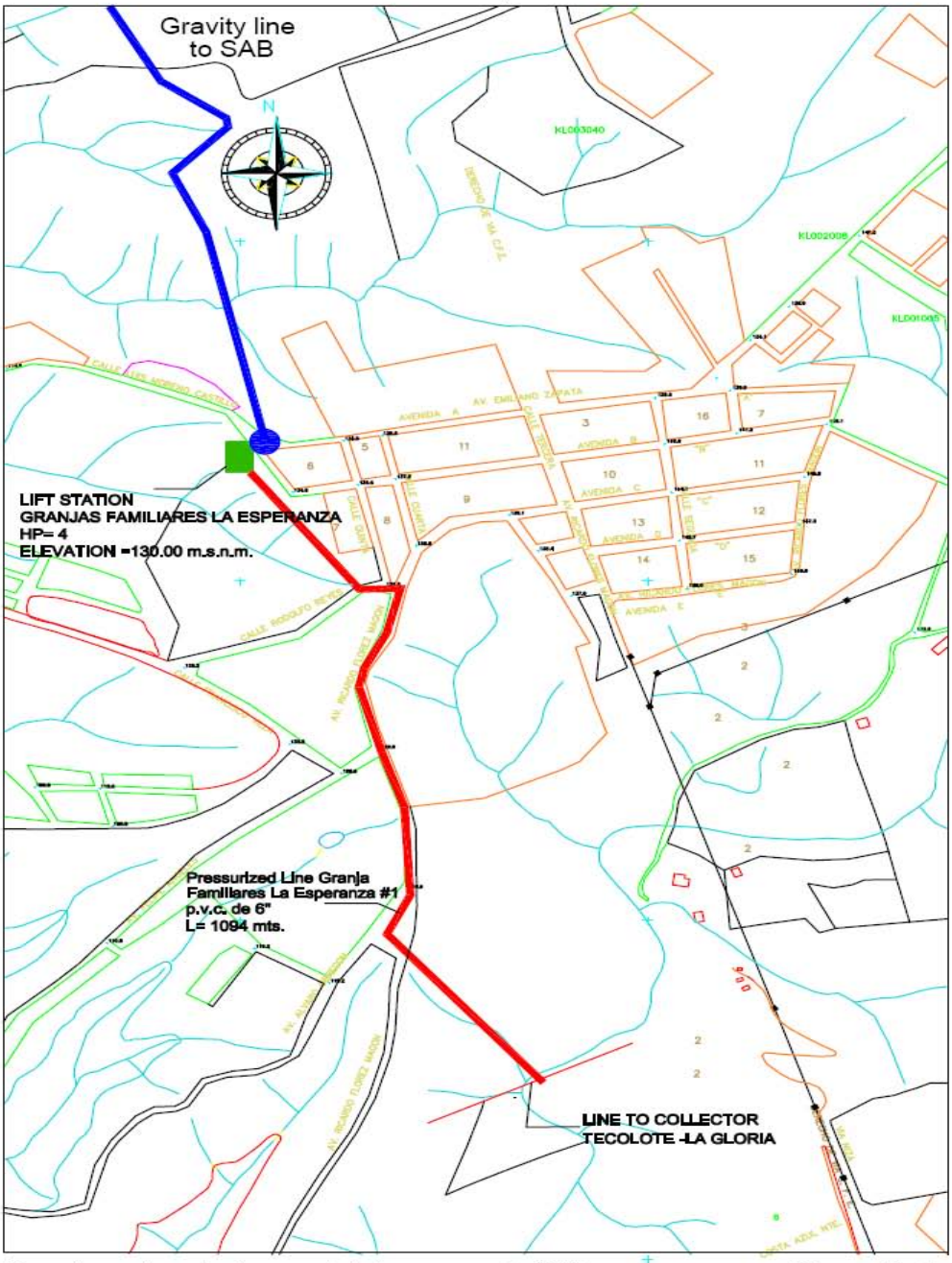
Wilderness Protection - The Wilderness Act, 16 USC 1131 et seq., establishes a system of National Wilderness Areas. The act establishes a policy for protecting this system by generally prohibiting motorized equipment, structures, installations, roads, commercial enterprises, aircraft landings, and mechanical transport. Otay Mountain Wilderness, designated in 1999, is the nearest wilderness site to the study area.

