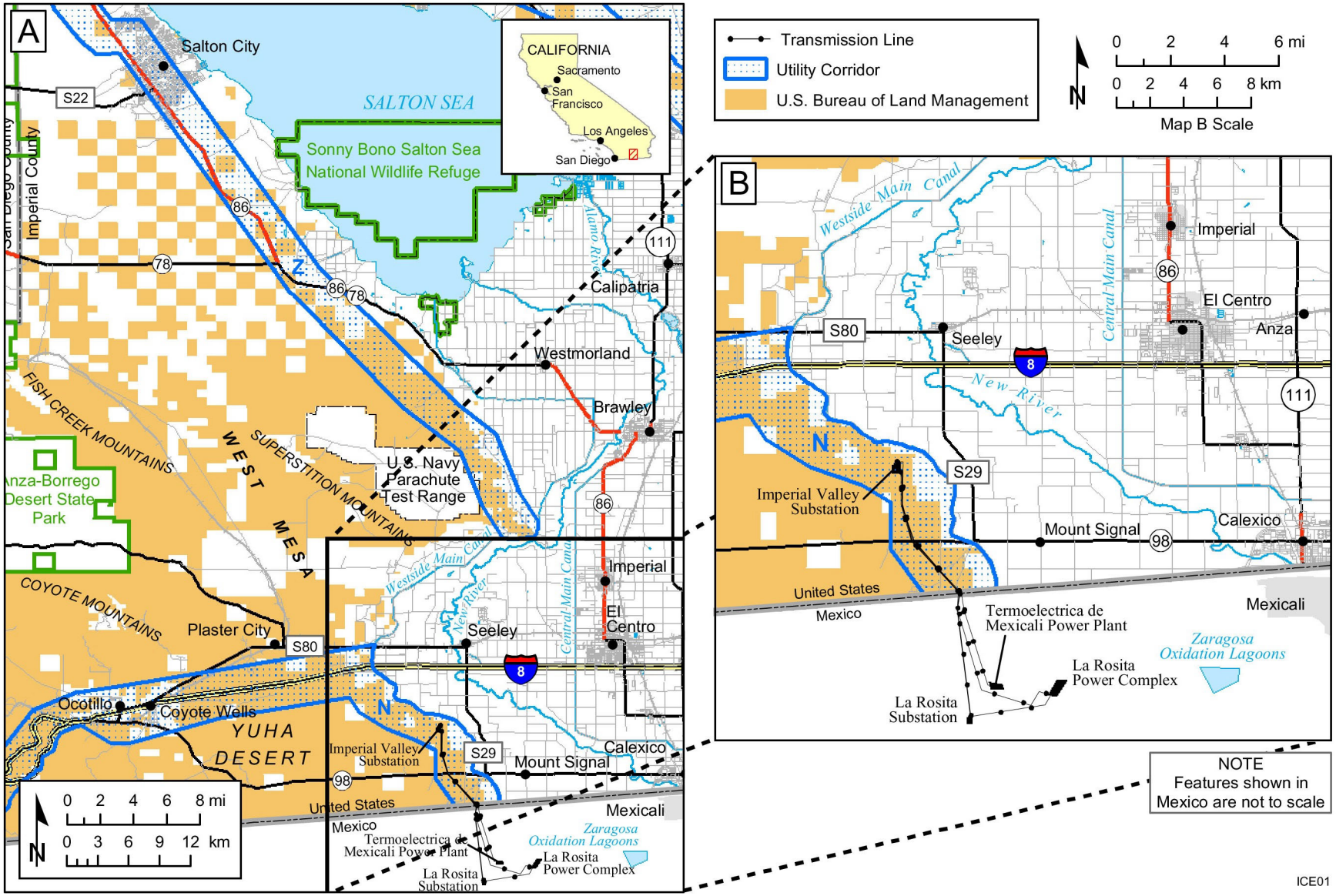


FIGURE 1.1-1 Regional Setting for Imperial-Mexicali 230-kV Transmission Lines

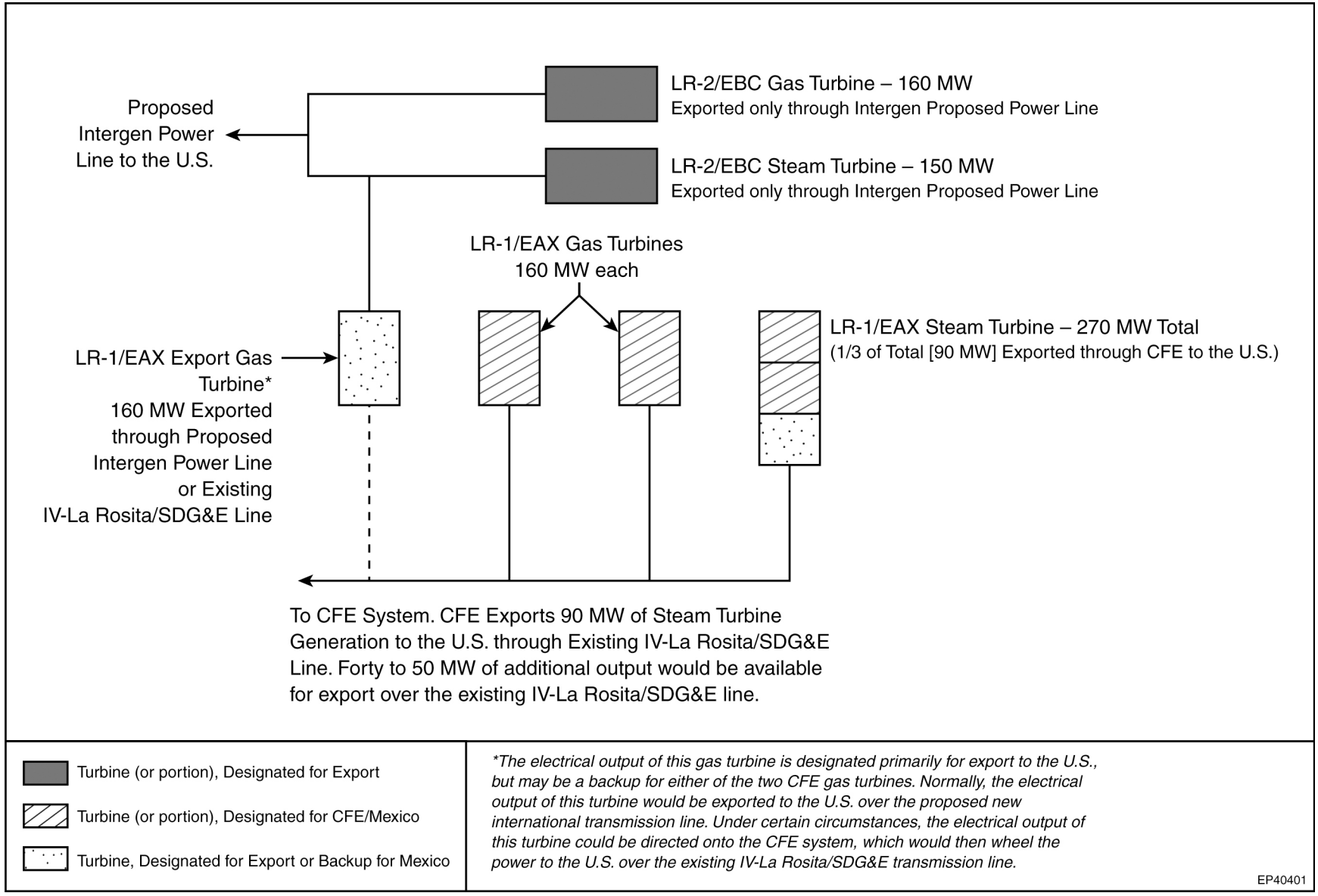


FIGURE 1.1-2 La Rosita Power Complex: Electrical Distribution

TABLE 2.5-1 Summary of Impacts for Proposed Action and Other Alternatives by Resource Area[a]

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Geology, Soils, and Seismicity (4.1)	No additional impacts are anticipated to geological resources or soils. Normal erosional forces would continue. Because the transmission lines would not be built, seismicity hazards would not be relevant.	*Geology* Minor disturbance of surface material resulting from construction but with minimal potential for slope failure. *Seismicity* On the basis of the California Geological Survey's on-going evaluation of fault zones to date, surface fault rupture is not likely to occur along the proposed or alternative transmission line routes. *Soils* Potential for impacts would increase as a result of vegetation removal, and grading and excavation during construction that could lead to increased erosion. Temporary increase in soil compaction resulting from vehicle usage of access roads.	Impacts would be the same as those under the proposed action.	Impacts would be the same as those under the proposed action. In addition, with regard to soils, any paving of roads or construction activities could have short-term adverse impacts to soils due to soil disturbance. Overall, impact would be beneficial because dust emissions and soil erosion would be reduced over the long term.
Applicants' Proposed Routes:		Temporary impacts due to soil disturbance total about 15.8 acres (6.4 ha); permanent impacts would be less than 3.6 acres (1.5 ha) since no new access road would be built.		
Western Alternative Routes:		Temporary impacts would be about 18.0 acres (7.3 ha); permanent impacts about 13.1 acres (5.3 ha). The lower portion of the routes could cross prime farmland.		
Eastern Alternative Routes:		Temporary impacts would be about 16.3 acres (6.6 ha); permanent impacts about 10.5 acres (4.2 ha).		

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Water Resources (4.2)	*Transmission Lines* Under the no action alternative no transmission lines would be built and thus there would be no impacts. *Water Consumption* The LRPC unit would consume up to 4,940 ac-ft/yr of water taken from the Zaragoza Oxidation Lagoons in Mexicali. *Flow Reduction* The flow of the New River would be reduced by less than 4% (15.7% of the standard deviation for the flow at the Calexico gage). *New River* The TDS concentration would be increased by less than 3.7% (31% of the standard deviation). TSS, BOD, COD, and phosphorus loads in the New River would be reduced.	*Transmission Lines* Construction of two transmission lines along the proposed routes or alternative routes would have minimal impacts on surface waters. A maximum of two lattice towers for each line would be placed on the 100-yr floodplain for the Pinto Wash. This placement would have minimal impacts on floodplain function or values. Impacts to groundwater would be prevented during construction. *Water Consumption* The LRPC and TDM power plants would consume 10,667 ac-ft/yr of water for cooling purposes. The water would be taken from the Zaragoza Oxidation Lagoons in Mexicali. (The LRPC power plant alone would consume 7,170 ac-fr/yr. The TDM power plant alone would consume 3,497 ac-ft/yr.) *New River* Power plant operations would directly impact the New River by reducing the flow of water received from the Zaragoza Oxidation Lagoons and by modifying its quality. As a result, the average annual flow of the New River would be decreased by about 5.9% at the U.S.-Mexico border (Calexico gage). Decreases in flow would result in a decrease in average annual water depth of about 0.13 ft (3.9 cm) at the Calexico gage and 0.7 ft (2.1 cm) at the Westmorland gage near the Salton Sea. TDS concentrations would increase by 5.6%, or about 46% of its variability in the river at the Calexico gage, TDS, TSS, BOD, COD, phosphorus, and selenium loads would be reduced as a result of water treatment at the plants.	*Dry Cooling* The plants would use about 5% of the water needed for wet cooling under the proposed action. BOD, TSS, and phosphorus and selenium concentrations in the New River would be essentially unchanged. COD would slightly decrease. Indirect impacts to the Salton Sea would be minimal. *Wet-Dry Cooling* Impacts would be greater than those for dry cooling but less than those for wet cooling only, as described for the proposed action. Impacts to the New River, Salton Sea, Brawley Wetlands, and groundwater would be less than those for the no action and proposed action alternatives and would be proportional to the amount of wet-cooling used.	Impacts would be the same as for the proposed action. Measures to reduce air quality impacts could result in beneficial impacts to water resources over the long term, since surface runoff from unpaved surfaces would be reduced.

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Water Resources (4.2) (Cont.)	*Salton Sea* The Salton Sea inflow would be reduced by 0.4%, or 6.3% of the standard deviation of total inflow. Salinity would increase by less than 0.17 mg/L/yr. *Brawley Wetland* New River flow reductions would not interfere with withdrawal of water for wetland. Increases in TDS would not cause adverse impacts to the system. *Groundwater* The flow reduction of 4% at the Calexico gage would have minimal effect on groundwater recharge to the Imperial Valley Groundwater Basin, from the New River.	*Salton Sea* New River inflow to the Salton Sea would decrease, thus reducing its volume, lowering its elevation, and decreasing its surface area. The decrease in inflow of 10,667 ac-ft/yr would result in a elevation decrease of about 0.05 ft (0.6 cm), about 10% of the Sea's natural variability. Surface area would decrease by about 97 acres (39 ha), which is about 0.04% of its initial surface area and about 9% of its natural variability. Decreased water inflow would increase the TDS concentration (salinity) by 0.19 mg/L/yr. This rate of increase would cause the Salton Sea to reach a threshold of 60,000 mg/L only about 4 days earlier out of 36 years than it would with no plants operating. Phosphorus loads would be reduced by about 5.3%. Selenium loads would be reduced by about 38 lb/yr, or about 0.2% of the dissolved mass in the sea. *Brawley Wetland* New River flow reductions would not interfere with withdrawal of water for wetland. Increases in TDS would not cause adverse impacts to the system. Changes in other parameters (i.e., BOD, COD, and pathogens) could have beneficial impacts. All changes would fall within the range of the parameter's variability. *Groundwater* Indirect impacts to groundwater would occur as a result of decreasing flow in the New River since it is a recharge source for groundwater in the Imperial Valley Groundwater Basin. Impacts to the basin would be minimal because the New River is only one of many recharge sources, and the reduction in its flow is expected to be low.		

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Air Quality (4.3)	*Primary Emissions* Plant emissions would be somewhat greater for no action than for the proposed action for CO and NO_x because of the inclusion of the Mexico units at LRPC. However, emissions would still result in impacts in the United States below EPA SLs for all pollutants. Carbon dioxide (CO_2) emissions would be about 3.9 million tons/yr, or about 0.066% of total U.S. CO_2 emissions. *Secondary Air Pollutants* Increases or decreases of ambient ozone concentrations resulting from plant emissions of NO_x and volatile organic compounds (VOC) would be minor. Secondary PM_{10} (particulate matter with a mean aerodynamic diameter of 10 µm or less) production from plant emissions would also be minor and be similar to that under the proposed action. *Fugitive Dust* There would be no fugitive dust emissions from construction as transmission lines would not be built.	*Primary Emissions* The impacts from operation of export turbines at the TDM and LRPC power plants are considered as effects of the transmission line projects. Plant emissions of PM_{10}, nitrogen oxides (NO_x), carbon monoxide (CO), and ammonia (NH_3) all would result in increases in air concentrations that are below EPA SLs used here as thresholds of significant deterioration of air quality. CO_2 emissions would be about 5.1 million tons/yr, or about 0.088% of total U.S. CO_2 emissions. *Secondary Air Pollutants* Characterization of the air chemistry in the region suggests that plant emissions of NO_X and VOC could result in slight (less than 3 ppb) increases or decreases in the concentration of ambient ozone levels. Secondary production of PM_{10} in the atmosphere resulting from plant emissions of NH_3 and NO_x is expected to be no more than 1 µg/m^3. The SL for PM_{10} is not expected to be exceeded with the addition of secondary PM_{10}. *Fugitive Dust Emissions* Temporary emissions from transmission line construction would include those from fugitive dust, PM_{10} (construction, vehicular traffic, and helicopter operations), and fuel combustion. Construction-related PM_{10} emissions over the construction period would be about 11.4 tons (10.3 t) for the proposed routes, 14.4 tons (13.1 t) for the western alternative routes, and 12.3 tons (11.2 t) for the eastern alternative routes. The emission rate of fugitive dust (PM_{10}) from exposed shoreline resulting from the reduction in the surface area of the Salton Sea would be at most 100 tons/yr (91 t/yr).	*Emission Controls* CO emissions would be up to 80% less than those under the proposed action. HAPs emissions are assumed to be reduced by 50%. Emissions of other pollutants would as for the proposed action. Secondary O_3 and PM_{10} impacts would be the same as those for the proposed action. *Dry cooling or wet-dry cooling* Plant emissions of PM_{10} would be reduced without wet-cooling tower use. Other emissions would increase 10–15% as a result of reductions in plant efficiency. *Fugitive Dust Emissions* Emissions from transmission line construction would be the same as for the proposed action.	*Primary Emissions* Plant emissions would be the same as for the proposed action. Impacts of plant emissions on air quality would be offset by reductions in emissions of the same pollutants from other sources in the air basin. *Secondary Air Pollutants* Secondary O_3 and PM_{10} impacts from plant emissions could be reduced as compared to those for the proposed action with the use of emission offsets. *Fugitive Dust Emissions* In addition to emissions from transmission line construction, mitigation activities such as road paving could produce temporary fugitive dust emissions but long term improvement.

