

## **4 Current Water and Wastewater Infrastructure Needs**

While many U.S.-Mexico border communities are currently addressing their water and wastewater infrastructure needs, there is still much work to be done in order to provide adequate human health and environmental protection. Water supply and wastewater treatment infrastructure in the border area, as is the case elsewhere, varies from community to community. There are systems which have capacity to serve essentially the entire populace and those without significant public systems, in which case individual homes and commercial/industrial facilities in the community have made their own provision for service. Financial supplements to limited local budgets are necessary to expedite the resource-intensive building, expansion or rehabilitation of water treatment plants, water distribution networks, wastewater treatment plants and sewer systems.

The needs are not only for the people now living in the border area, but to keep up with the growth of the communities. For that reason, the current needs have been estimated for two different time frames. The Near-term needs are those that the communities have identified as essential to provide or maintain adequate service for the populace today. Long-term needs are those that, while they should be started as soon as possible, are based on the commonly used public works planning period of 20 years to provide for the additional burden of maintaining service into the future.

Near-term needs descriptions and projections for these endeavors have been taken from individual community profiles developed at the BECC by the Project Managers, under the direction of the Technical Director, who are in direct contact with local government officials. In some cases, the Near-term needs are not in the profiles. Because these profiles generally reflect a known deficiency or potential health or environmental hazard, the near-term is considered the time frame within which municipal officials can implement a project development process. That is, the Near-term needs estimate represents a two to three year time frame within which it is reasonable to expect a community to complete its program, but many can be expected to be completed sooner and others will undoubtedly require a longer period to reach completion. Projects which have been certified by the BECC, are being readied for construction and have already identified financing are not included as Near-term needs in the tables 4-1 thru 4-7.

Long-term water and wastewater infrastructure needs have been estimated from the projected Year 2020 populations of the watersheds and generally consist of substantial rehabilitation of the existing systems where available as well as addition of capacity to provide for population growth. The 20-year planning horizon is common in long-range public works management plans, but many factors would affect the actual pace of development used in the long-range estimates. Allowance has been made for the value of portions of existing facilities that should remain serviceable in 20 years, mitigated by the cost of rehabilitation to include them in upgrades where possible.

The EPA Drinking Water Needs Survey and Clean Water Needs Survey cost curves were used to calculate the Year 2020 needs for water supply filtration plants and distribution lines and wastewater treatment plants and collection systems respectively. Development of impoundments, reservoirs and aqueducts are not included in the estimates for water supply. Wastewater treatment facility estimates are based on stabilization pond technology unless there is an existing plant utilizing another technology. The long-term estimates are for service to the entire estimated population of the community and, for wastewater treatment, attainment of secondary treatment. Within each watershed, extension of the needs identified in the profiles have been supplemented with estimates based on the population of areas outside of identified communities.

#### 4.1 Pacific Coastal Basin

Descanso, California. Improvements to the municipal water supply and treatment system include the replacement of obsolete water distribution lines, construction of a new storage tank and installation of filtration units at the three water supply wells. A municipal wastewater treatment plant and collection system might be expected to be constructed in the future.

Ensenada, Baja California. Improvements to the water and wastewater systems may include the possibility of water reuse.

Tecate, Baja California. Water distribution system and wastewater collection system may expand to the entire city as well as upgrading of the existing wastewater treatment plant.

Tijuana, Baja California. A significant portion of the wastewater collection system is in need of replacement.

San Diego County, California. Other near-term needs include improvements to the water supply system in the Sweetwater District.

**Table 4-1 Near-and Long-term Needs in the Pacific Coastal Basin**

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-term Capital Cost (\$millions)</b>	<b>Long-term Capital Cost (\$millions)</b>
Descanso, CA	900	1,100	2	2
Ensenada, BC	325,000	617,300	10	145
San Diego, CA	1,248,200	1,496,900	0	127
Tecate, BC	74,500	134,300	9	46
Tijuana, BC	1,260,100	2,676,700	7	402
Unincorporated and Other Areas of San Diego County, CA	1,421,900	1,693,000	93	103
<b>Total</b>	<b>4,330,600</b>	<b>6,619,300</b>	<b>121</b>	<b>825</b>

## **4.2 New River Basin**

Blythe, California. The community is considering a centralized water production and treatment facility. Water mains are envisioned to serve the nearby areas of Ripley and Mesa Verde.

Brawley, California. The community has received a notice of non-compliance from the California Regional Water Resources Control Board mandating the upgrade and expansion of its existing wastewater treatment plant. The city is also considering replacement of water supply piping for additional capacity and improvements to the wastewater collection system and pumping stations.