Environmental Justice - EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and the accompanying presidential memorandum, advise federal agencies to identify and address, whenever feasible, disproportionately high and adverse human health or environmental effects on minority communities and/or low-income communities.

Appendix B

COL. GRANJAS FAMILIARES LA ESPERANZA

Wastewater Collection System Alternatives



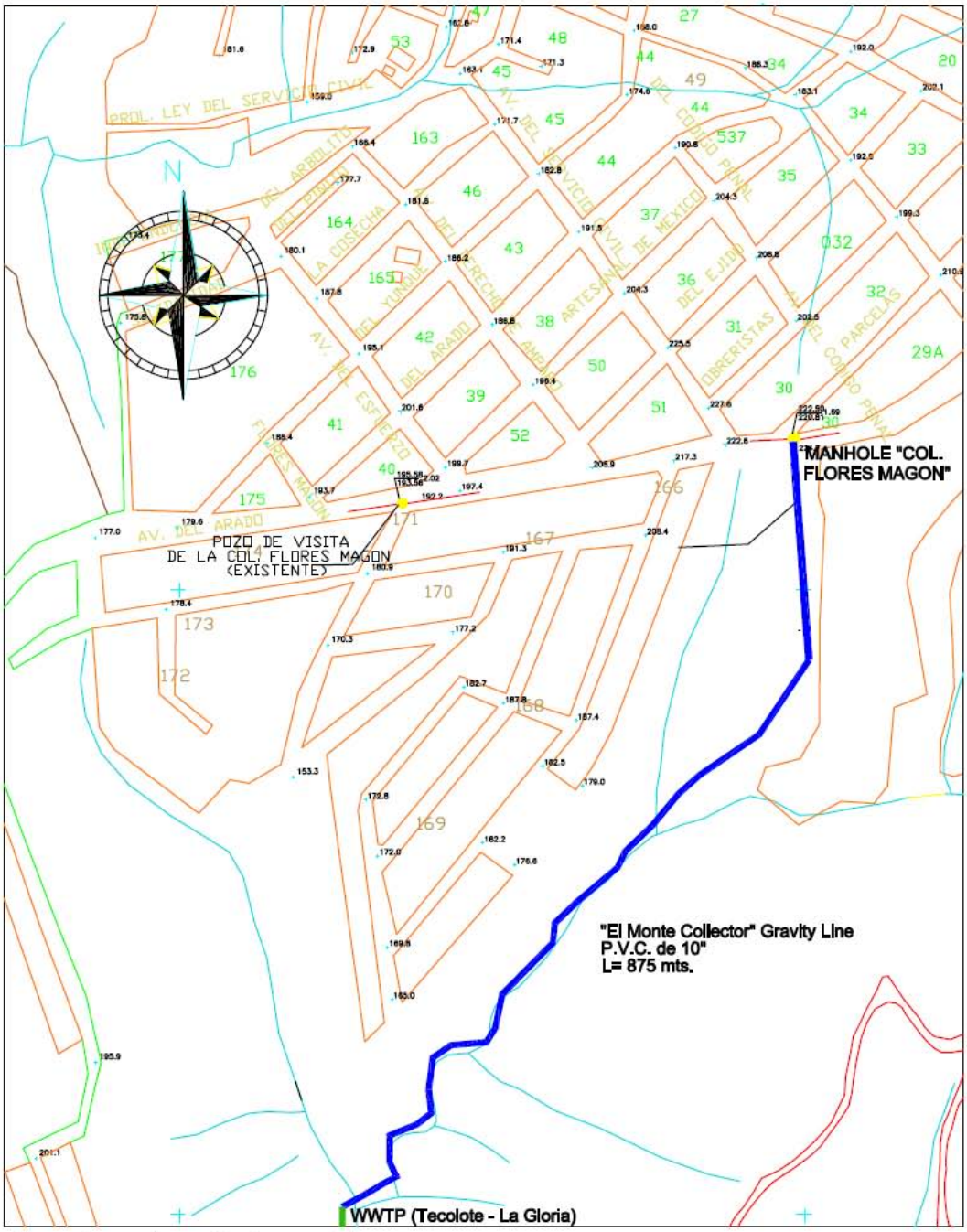
Transboundary Enviromental Assessment (EA) Figure B–1

Alternative "A" - Gravity (Prefered)