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Biological Resources (4.4)	*Transmission Lines* No additional impacts to desert habitat or wildlife are expected since no transmission lines would be built. *New River* Impacts to biological resources would occur from changes in water quality and volume in the New River, due to power plant operation. Impacts to aquatic organisms would be in proportion to the water resource impacts under the proposed alternative in accordance with relative water consumption. *Wetlands* No impacts would occur to wetlands because the transmission lines would not be built. The Brawley Wetland would not be adversely impacted by a decrease in New River water depth or an increase in salinity.	*Transmission Lines* Permanent impacts to Sonoran creosote bush scrub and desert wash habitat would occur during construction of the transmission lines. Construction may adversely impact small mammals and reptiles with low mobility during construction. No Federal-listed threatened or endangered species would be impacted by the proposed action; however, some sensitive plant species could be disturbed. Protective measures would be taken to minimize impacts to the flat-tailed horned lizard, the western burrowing owl, and other sensitive species. *New River* Water quality changes would have a minor adverse impact on fish and aquatic invertebrates. Riparian vegetation would not be impacted by a decrease in water depth or an increase in salinity. *Wetlands* No wetlands would be impacted by transmission line construction and operation. Desert wash areas [about 0.2 ac (0.08 ha)] could be adversely impacted. Brawley Wetland would not be adversely impacted by a decrease in New River water depth or an increase in salinity.	*Transmission Lines* The effects on desert habitat would be the same as those for the proposed action. *New River* The use of alternative cooling technologies at the power plants would reduce the adverse impacts associated with slight water depth and water quality changes to the New River and Salton Sea (though all these impacts would be small). *Wetlands* Impacts would be less to the Brawley wetland than under the proposed action for dry cooling or wet-dry cooling systems.	*Transmission Lines* Impacts would be the same as under proposed action. *New River* Impacts would be the same as for proposed action. *Wetlands* Impacts would be the same as for proposed action. *Salton Sea* Impacts would be the same as for proposed action. *Mitigation Measures Impacts* Prior to implementation an evaluation of potential impacts to special status species would be conducted.

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Biological Resources (4.4) (Cont.)	*Salton Sea* No additional impacts to aquatic invertebrates and fish.	*Salton Sea* Reduction in New River inflow would increase salinity (e.g., increase of 0.19 mg/L/yr) and could cause small adverse impacts to biological resources. A decrease in phosphorus load could reduce eutrophication, resulting in fewer episodic fish kills and improving the food base for some bird species. Impacts to habitat for waterfowl and wading birds would be small.	*Salton Sea* The use of alternative cooling technologies at the power plants would reduce the adverse impacts associated with slight water depth and water quality changes to the New River and Salton Sea (though all these impacts would be small).	
Applicants' Proposed Routes:		Permanent impact to 3.1 acre (1.3 ha) of Sonoran creosote bush scrub and 0.3 acre (0.1 ha) of desert wash habitat.		
Western Alternative Routes:		Permanent impacts would be about 30% greater due to greater length relative to the proposed routes.		
Eastern Alternative Routes:		Permanent impacts would be about 8% greater due to greater length relative to the proposed routes.		
Cultural Resources (4.5)	No additional impacts expected.	Cultural resources would be impacted by the construction and operation of the transmissions lines. Impacts to cultural resources would be mitigated.	Impacts would be the same as those identified for the proposed action.	Any measures involving road paving or construction may require evaluation for NRHP eligibility status and protection in consultation with California SHPO to mitigate impacts.
Applicants' Proposed Routes:		Construction of the transmission lines in the proposed routes would impact four archaeological sites. Adverse impacts from transmission line construction to these archaeological sites would be mitigated in consultation with the California SHPO.		

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Cultural Resources (4.5) (Cont.) *Western Alternative Routes:*		Portions of the western alternative routes have not been surveyed for cultural resources. While these routes would avoid the larger concentrations of archaeological sites found along the proposed routes, the routes would likely impact cultural resources. Any adverse effects would be mitigated prior to construction.		
Eastern Alternative Routes:		Portions of the eastern alternative routes have not been surveyed for cultural resources. While these routes would avoid the larger concentrations of archaeological sites found along the proposed routes, the routes would likely impact cultural resources. Any adverse effects would be mitigated prior to construction.		
Land Use (4.6)	No additional impacts expected.	Land use in the projects area is limited due to its status as an Area of Critical Environmental Concern. Vehicle use is confined to roads, and camping is limited to designated areas only. No farming or mining is currently allowed in the area.	Impacts would be the same as those under the proposed action.	Impacts would depend on mitigation measure (e.g., paving roads could result in adverse impacts if access to remote areas is increased).
Applicants' Proposed Routes:		Permanent impacts would be less than 3.6 acres (1.5 ha) since no new access roads would be built. No alteration of current land use plans is required.		
Western Alternative Routes:		Permanent impacts would be greater than those of the proposed and eastern routes: about 13.1 acres (5.3 ha). Routes would partially run outside of the utility corridor and would require alteration of land use designation.		
Eastern Alternative Routes:		Permanent impacts would be greater than those of the proposed routes: about 10.5 acres (4.2 ha). No alteration of current land use plans would be required.		

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Transportation (4.7)	No additional impacts expected.	Traffic in the projects area would increase during the transmission line construction period. Given the current levels of service on State Route 98 and low traffic volumes associated with projects, no impacts on existing levels of service are expected for the proposed or alternative routes.	Impacts would be same as those under the proposed action.	Impacts would depend on mitigation measures. In the short-term, adverse impacts could result from increased local traffic.
Visual Resources (4.8)	No additional impacts expected.	Construction and operation of the transmission lines would not alter the Class III Visual Resource Management rating for the project area. Transmission lines would not be a prominent addition to the existing landscape. Location of the lines in the Eastern routes would be closer to the nearest residence and a larger aspect of the landscape than in the other routes.	Impacts would be the same as those under the proposed action.	Impacts would depend on mitigation measure used (e.g., a compressed natural gas station would not cause a visual contrast, since its height would be similar to that of a gasoline service station).
Noise Impacts (4.9)	No additional impacts expected.	No adverse impacts are expected during transmission line construction or operation. Noise levels would be below EPA guideline values for the proposed and western alternative routes. For the eastern alternative routes, construction noise would be above EPA guidelines, but only for a short period of time (8-hr daytime shift, less than 1 week).	Impacts would be the same as those under the proposed action.	Impacts would depend on mitigation measures (e.g., paving roads would cause short-term adverse noise impacts due to equipment use near residential areas, but retiring old automobiles would have a beneficial impact).
Socioeconomics (4.10)	No additional impacts expected.	Temporary, small beneficial impacts on the local economy would occur during construction of the transmission lines as a result of wage expenditures and material procurement. Local tax revenues and lease payments to the Federal government from the proposed action are expected be minimal.	Impacts would be the same as those under the proposed action.	Impacts would depend on the mitigation measure (e.g., wage and salary spending and material procurement to implement a measure would have a beneficial impact to the local economy).

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Human Health Impacts (4.11)	No additional impacts from EMF would occur since the transmission lines would not be constructed. Impacts due to plant emissions would be minimal since they would be below EPA SLs. Secondary production of ozone and PM_{10} from plant emissions of precursors (NO_x, NH_3, and VOCs) would pose minimal health impacts.	No health impacts to residents, workers, or recreationalists due to EMF exposure would be expected from the proposed action. Emissions of NO_x, CO, and PM_{10} would result in air concentration increases to levels that would be below EPA SLs and therefore unlikely to adversely impact the health of residents in the air basin. Secondary production of ozone and PM_{10} from plant emissions of precursors (NO_x, NH_3, and VOCs) would pose minimal health impacts. Estimated incremental (above no action) cancer risks from exposure to HAPs are below the one per million significance threshold. Noncancer risks for HAPs and NH_3 are below the significance threshold for both acute and chronic exposure.	EMF impacts would be as for the proposed action. Emission controls (oxidizing catalysts) would reduce CO and HAPs emissions relative to the proposed action. Only minimal benefits to residents of the air basin would be expected. The use of alternative cooling technologies at the power plants would increase air emissions up to 15%, but health impacts would be minimal.	EMF impacts would be as for the proposed action. Mitigation measures would result in beneficial impacts by improving the air quality in the region. Road paving would produce long-term reductions in PM_{10} emissions. Fuel conversions would produce short- and long-term reductions in NO_x, CO, and VOC emissions.

TABLE 2.5-1 (Cont.)

For the proposed action, that is, the granting of one or both of the Presidential permits and ROWs, for most resource areas, the analysis was bounded by calculating impacts as if both lines had been allowed. This serves two purposes. First, it demonstrates the maximum possible impacts; second, it clearly presents the combined impacts of the agencies' preferred alternative, that is, permitting both facilities. The only exceptions to this methodology are in the areas of air, water, and human health. Impacts to air, water, and human health attributable to permitting each transmission line separately are contained in Sections 4.2, 4.3, and 4.11, respectively.

Resource	No Action	Proposed Action	Alternative Technologies	Mitigation Measures
Environmental Justice	No additional impacts expected.	Temporary impacts from noise and dust emissions and the more long-term impacts from noise and EMF in the vicinity of the transmission lines would not contribute to high and adverse impacts on the general population or to disproportionately high and adverse impacts on minority and low-income populations in any block group. Increases in air pollution due to emissions of $PM_{2.5}$ and PM_{10} were found to be below new source significance levels used as a benchmark for negligible impacts; therefore, these emissions would not contribute to high and adverse impacts on the general population or to disproportionately high and adverse impacts on minority and low-income populations in any block group. Adverse impacts to biological resources as a result of increases in Salton Sea salinity could result in minor impacts on the general population that fishes recreationally at the Sea. These impacts attributable to the proposed action would not be disproportionately high and adverse for any populations that might rely on the Sea for subsistence fishing, because the same minor effects on biological resources are estimated as under no action.	Installation of dry cooling or wet-dry cooling systems at the power plants would not contribute to impacts.	Mitigation measures to compensate for power plant emissions would have a beneficial impact on low-income and minority populations by improving air quality in the region. (Because of uncertainties related to the location of mitigation measures, an impact assessment at the census-block level was not conducted.)

a Abbreviations: BOD = biochemical oxygen demand; CO = carbon monoxide; COD = chemical oxygen demand; EMF = electric and magnetic fields; EPA = U.S. Environmental Protection Agency; HAPs = hazardous air pollutants; LRPC = La Rosita Power Complex; metric ton = 2,206 lb; NH_3 = ammonia; NO_x = nitrogen oxides; NRHP = National Register of Historic Places; O_3 = ozone; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter; PM_{10} = particulate matter less than 10 micrometers in diameter; ROW = right-of-way; SHPO = State Historic Preservation Office; SL = significance level; TDS = total dissolved solids; TSS = total suspended solids; VOC = volatile organic compound(s).