Calexico, California. The community is expanding the existing water and wastewater treatment plants.

Heber, California. The community expects to complete improvements to and expand the existing water treatment plant and wastewater collection system.

Mexicali, Baja California. The community needs to identify, evaluate and select alternatives for wastewater treatment using natural systems for four communities in the Mexicali Valley. The feasibility for water reuse could be included in the evaluation.

Palo Verde, California. The community needs to develop a wastewater facility plan for possible construction of a wastewater collection system and treatment plant to replace individual septic tanks.

Salton, California. The community is considering rehabilitation of its wastewater collection system and replacement of its wastewater treatment plant.

Seeley, California. The community needs to evaluate its water supply and wastewater systems.

Westmorland, California. The community is to complete a replacement of its wastewater treatment plant.

**Table 4-2 Near and Long-term Needs in the New River Basin.**

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-term Capital Cost (\$millions)</b>	<b>Long-term Capital Cost (\$millions)</b>
Blythe, CA	14,200	26,700	12	15
Brawley, CA	24,000	44,900	14	18
Calexico, CA	28,500	53,500	0	32
Heber, CA	3,600	6,700	0	4
Mexicali, BC	794,400	1,233,000	4	85
Palo Verde, CA	13,900	26,100	2	20
Salton, CA	500	1,000	3	2
Seeley, CA	500	900	6	2
Westmorland, CA	1,900	3,500	0	3
Unincorporated and other Areas of Imperial County, CA	91,700	171,900	No Data	27
<b>Total</b>	<b>973,200</b>	<b>1,568,200</b>	<b>41</b>	<b>208</b>

### **4.3 Gulf of California Coastal Basin**

Altar, Sonora. The community needs to expand its water distribution system to serve the balance of the city, provide chlorination, refurbish all water supply production wells and expand the delivery system to adjacent areas. It also needs to expand the wastewater collection system to provide citywide service and to expand and rehabilitate the existing oxidation pond.

Bavispe, Sonora. The community needs to upgrade or replace its water supply production wells and its water distribution facilities, expand its wastewater collection system and provide additional treatment capacity.

Caborca, Sonora. The community needs to rehabilitate its public water distribution system.

Imuris, Sonora. The community needs to rehabilitate and upgrade its water supply production wells and expand the water distribution system, rehabilitate or replace the wastewater collection lines and upgrade the wastewater treatment plant.

Magdalena de Kino, Sonora. The community needs to improve its water and wastewater systems.

Puerto Peñasco, Sonora. The community has short-term needs to improve its water system, expand and rehabilitate its wastewater system. This will require the expansion of the wastewater collection system, the wastewater treatment plant and the water distribution system.

Santa Ana, Sonora. The community needs to construct a wastewater treatment plant, expand the wastewater collection system and make improvements to the potable water system.

Sásabe, Sonora. The community needs to construct a wastewater collection and treatment system.

Sonoyta, Sonora. The community needs to make improvements to the public water supply system and to the wastewater collection and treatment facilities, including rehabilitation and expansion. Lukeville, Arizona, is an adjacent small community of less than 100 people and its needs estimates are included with those of Sonoyta.

**Table 4-3 Near and Long-term Needs in the Gulf of California Coastal Basin**

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-Term Capital Cost (\$Millions)</b>	<b>Long-Term Capital Cost (\$Millions)</b>
Altar, SN	7,900	11,500	No Data	7
Bavispe, SN	2,000	3,500	1	4
Caborca, SN	70,900	100,800	No Data	45
Imuris, SN	12,400	22,200	1	17
Magdalena de Kino, SN	42,900	76,500	5	30
Puerto Peñasco, SN	39,500	49,900	12	21
Santa Ana, SN	13,400	23,900	4	20
Sásabe, SN	1,400	2,500	1	3
Sonoyta, SN/Lukeville, AZ	16,500	29,500	2	15
<b>Total</b>	<b>206,900</b>	<b>320,300</b>	<b>26</b>	<b>162</b>

#### **4.4 Colorado River Basin**

Agua Prieta, Sonora. The community needs rehabilitation of its water distribution system, expansion of its water storage capacity and expansion of both the wastewater collection system and treatment plant.

Bisbee, Arizona. The community needs improvements to the wastewater collection system including correction of excessive inflow and infiltration in two areas and treatment facilities.

Cananea, Sonora. The community needs to create a public water utility, install water meters, increase water storage capacity, expand water distribution and wastewater collection systems and rehabilitate its wastewater treatment facilities.

Douglas, Arizona. The community needs to upgrade its water supply and wastewater systems.