Alternative "B" - Lift Station

COL. EL MONTE

Wastewater Collection System Alternatives



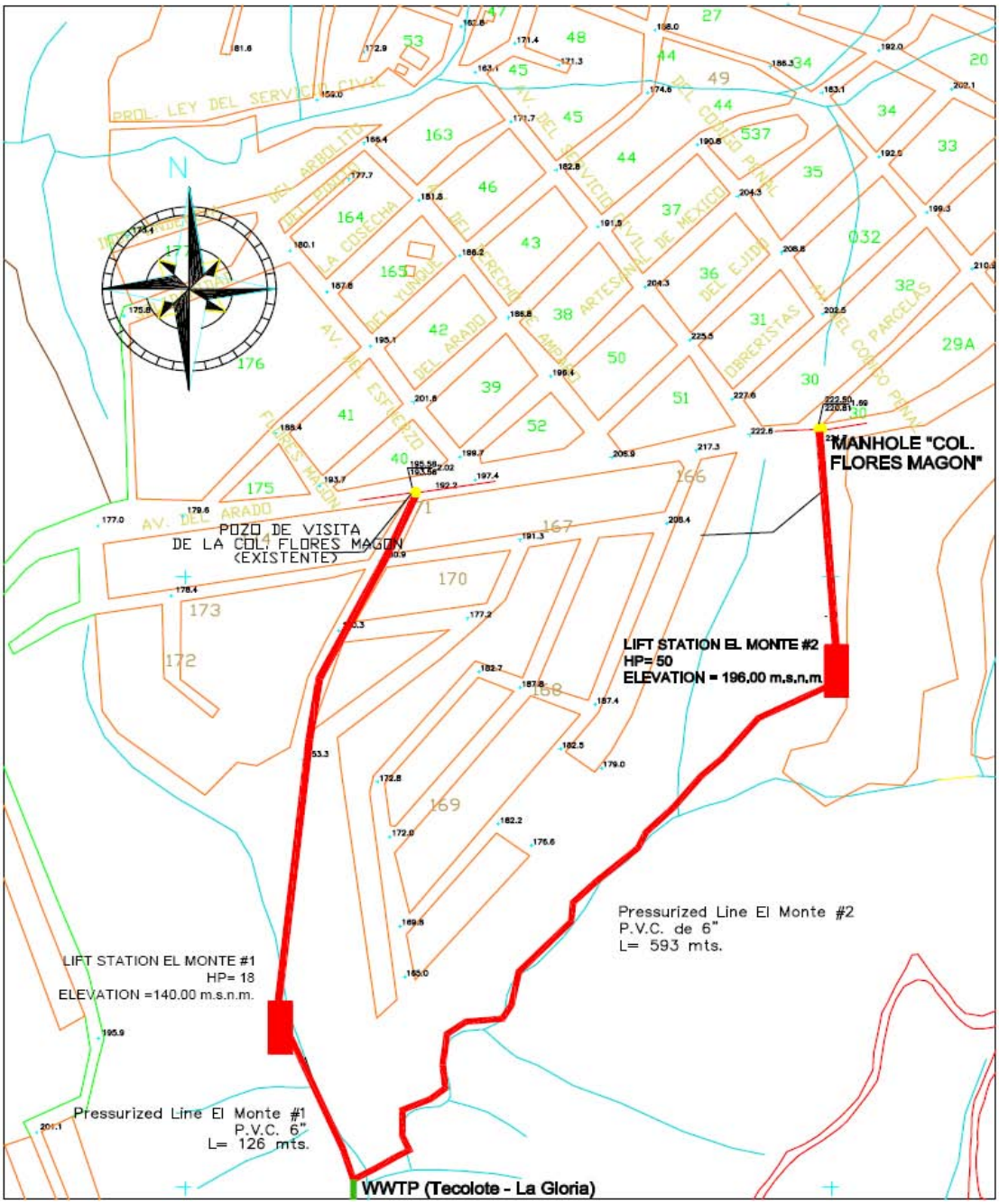
Transboundary Enviromental Assessment (EA)

Figure B-2

Alternative "A" - Gravity Line (Prefered)

COL. EL MONTE

Wastewater Collection System Alternatives



Transboundary Enviromental Assessment (EA)

Figure B-2

Alternative "B" - Lift Stations