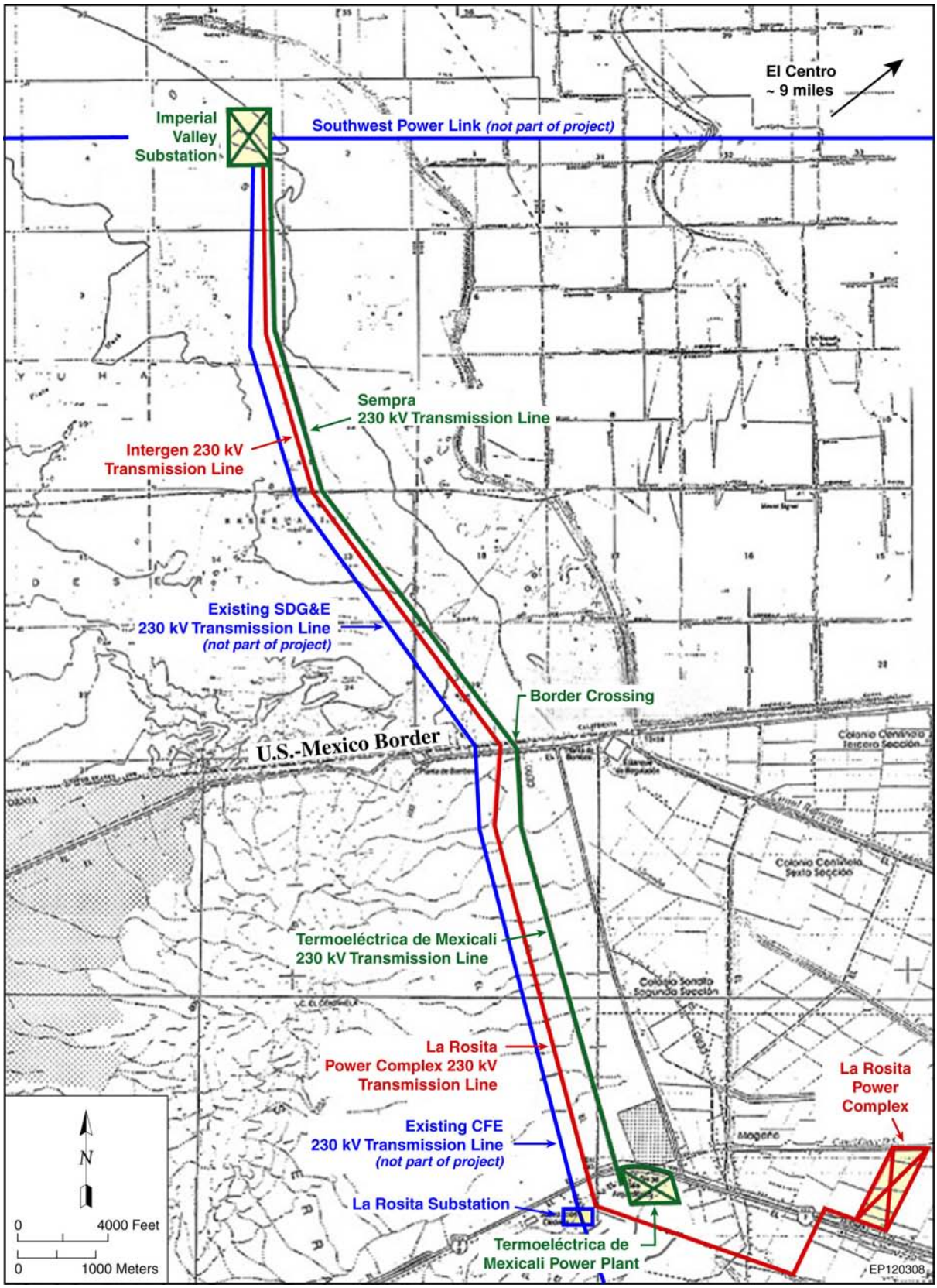


FIGURE 2.2-1 General Area Map Showing the Proposed Transmission Lines

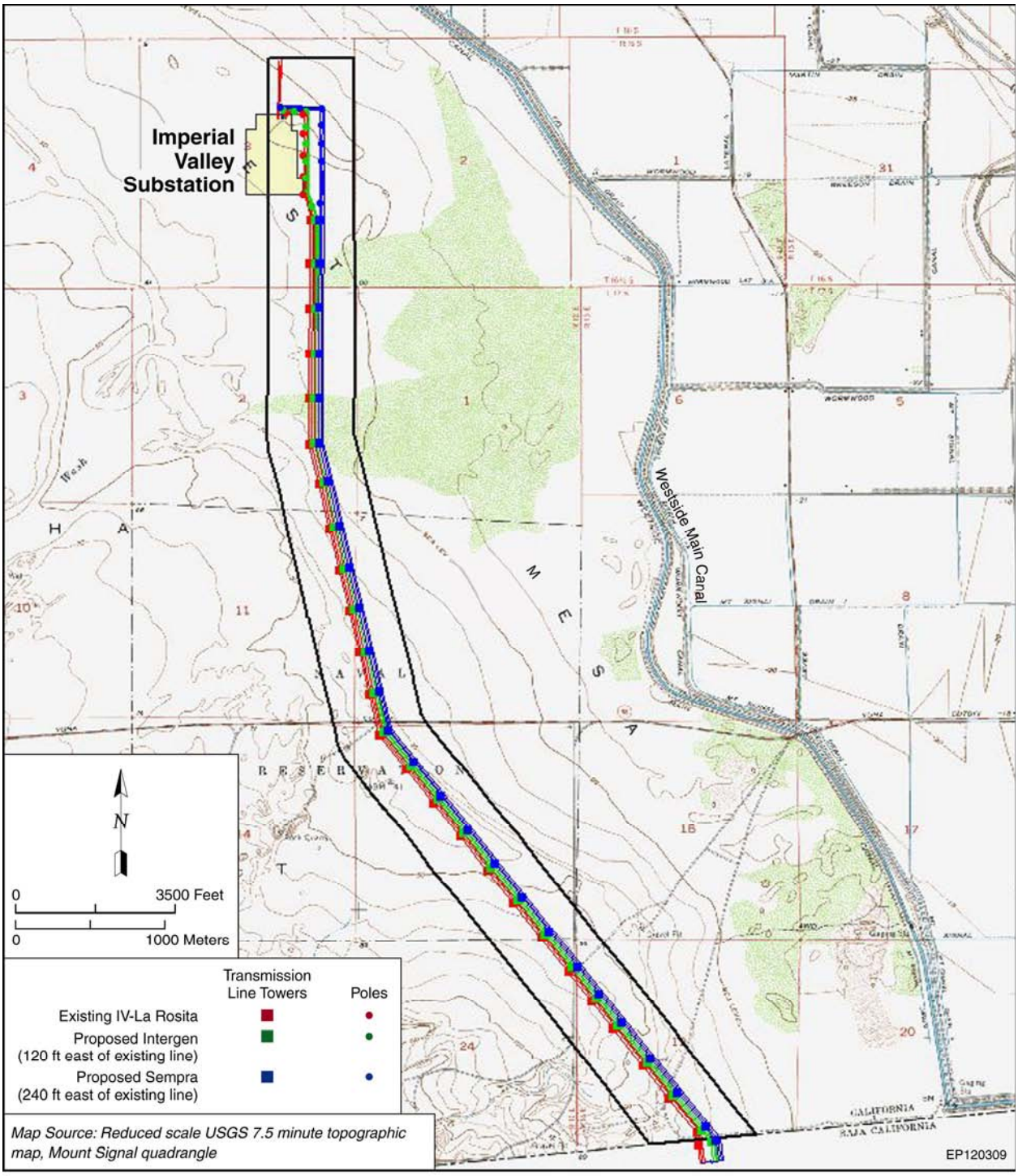


FIGURE 2.2-2 Location of Existing and Proposed Transmission Lines as Shown on USGS Topographic Map