Naco, Arizona/Sonora. Additional needs information for this community was not made available.

Nogales, Arizona. The community needs to upgrade its water distribution system, wastewater collection system and its share of the international wastewater treatment plant.

Nogales, Sonora. The community needs to upgrade municipal water supply and distribution, wastewater collection and its share of the international wastewater treatment plant.

Patagonia, Arizona. The community needs to upgrade its wastewater treatment plant because of upcoming revision of effluent limits and to rehabilitate its wastewater collection system to reduce excessive inflow and infiltration.

San Luis, Arizona. The community needs to increase its water supply and storage capacity as well as rehabilitate its wastewater collection system.

San Luis Rio Colorado, Sonora. The community needs to provide a wastewater treatment plant, expand its wastewater collection system and upgrade its water system.

Somerton, Arizona. The community needs additional wastewater treatment plant capacity as well as replacement of undersized and deteriorating asbestos cement water mains and obsolete water meters.

Tombstone, Arizona. The community needs improvements to its water supply and distribution system, expansion of the wastewater collection system and upgrading of its wastewater treatment plant.

Willcox, Arizona. The community needs to upgrade its wastewater treatment plant.

Yuma, Arizona. The community needs to extend its water distribution and wastewater collection systems.

**Table 4-4 Near- and Long-term Needs in the Colorado River Basin.**

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-term Capital Cost (\$millions)</b>	<b>Long-term Capital Cost (\$million)</b>
Agua Prieta, SN	76,400	198,400	3	73
Bisbee, AZ	6,400	8,500	10	4
Cananea, SN	31,900	44,000	3	16
Douglas, AZ	15,500	20,600	10	6
Naco, AZ/SN	6,300	8,500	No Data	4
Nogales, AZ/SN	183,500	337,400	55	82
Patagonia, AZ	1,000	1,700	2	2
San Luis, AZ	14,100	19,500	2	7
San Luis Rio Colorado, SN	157,300	272,400	17	92
Somerton, AZ	7,300	10,100	3	4
Tombstone, AZ	1,500	2,000	5	2
Willcox, AZ	3,800	5,000	2	3
Yuma, AZ	63,800	88,200	72	21
Unincorporated and Other Areas of Cochise County, AZ	71,900	95,500	No Data	19
Unincorporated and Other Areas of Pima County, AZ	743,500	980,200	No Data	75
Unincorporated and Other Areas of Santa Cruz County, AZ	19,400	32,300	No Data	10
Unincorporated and Other Areas of Yuma County, AZ	60,000	83,000	No Data	18
<b>Total</b>	<b>1,463,600</b>	<b>2,207,300</b>	<b>184</b>	<b>438</b>

#### 4.5 Northwest Chihuahua Basin

Ascensión, Chihuahua. The community needs to upgrade or replace its water distribution and storage system, expand its wastewater collection system and provide for wastewater treatment facilities.

Columbus, New Mexico. The community needs minor improvements at its municipal wells and completion of the third phase of its wastewater treatment plant.

Janos, Chihuahua. The community needs to rehabilitate and upgrade the municipal wells and water distribution system and to provide a wastewater treatment plant.

Nuevo Casa Grandes, Chihuahua. The community needs to expand and upgrade its water supply and distribution system and provide a wastewater treatment plant.

Palomas, Chihuahua. The community needs to rehabilitate or replace its water supply and distribution system as well as upgrade or replace the wastewater collection system and provide a treatment plant.

Villa Ahumada, Chihuahua. The community needs to rehabilitate and upgrade the water distribution system, expand wastewater collection to the entire community and provide a wastewater treatment plant.

**Table 4-5 Near- and Long-term Needs in the Northwest Chihuahua Basin.**

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-term Capital Cost (\$millions)</b>	<b>Long-term Capital Cost (\$million)</b>
Ascensión, CH	23,400	42,300	2	26
Columbus, NM	1,000	1,700	1	3
Janos, CH	11,100	14,100	No Data	11
Nuevo Casas Grandes, CH	67,800	128,700	No Data	<b>55</b>
Las Palomas, CH	7,200	14,700	No Data	11
Villa Ahumada, CH	13,600	25,700	2	19
Unincorporated and Other Areas of Hidalgo County, NM	5,900	6,800	No Data	4
Unincorporated and Other Areas of Luna County, NM	25,800	41,400	No Data	12
<b>Total</b>	<b>155,800</b>	<b>275,400</b>	<b>5</b>	<b>141*</b>

\* Value is different than in the Status report ( Summary Report) EPA -832-R-00-007 Page 6 published May 2000 because the report was preliminary.