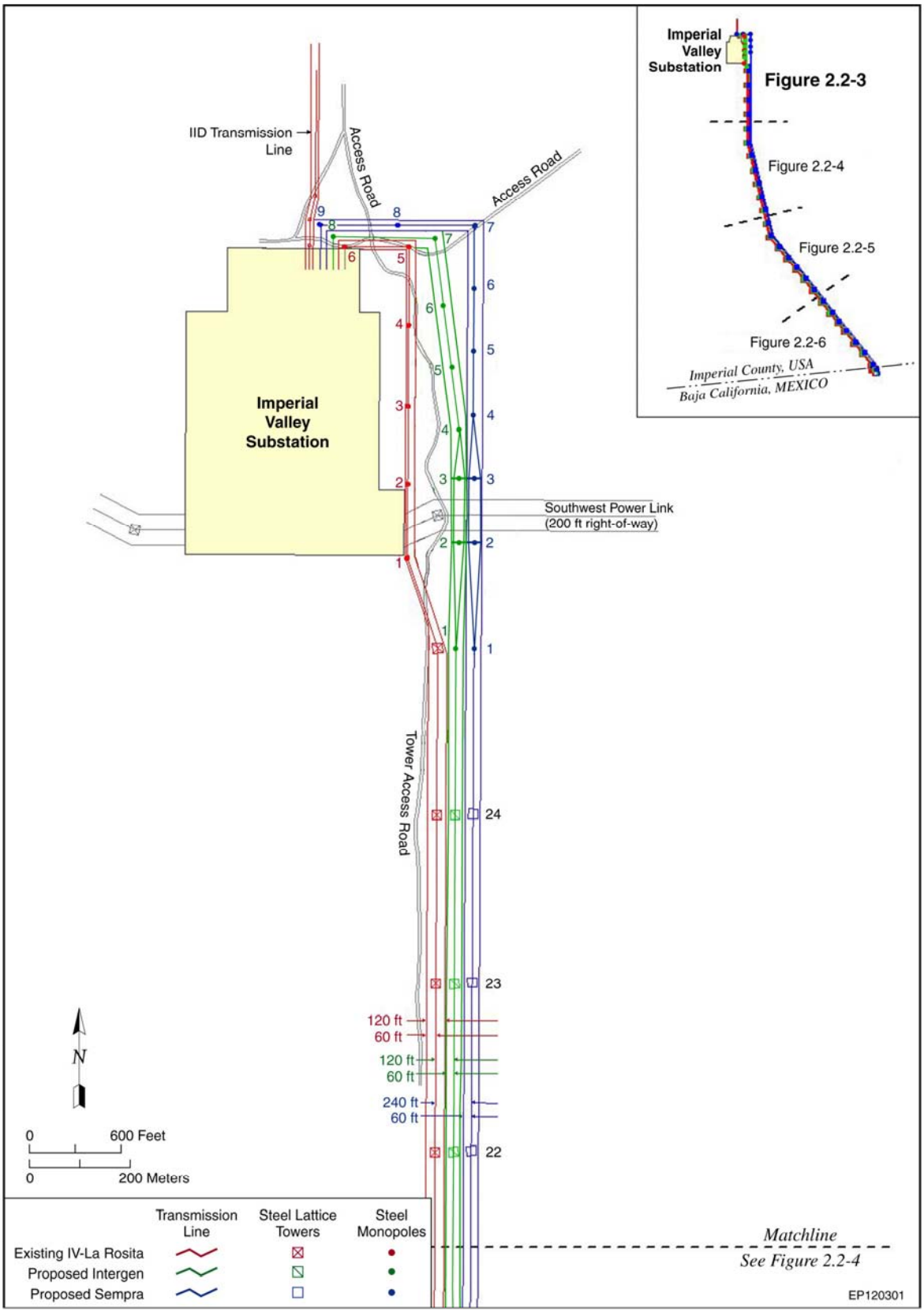


FIGURE 2.2-3 Projects Plan — Segment A

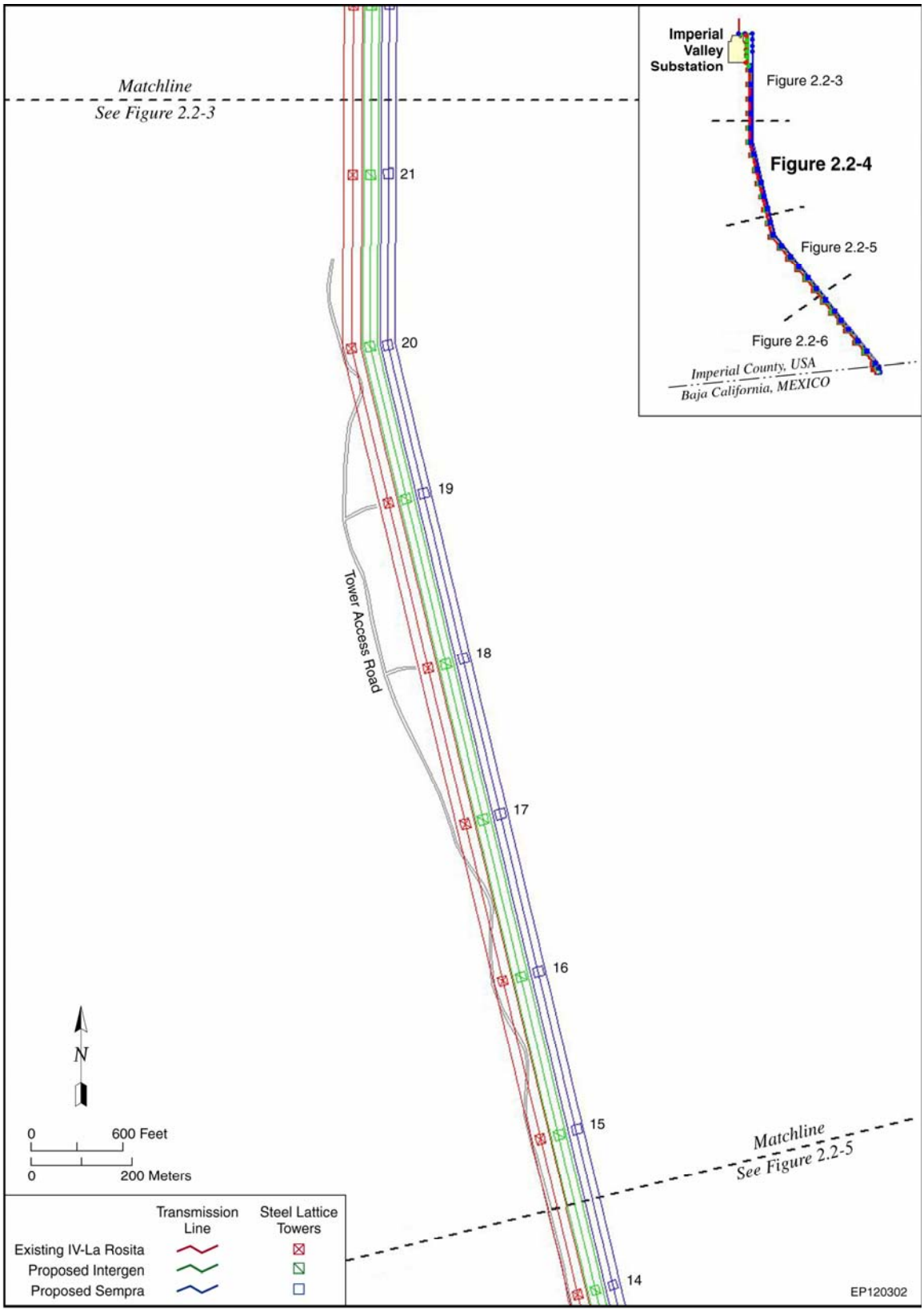


FIGURE 2.2-4 Projects Plan — Segment B

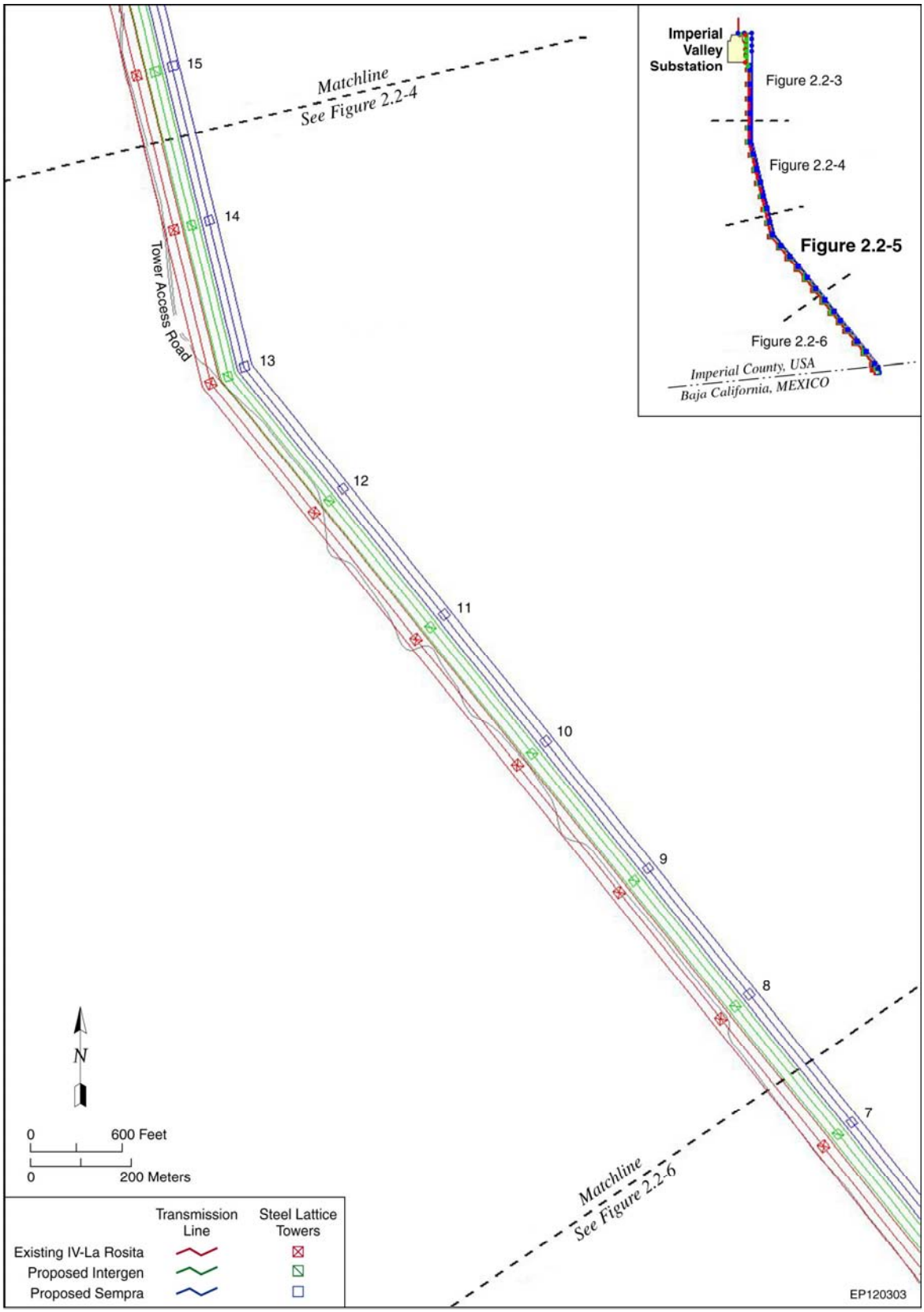


FIGURE 2.2-5 Projects Plan — Segment C

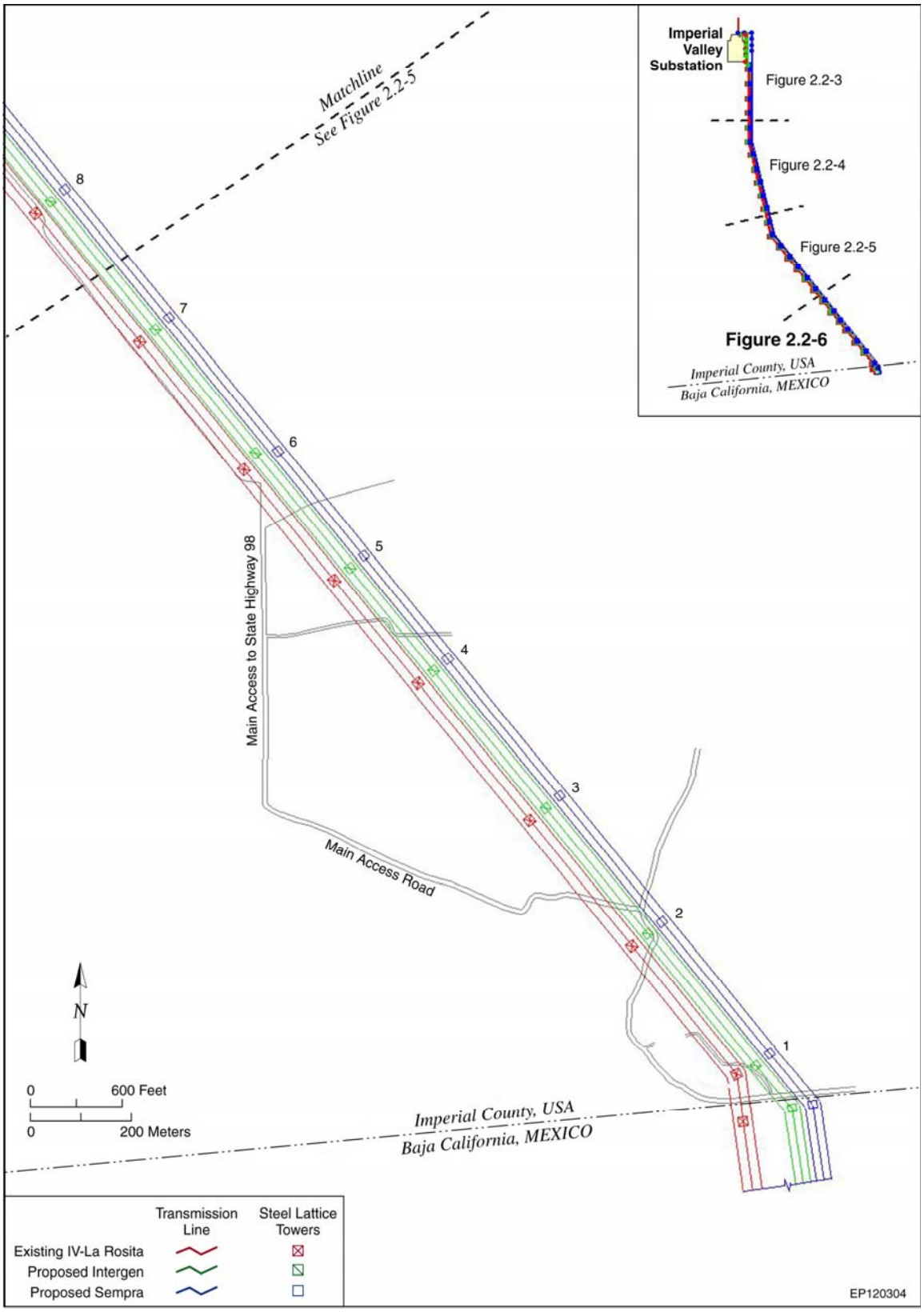


FIGURE 2.2-6 Projects Plan — Segment D

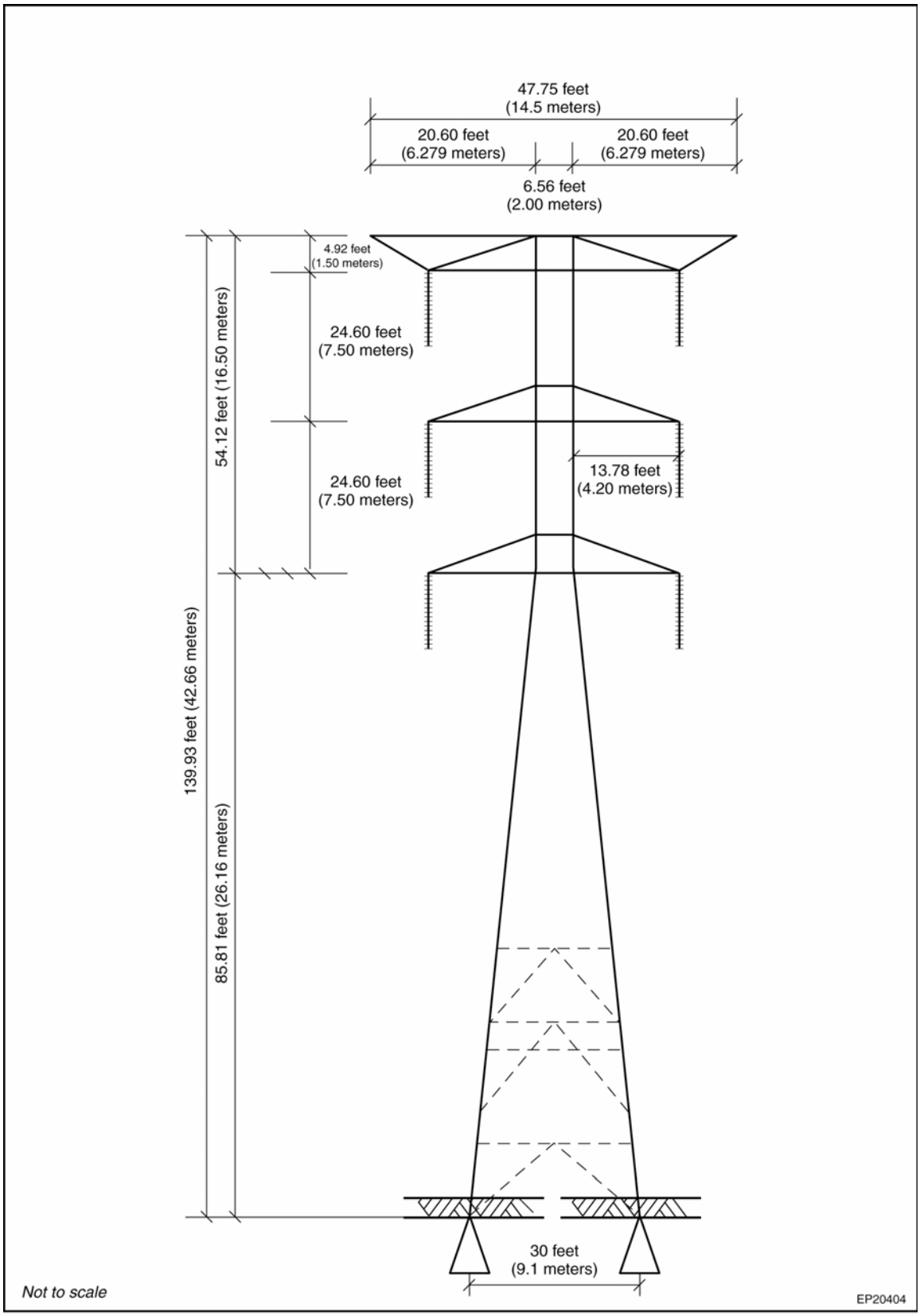


FIGURE 2.2-7 Suspension Tower

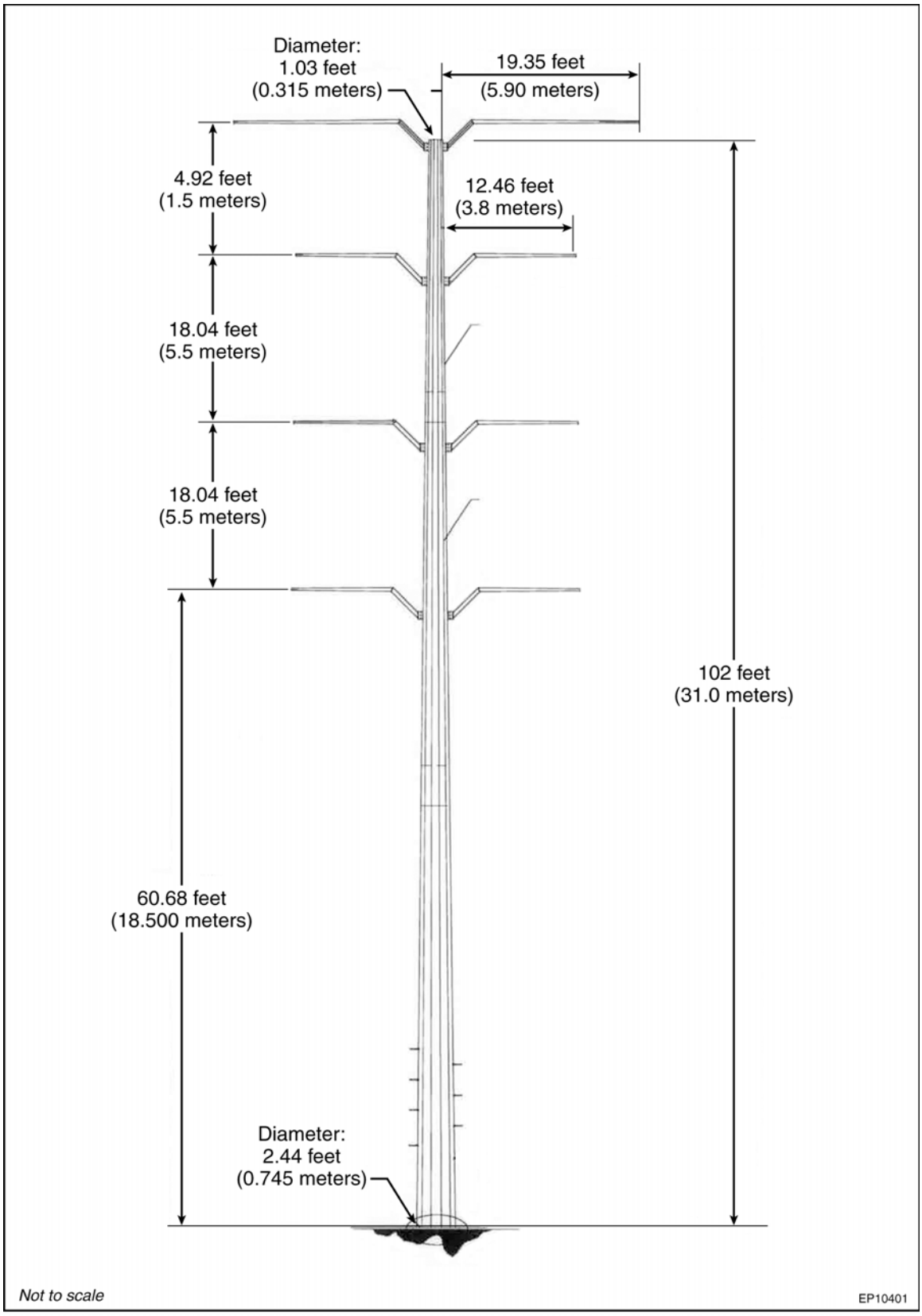


FIGURE 2.2-8 Suspension Monopole

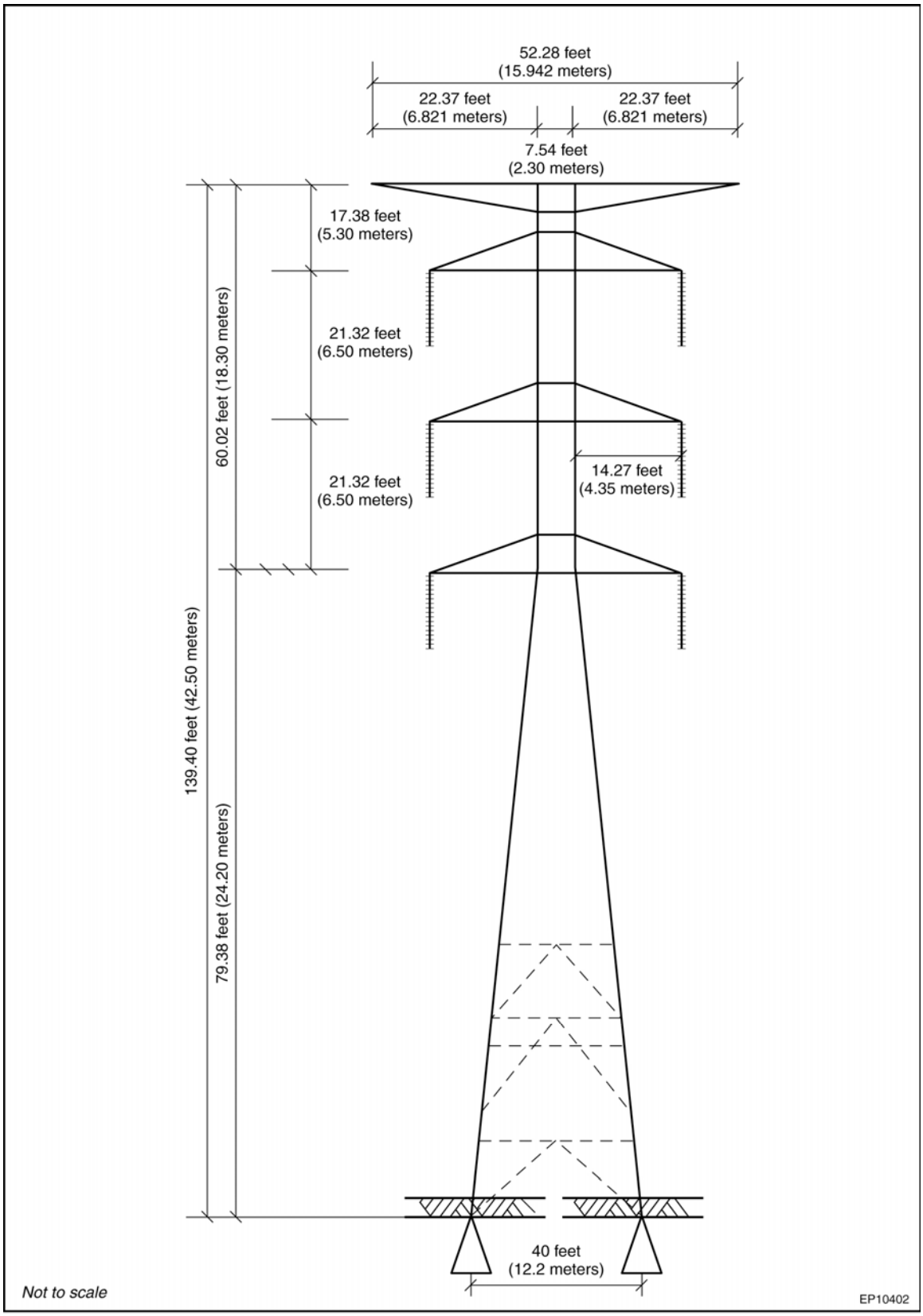


FIGURE 2.2-9 Deflection Tower

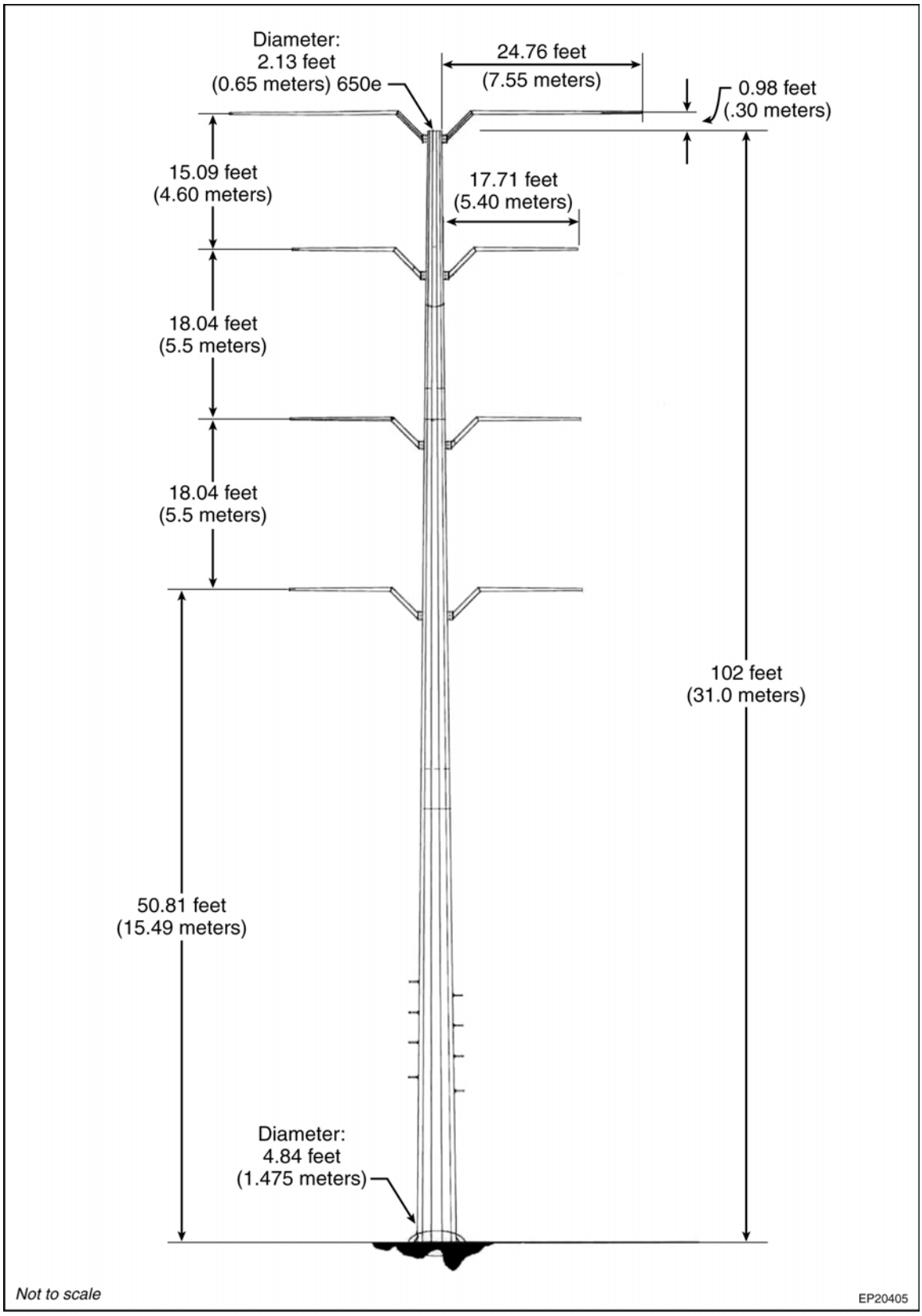


FIGURE 2.2-10 Deflection Monopole

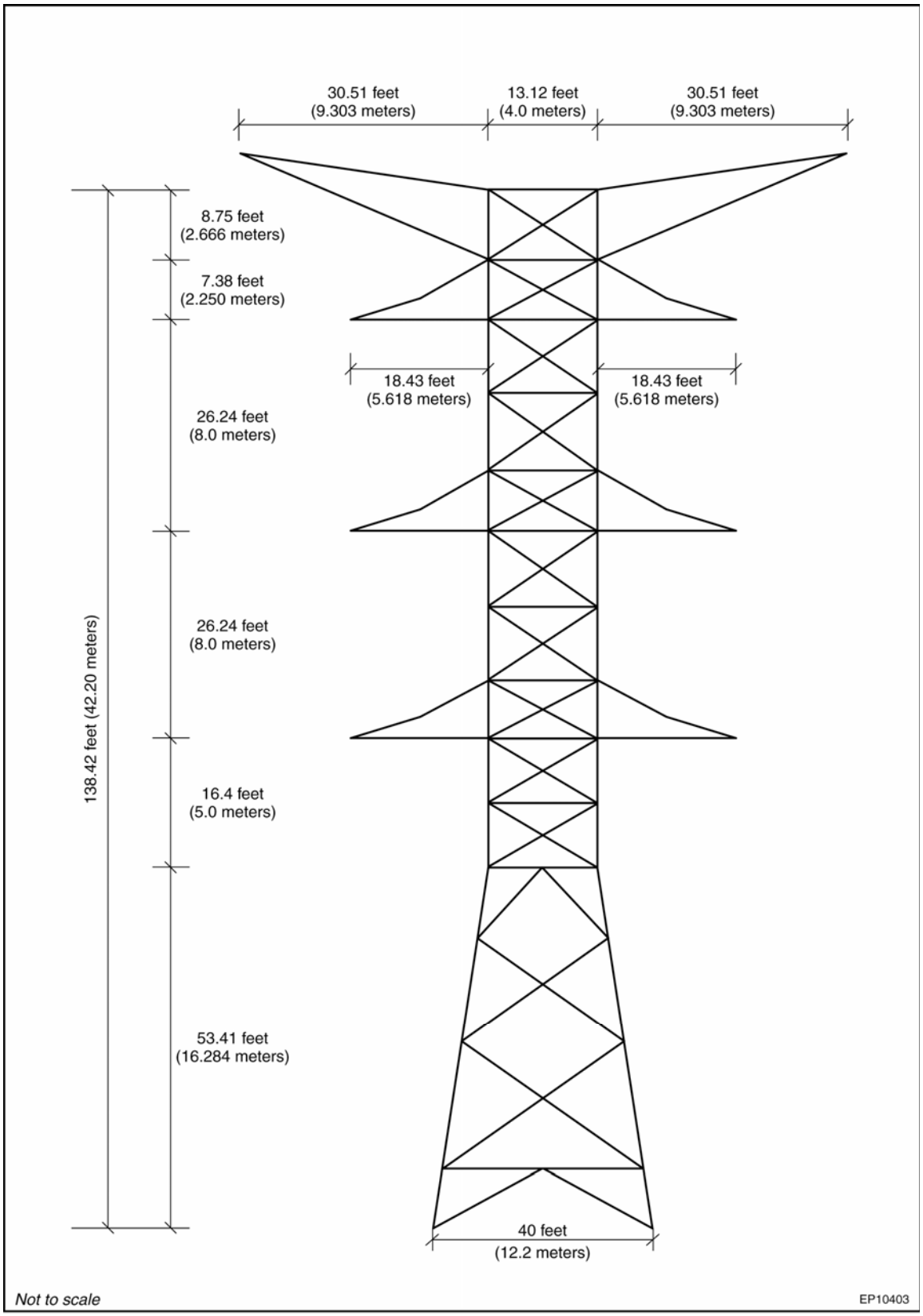


FIGURE 2.2-11 Dead-end Tower

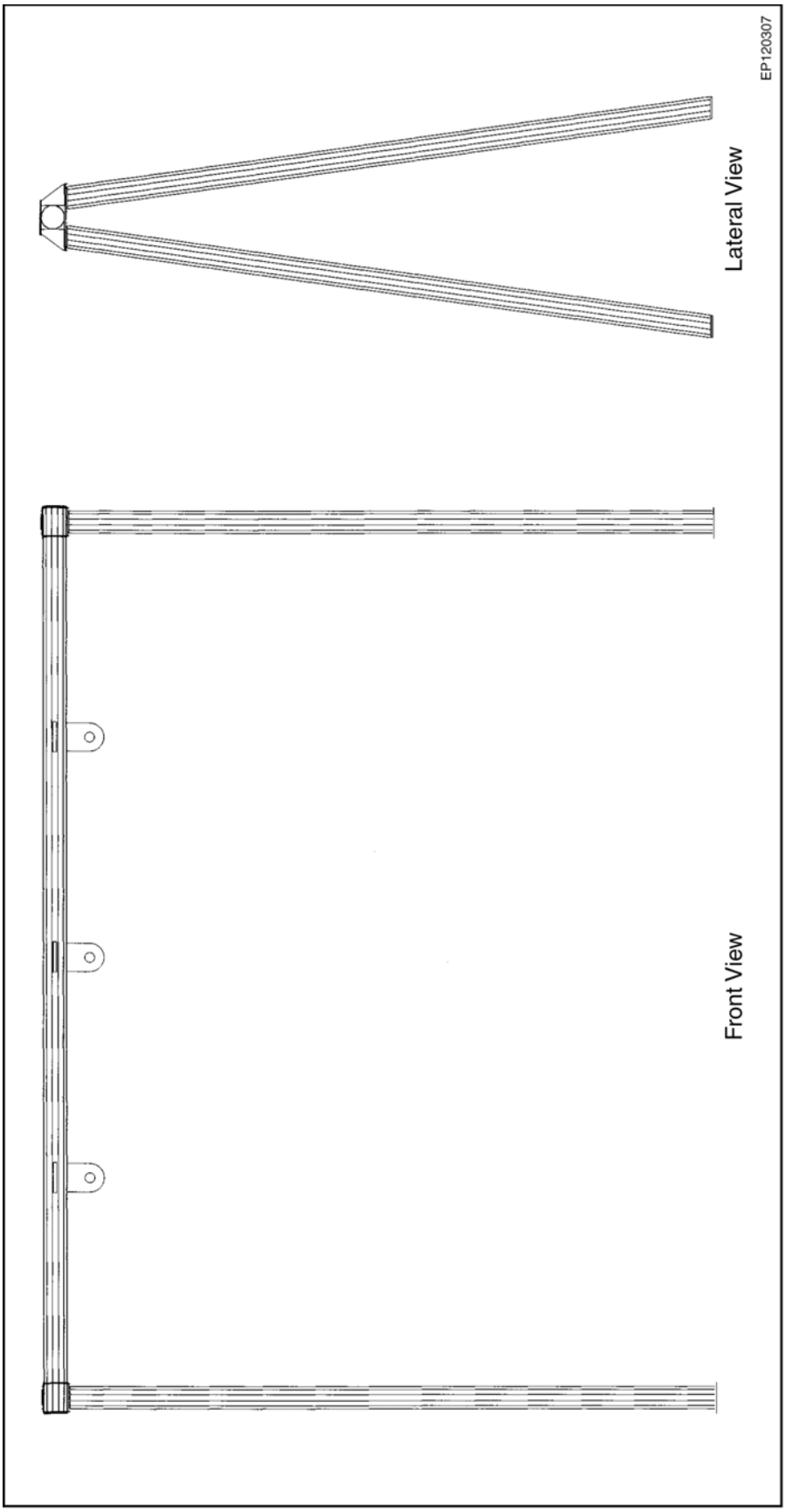


FIGURE 2.2-12 Crossing Structure

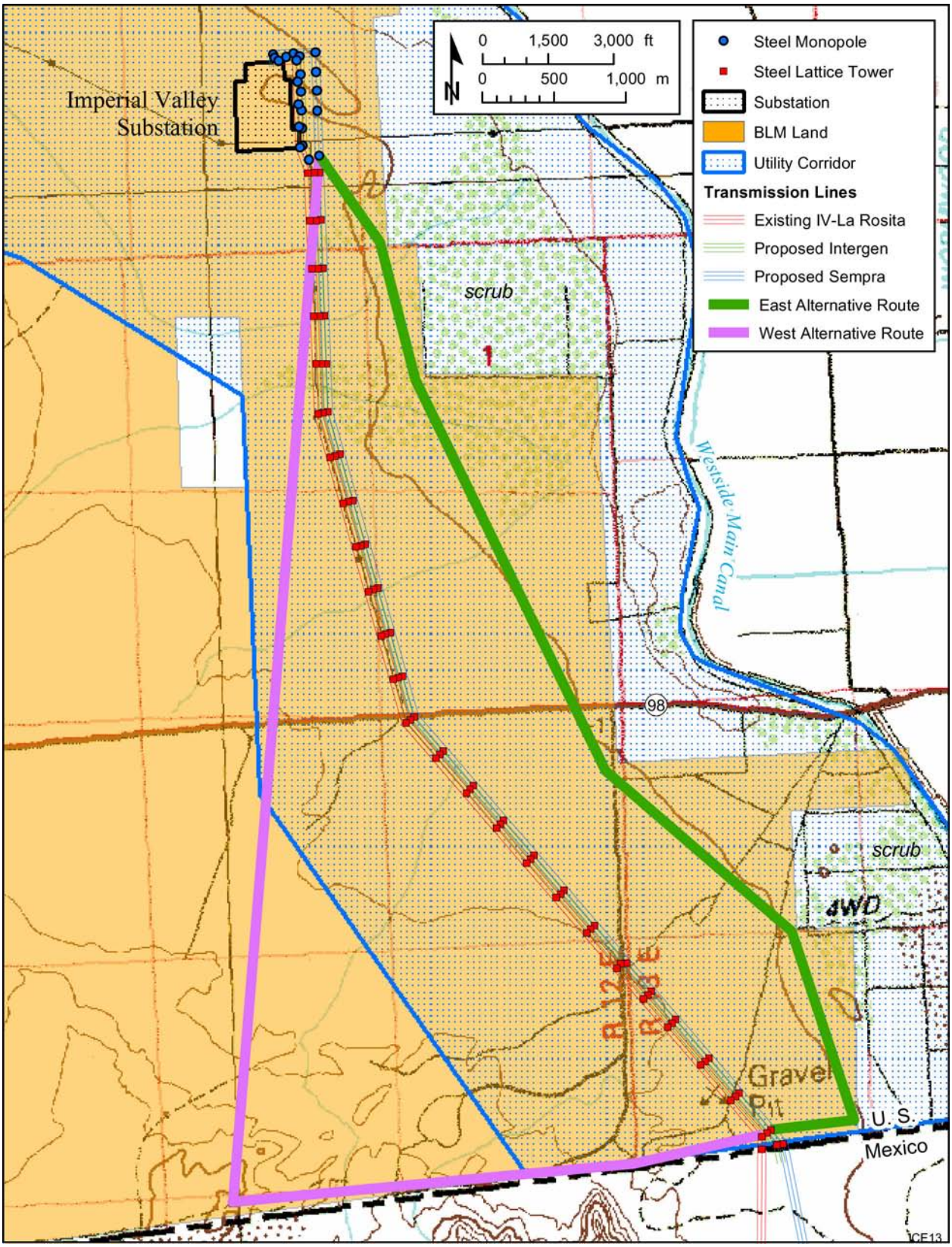


FIGURE 2.2-13 Alternative Transmission Line Routes

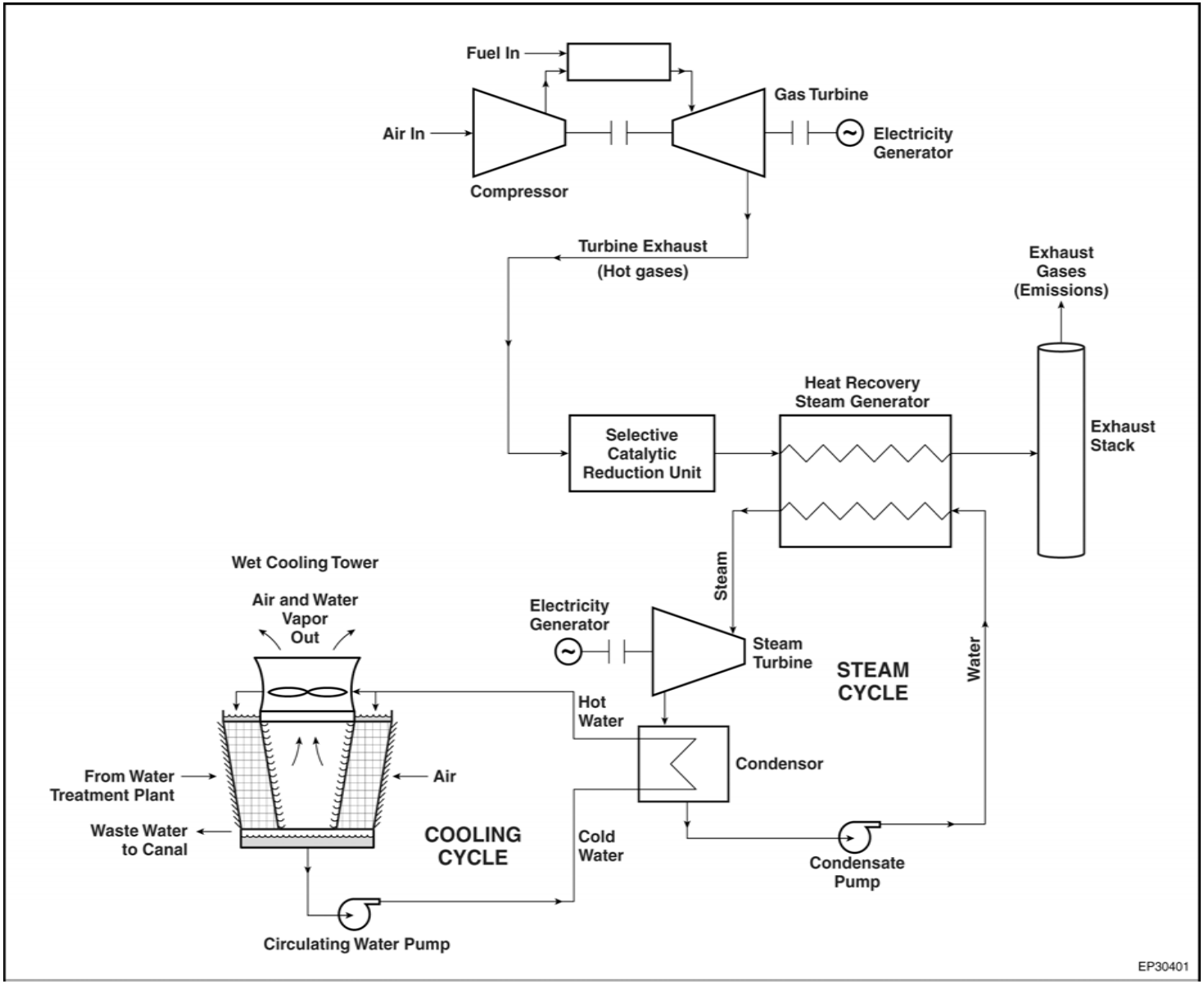


FIGURE 2.2-14 General Engineering Features at the LRPC and TDM Power Plants