## 4.6 Rio Grande Basin

Alpine, Texas. The community needs to upgrade its water supply production wells, storage capacity and water distribution system. The wastewater treatment plant needs to be upgraded and a new interceptor line provided.

Alton, Texas. The community needs to expand its water distribution system. An alternative is being considered for connecting its system to the McAllen municipal water supply system.

Camargo, Tamaulipas. The community needs to upgrade its wastewater collection system.

China/General Bravo, Nuevo Leon. The community needs to expand its wastewater collection system and provide wastewater treatment.

Ciudad Acuña, Coahuila. The community has a wastewater treatment plant under construction and needs to upgrade its wastewater collection system.

Ciudad Juárez, Chihuahua. The community needs to expand both the water and the wastewater systems to serve the metropolitan area.

Coyame, Chihuahua. The community needs to rehabilitate and upgrade its water supply and distribution system and provide a wastewater treatment plant.

Del Rio, Texas. The community is rehabilitating its water storage and distribution system, water supply wells and pumping station.

Donna, Texas. The community is replacing and upgrading the existing wastewater collection system.

Eagle Pass, Texas. The community needs to upgrade its water distribution system and may consider expanding it to serve neighboring Pueblo Nuevo, Texas. The existing wastewater treatment plant needs to be upgraded or replaced and extension of the collection system to Pueblo Nuevo may be considered.

El Paso, Texas. The community needs to include long-term planning for water supply.

Fabens, Texas. The community needs to install a water treatment system for high iron and manganese removal.

Gustavo Díaz Ordaz, Tamaulipas. The community needs to upgrade its wastewater collection system.

Guadalupe Bravos, Chihuahua. The community needs to provide for water system improvements, wastewater treatment and expansion of its wastewater collection system.

Laredo, Texas. The community is considering expansion of its water distribution and wastewater collection systems for nearby Colonias.

Manuel Benavides, Chihuahua. The community needs to and upgrade and expand its water distribution system, expand its wastewater collection system and provide for wastewater treatment.

McAllen, Texas. The community needs to expand its wastewater collection system including service to Colonias outside of the city limits.

Mercedes, Texas. The community may need to expand its wastewater treatment plant and collection systems.

Mier, Tamaulipas. The community needs to rehabilitate and expand its water treatment plant.

Miguel Alemán, Tamaulipas. The community needs to extend its wastewater collection system and upgrade its treatment facilities.

Nava, Coahuila. The community needs to upgrade its water supply and distribution system, including additional storage, to improve and expand the wastewater collection system and to provide a wastewater treatment plant. The community of Estación Rio Escondido needs upgrading of the water supply system. Provisions of water supply and wastewater collection system is being considered for the community of La Saucedá.

Nueva Ciudad Guerrero, Tamaulipas. The community needs to expand its wastewater collection and provide an operational wastewater treatment facility.

Nuevo Laredo, Tamaulipas. The community needs to upgrade its water distribution and wastewater collection systems. Correction of Inflow/Infiltration problems is being considered for improving its wastewater collection system

Ojinaga, Chihuahua. The community needs to construct a water distribution system and storage facilities, upgrade wastewater treatment and expand its wastewater collection system.

Piedras Negras, Coahuila. The community plans to upgrade or replace its wastewater stabilization ponds with an activated sludge system as well as to upgrade and extend the wastewater collection system.

Presidio, Texas. The community needs upgrading or replacement of its wastewater treatment plant.

Reynosa, Tamaulipas. The community needs to upgrade part of its water supply system and upgrade and expand its wastewater collection system. Bioremediation of Laguna La Escondida, is being considered as well as the development of a treated wastewater sludge management plan.

Rio Bravo, Tamaulipas. The community needs to upgrade its water treatment plant and is considering extension of wastewater collection to a nearby Colonia.

Rio Grande, Texas. The community is considering water treatment plant upgrading and expansion of the wastewater collection system to a Colonia.

Roma, Texas. The community is making water and wastewater improvements including extension of service to a Colonia.

Sanderson, Texas. The community is considering wastewater collection and treatment facilities.

Weslaco, Texas. The community needs upgrading of its wastewater collection and treatment systems, with possible extension of service to a Colonia.

Zaragoza, Coahuila. The community needs to upgrade its water distribution system and provide for adequate storage capacity. Wastewater needs include expansion of the wastewater collection system to the full service area and provision of a wastewater treatment plant.