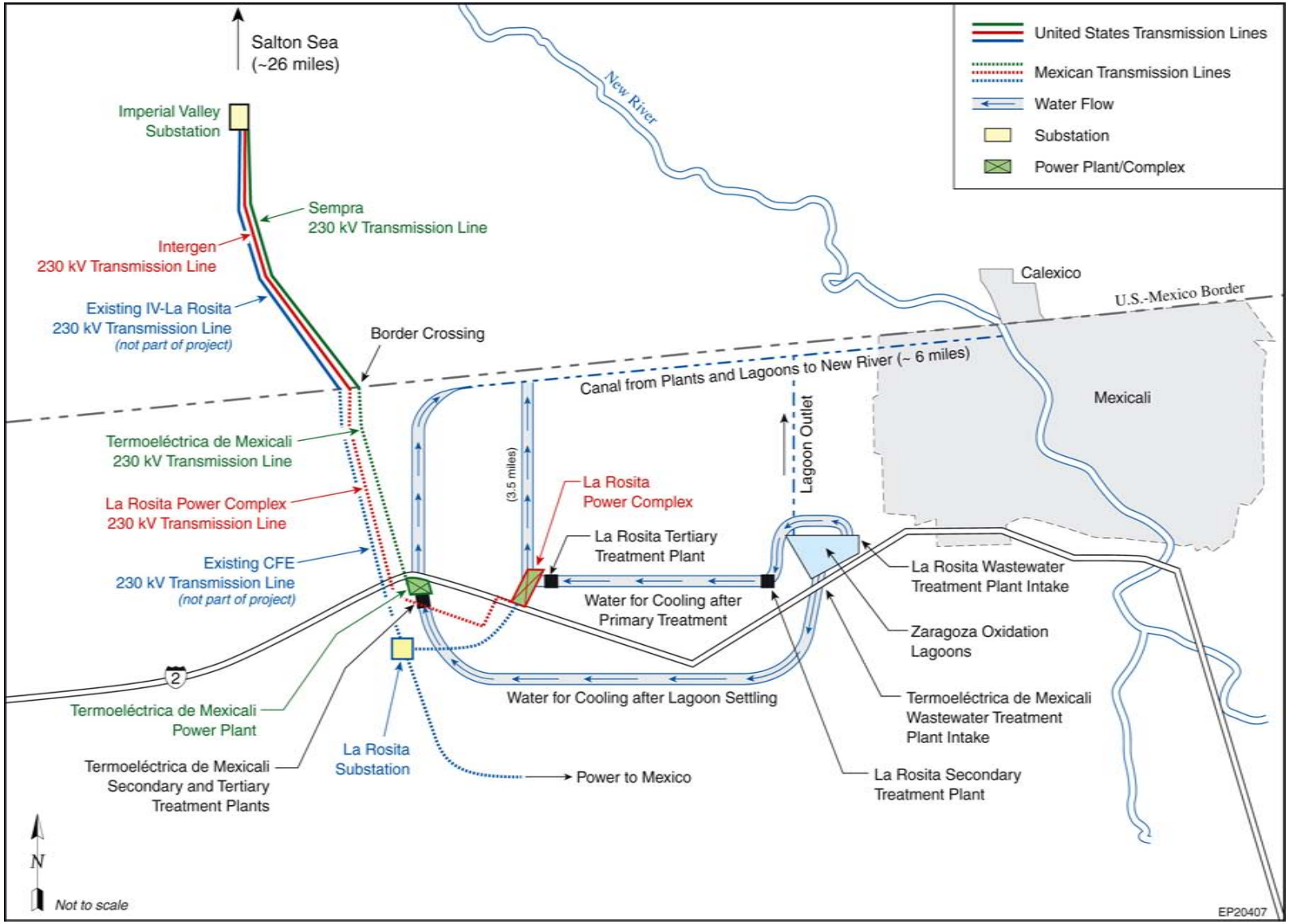


FIGURE 2.2-17 Water Supply Cycle for LRPC and TDM Power Plants

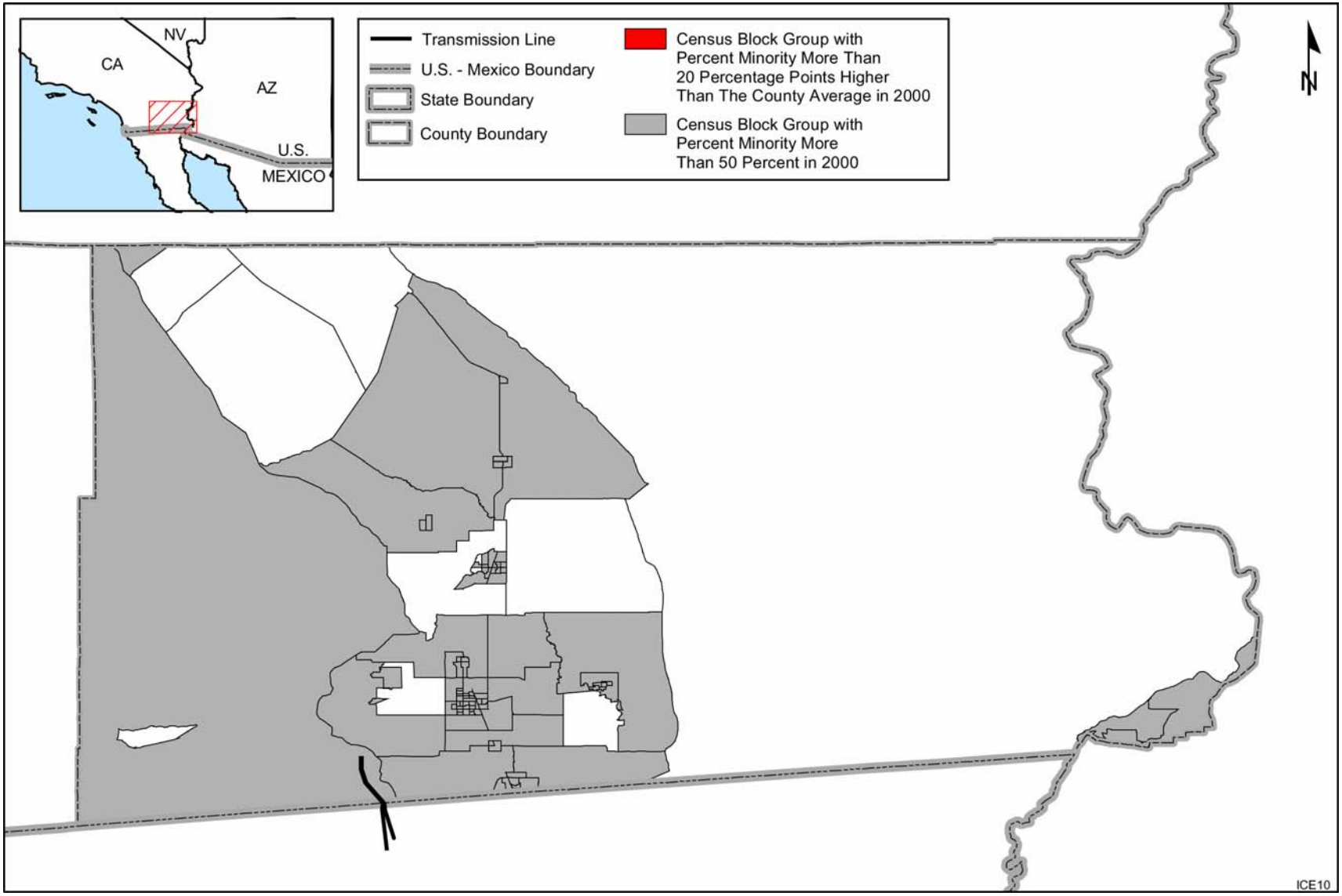


FIGURE 3.10-1 Minority Population Concentration in Census Block Groups in Imperial County (Source: U.S. Bureau of the Census 2001a)

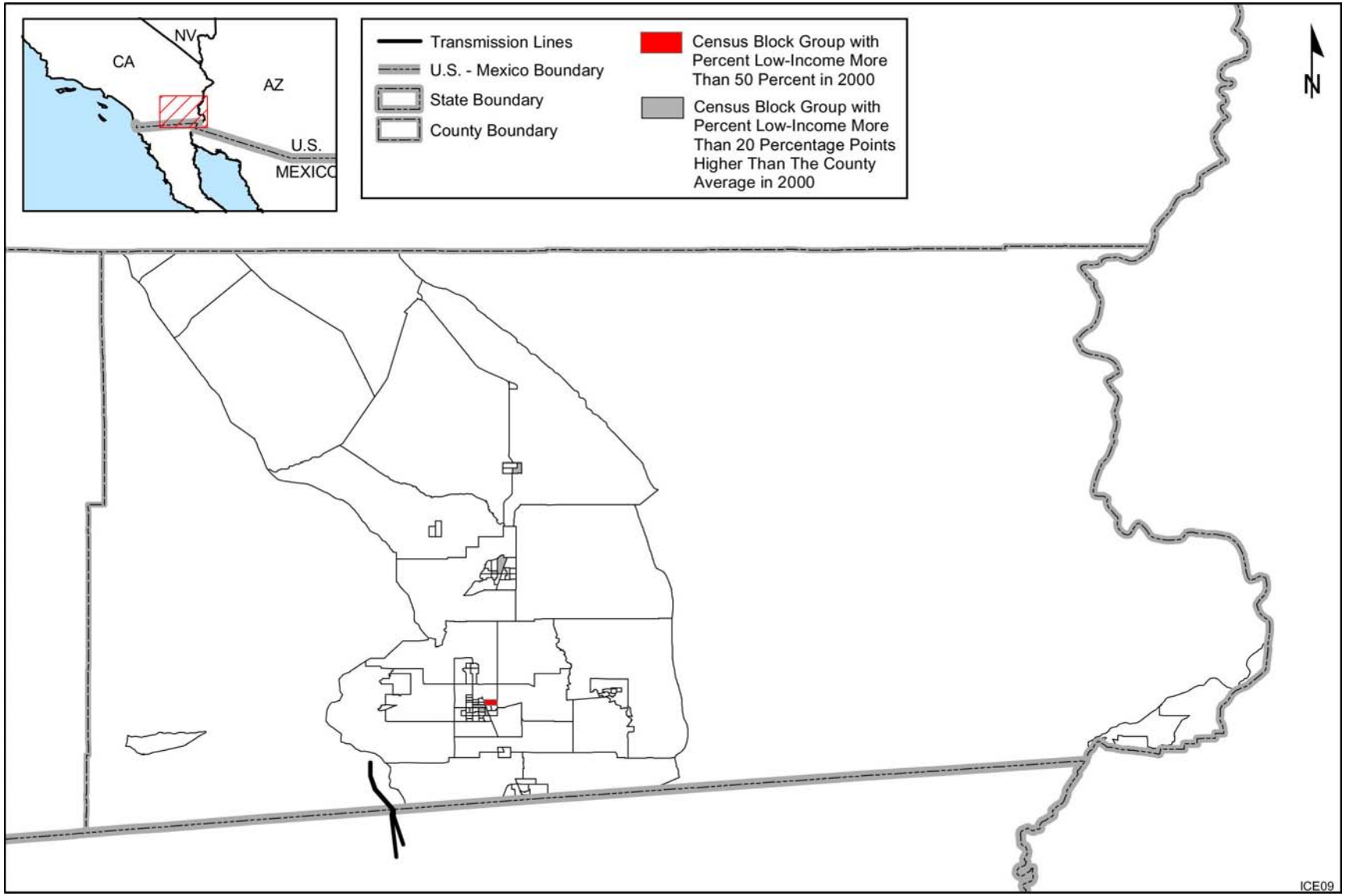


FIGURE 3.10-2 Low-Income Population Concentration in Census Block Groups in Imperial County (Source: U.S. Bureau of the Census 2001a

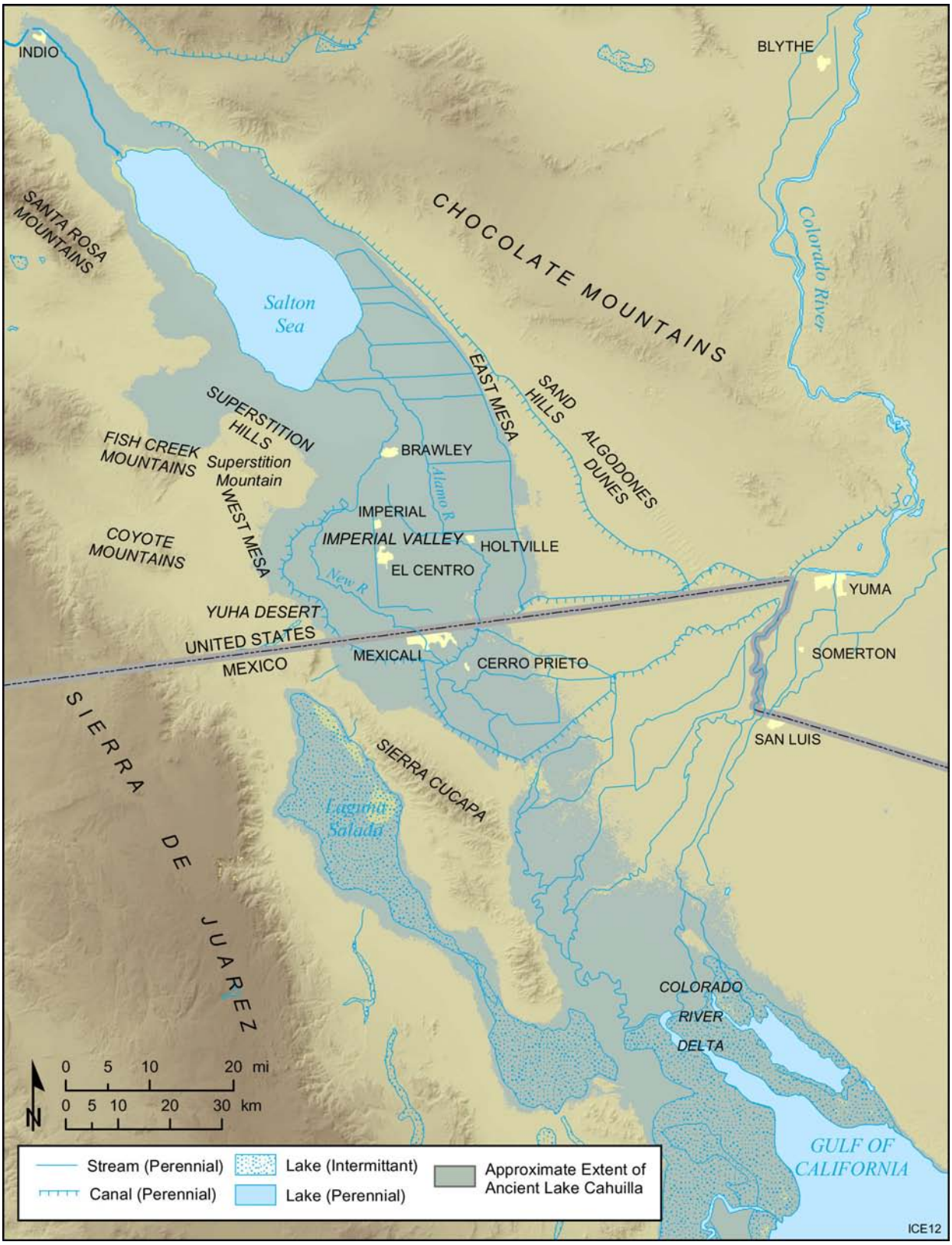


FIGURE 3.1-1 Physiographic Features of Imperial Valley Area

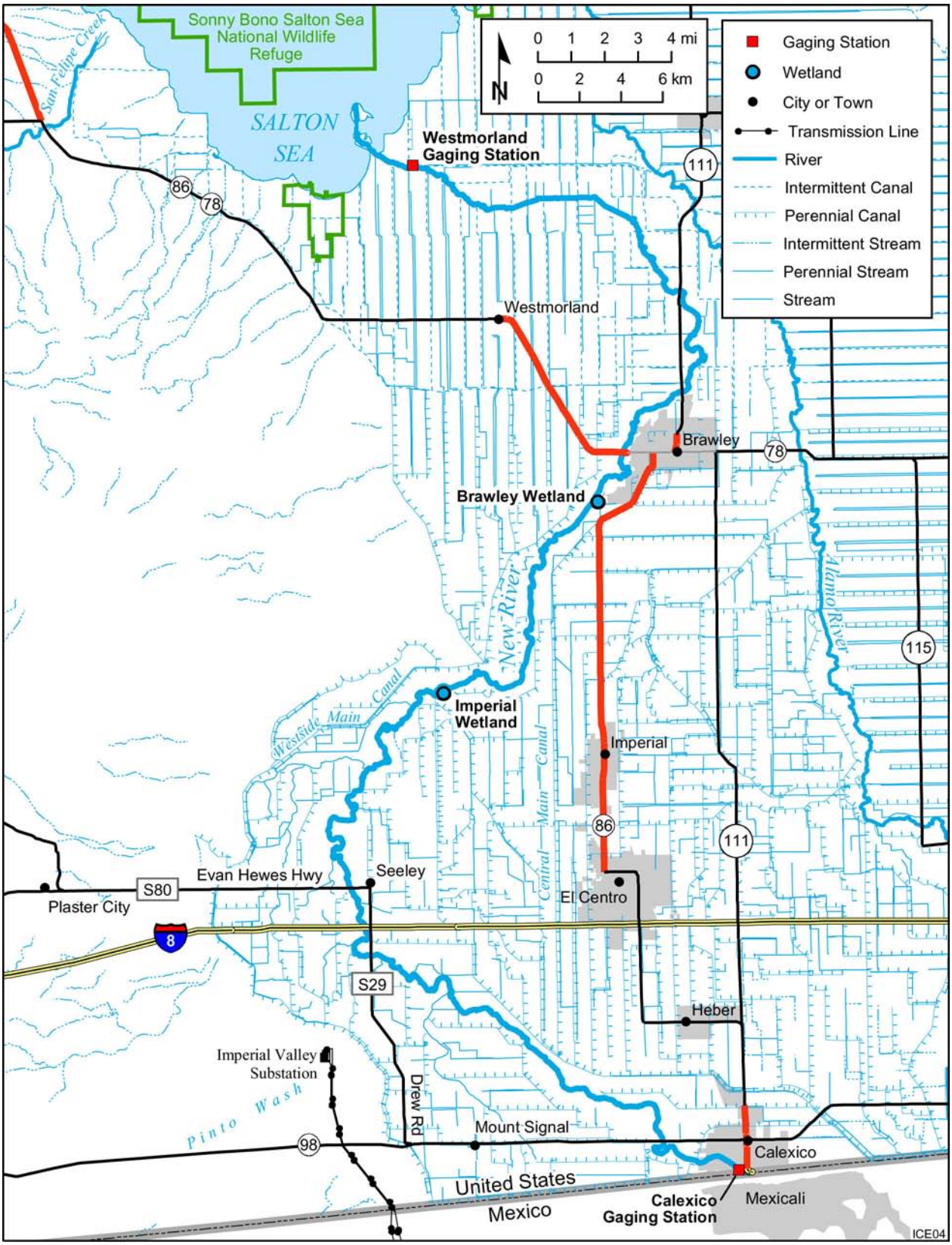


FIGURE 3.2-1 Course of the New River in the United States

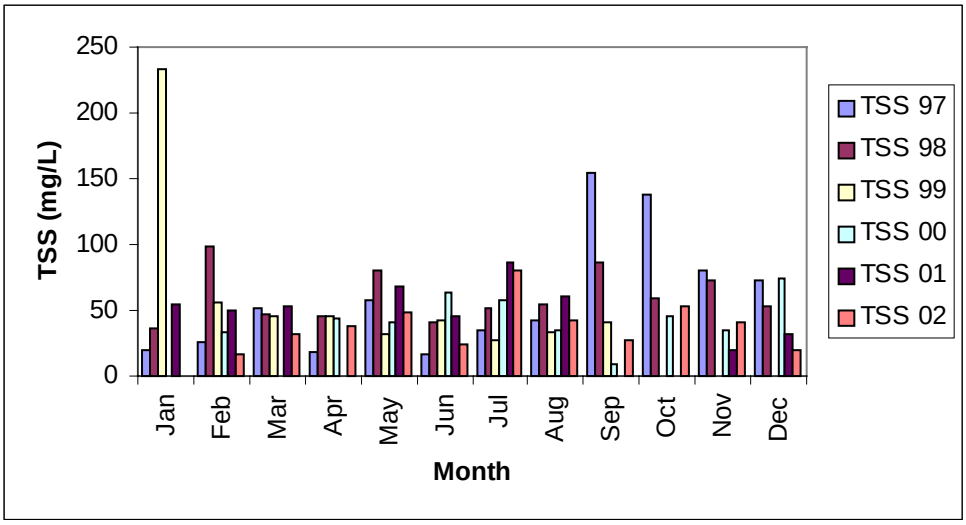


FIGURE 3.2-7 TSS (mg/L) Recorded at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)

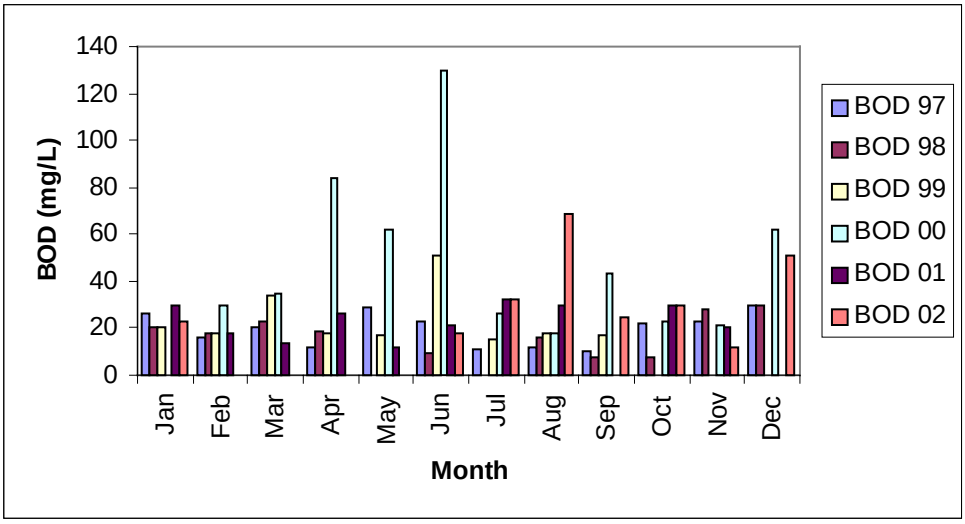
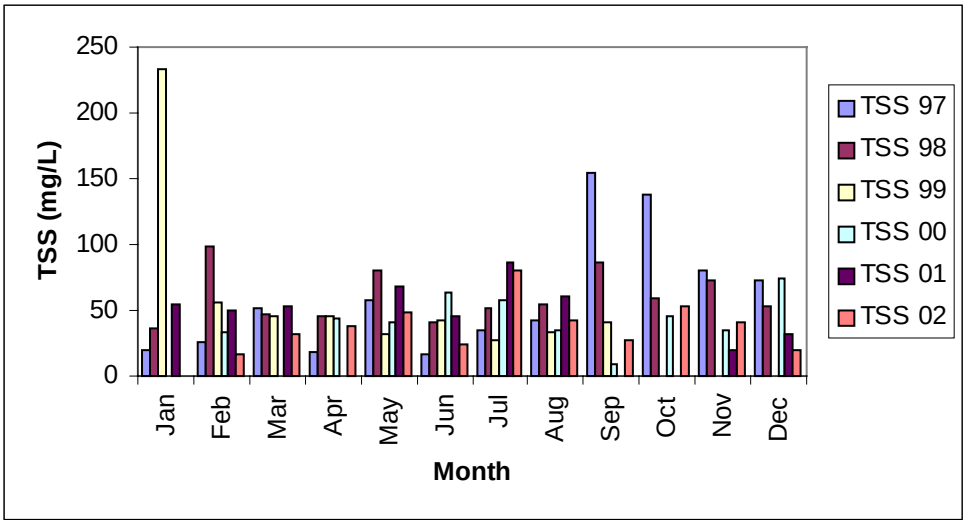


FIGURE 3.2-8 BOD (mg/L) Measured at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)



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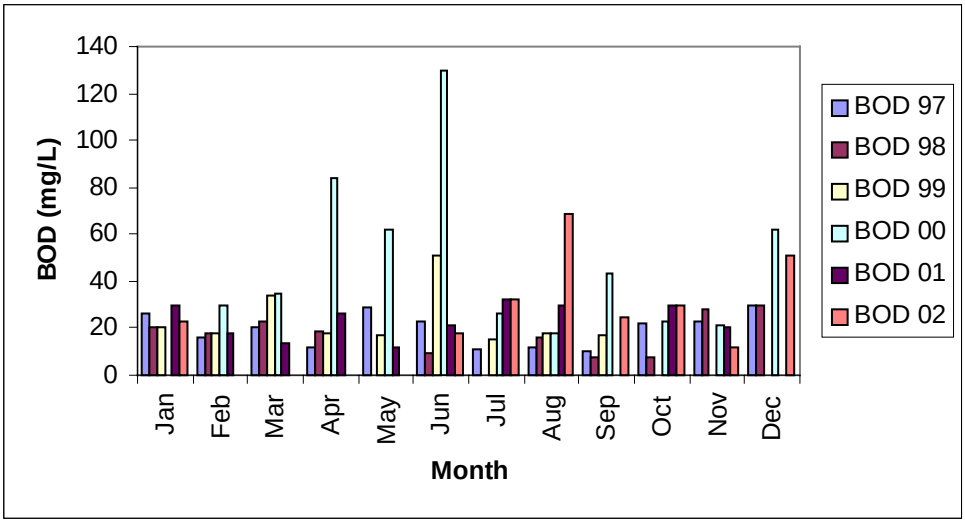