**Table 4-6 Near - and Long-term Needs in the Rio Grande Basin**

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-term Capital Cost (\$millions)</b>	<b>Long-term Capital Cost (\$millions)</b>
Alpine, TX	5,800	6,600	7	2
Alton, TX	4,000	7,300	No Data	7
Camargo, TM	15,800	18,900	2	13
China/General Bravo, NL	17,000	23,000	2	17
Ciudad Acuña, CO	81,206	294,900	81	43
Ciudad Juárez, CH	1,239,900	2,395,000	No Data	437
Coyame, CH	2,100	4,000	No Data	4
Del Rio, TX	36,100	47,600	0	14
Donna, TX	15,800	28,500	0	11
Eagle Pass, TX	30,700	53,500	No Data	15
El Paso, TX	640,000	923,400	No Data	121
Fabens, TX	500	700	No Data	1
Guadalupe Bravos, CH	10,300	14,000	No Data	12
Gustavo Díaz Ordáz, TM	14,600	13,300	2	9
Laredo, TX	189,000	360,500	11	85
Manuel Benavides, CH	2,100	1,700	No Data	2
McAllen, Texas	112,500	202,300	No Data	62
Mercedes, TX	15,000	26.,900	6	14
Mier, TM	6,500	7,900	5	7
Miguel Alemán, TM	23,800	31,500	4	9
Nava, CO	24,500	45,700	13	30
Nueva Cd Guerrero, TM	3,900	4,200	No Data	3
Nuevo Laredo, TM	358,500	898,000	13	151
Ojinaga, CH	24,000	27,700	4	12
Piedras Negras, CO	142,300	270,000	58	80
Presidio, TX	5,000	7,400	4	7
Reynosa, TM	533,400	1,138,000	29	155
Rio Bravo, TM	108,400	147,200	5	55

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-term Capital Cost (\$millions)</b>	<b>Long-term Capital Cost (\$millions)</b>
Rio Grande, TX	10,400	19,700	5	17
Roma, TX	12,000	22,800	0	14
Sanderson, TX	1,200	1,100	4	1
Weslaco, TX	28,900	51,900	5	28
Zaragoza, CO	19,200	39,400	4	26
Unincorporated and Other Areas of Brewster County, TX	2,900	3,200	No Data	2
Unincorporated and Other Areas of Doña Ana County, NM	141,600	213,100	No Data	32
Unincorporated and Other Areas of El Paso County, TX	124,500	179,700	No Data	28
Unincorporated and Other Areas of Hidalgo County, TX	484,500	935,600	No Data	63
Unincorporated and Other Areas of Maverick County, TX	23,500	40,900	No Data	12
Unincorporated and Other Areas of Presidio County, TX	3,900	5,700	No Data	3
Unincorporated and Other Areas of Starr County, TX	54,200	103,000	No Data	20
Unincorporated and Other Areas of Terrell County, TX	100	100	No Data	1
Unincorporated and Other Areas of Val Verde County, TX	10,400	13,700	No Data	6
Unincorporated and Other Areas of Webb County, TX	24,400	46,600	No Data	13
<b>Total</b>	<b>4,603,900</b>	<b>8,656,200</b>	<b>264</b>	<b>*1,644</b>

\* Value is different than in the Status report ( Summary Report) EPA -832-R-00-007 Page 6 published May 2000 because the report was preliminary.

#### 4.7 Gulf of Mexico Coastal Basin

Brownsville, Texas. The community proposes to build a reverse osmosis system to treat wastewater to "bottled water" quality for use by the Port of Brownsville and nearby industries.

Matamoros, Tamaulipas. The community needs to rehabilitate or replace its wastewater collection system and complete the construction of a wastewater pump station.

Valle Hermoso, Tamaulipas. The community needs to upgrade its water distribution and wastewater collection system as well as to provide for a wastewater treatment plant.

**Table 4-7 Near-and Long-term Needs in the Gulf Of Mexico Coastal Basin**

<b>Community</b>	<b>Year 2000 Population</b>	<b>Year 2020 Population</b>	<b>Near-term Capital Cost (\$millions)</b>	<b>Long-term Capital Cost (\$millions)</b>
Brownsville, TX	145,600	227,200	34	128
Matamoros, TM	427,700	736,900	6	181
Valle Hermoso, TM	60,100	83,200	10	38
Unincorporated and Other Areas of Cameron County, TX	202,400	315,800	No Data	39
<b>Total</b>	<b>835,800</b>	<b>1,363,100</b>	<b>50</b>	<b>386</b>

\* Value is different than in the Status Report ( Summary Report) EPA -832-R-00-007 Page 6 published May 2000 because the city of Reynosa was originally included in the Gulf of Mexico Coastal basin due to changes in the limits of the watershed basin.