FIGURE 3.2-8 BOD (mg/L) Measured at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)

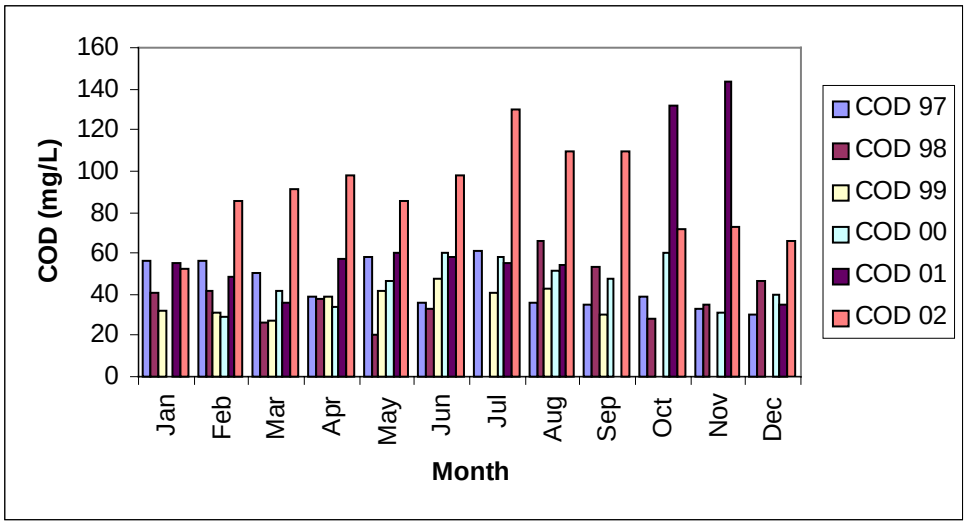


FIGURE 3.2-9 COD (mg/L) Measured at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)

TABLE 3.2-3 Average Values for TSS, BOD, COD, and Phosphorus

						Load (tons)		
Year	TSS (mg/L)	BOD (mg/L)	COD (mg/L)	P (mg/L)	Flow (ft^3/s)	TSS	BOD	COD
1997	59.3	19.5	44.1	2.3	217	12,670	4,170	9,420
1998	60.4	17.9	39.0	1.8	249	14,810	4,390	9,560
1999	61.8	23.1	37.0	1.9	254	15,460	5,780	9,250
2000	44.0	48.5	45.4	1.6	225	9,750	10,750	10,060
2001	52.2	23.3	66.8	2.3	201	10,330	4,610	13,220
2002	38.6	32.5	89.2	1.3	–[a]	–	–	–
Mean	52.7	27.5	53.6	2.0				
Standard deviation	9.6	11.5	20.4	0.27				

[a] A dash indicates no data available.

Source: CRBRWQCB (2003a).

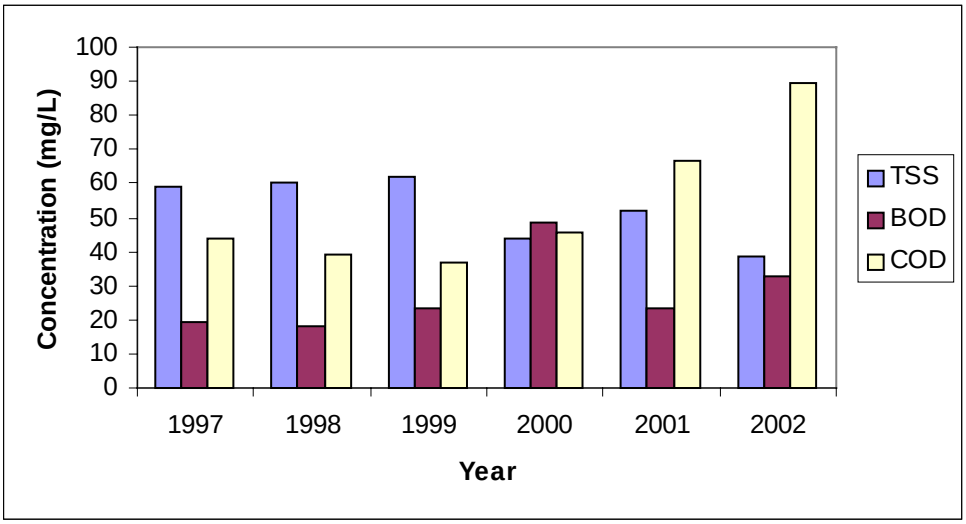


FIGURE 3.2-10 Yearly Averages for Water Quality at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)

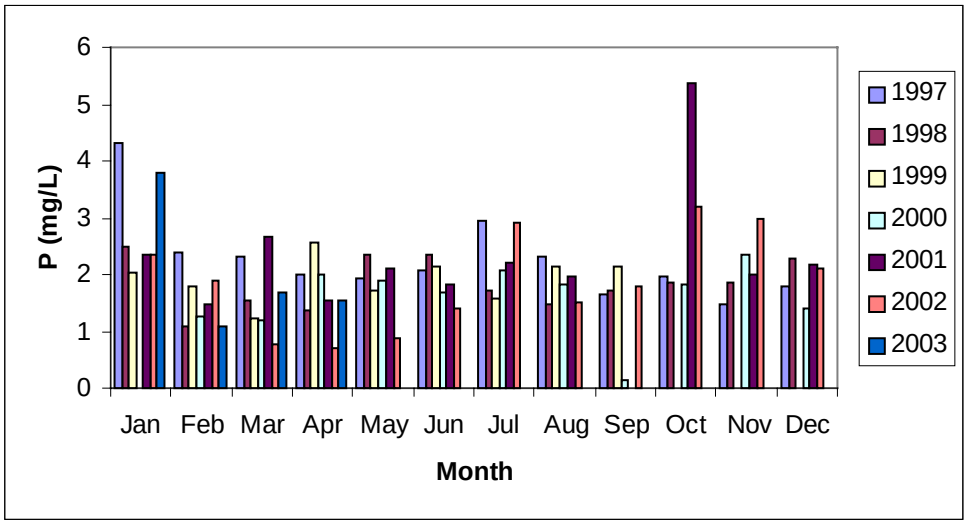
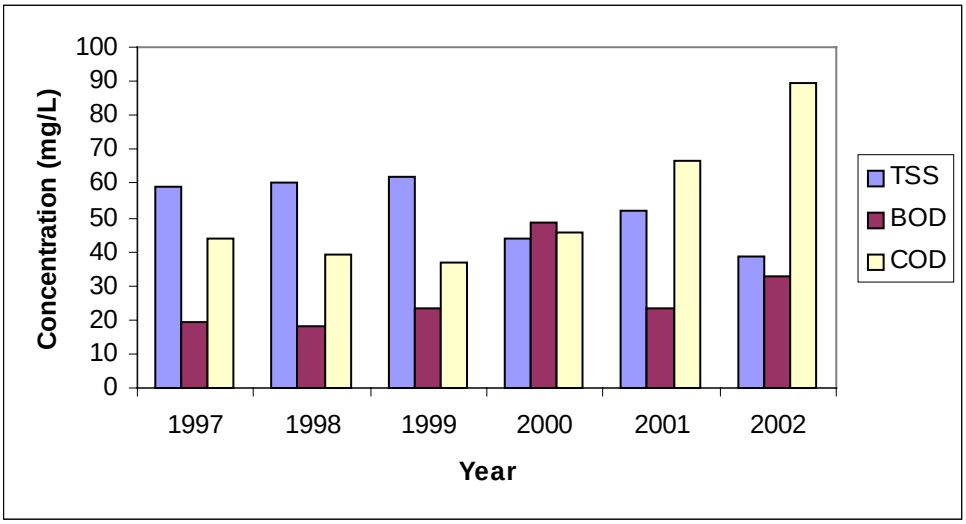


FIGURE 3.2-11 Concentration of Total Phosphorus at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)



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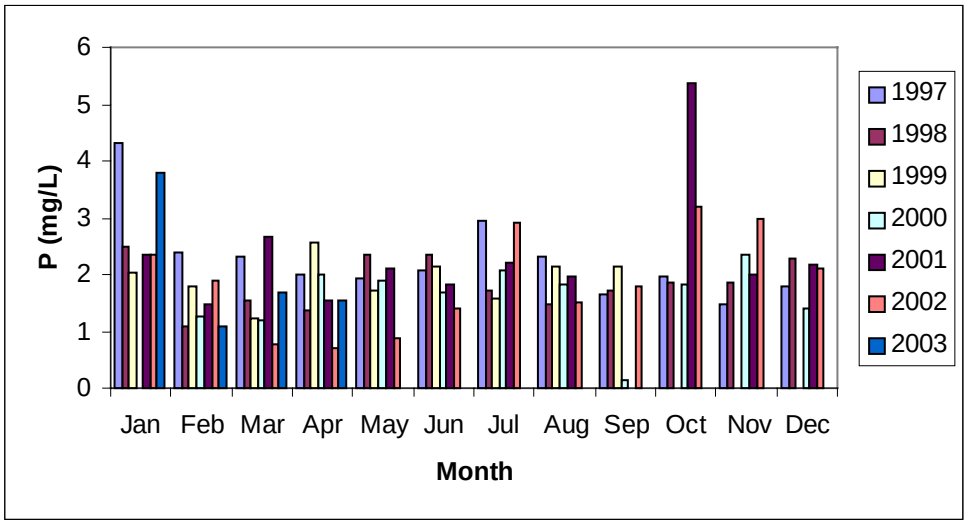


FIGURE 3.2-11 Concentration of Total Phosphorus at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)

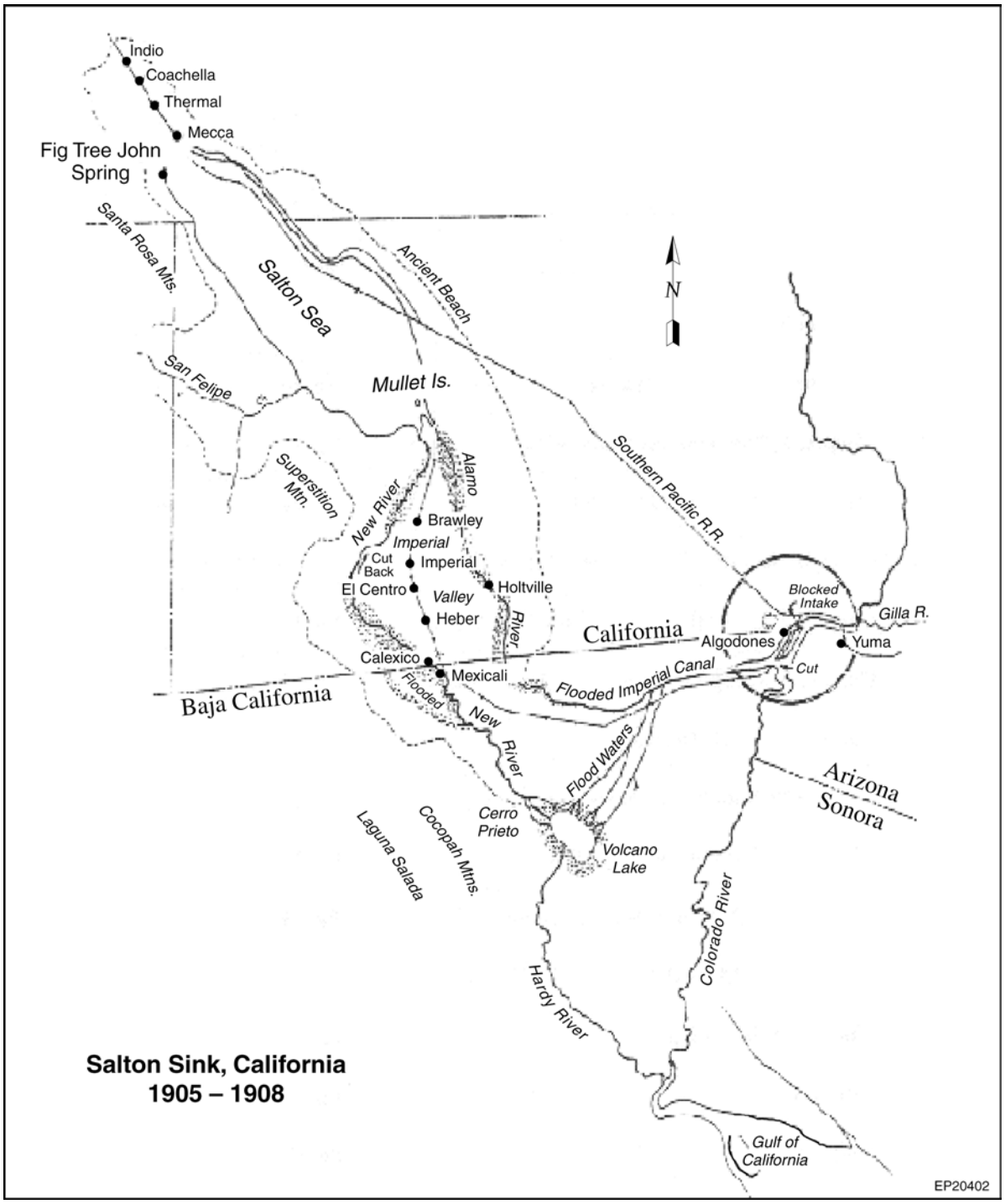


FIGURE 3.2-13 Areas Flooded during Creation of Contemporary Salton Sea (Source: Laflin 1995)

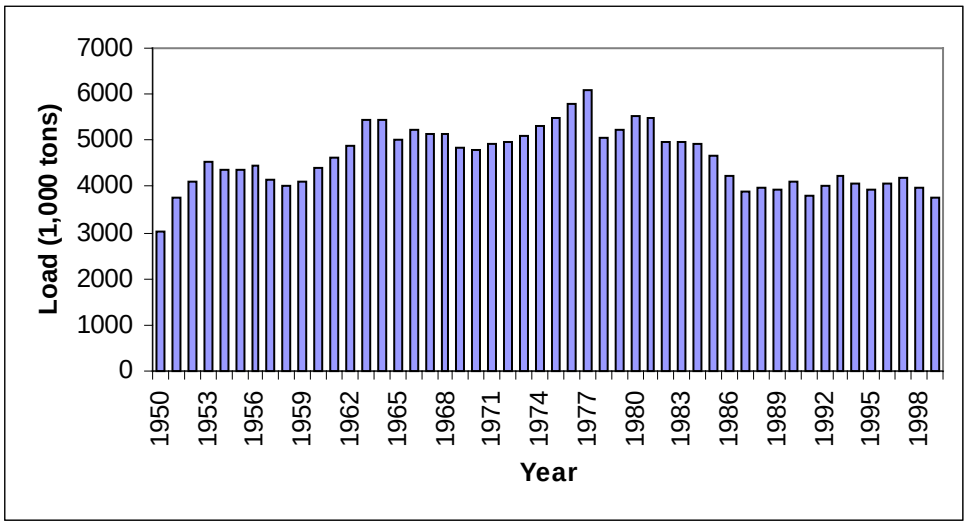


FIGURE 3.2-18 Total Salt Load in Inflow to the Salton Sea (Source: Weghorst 2001)

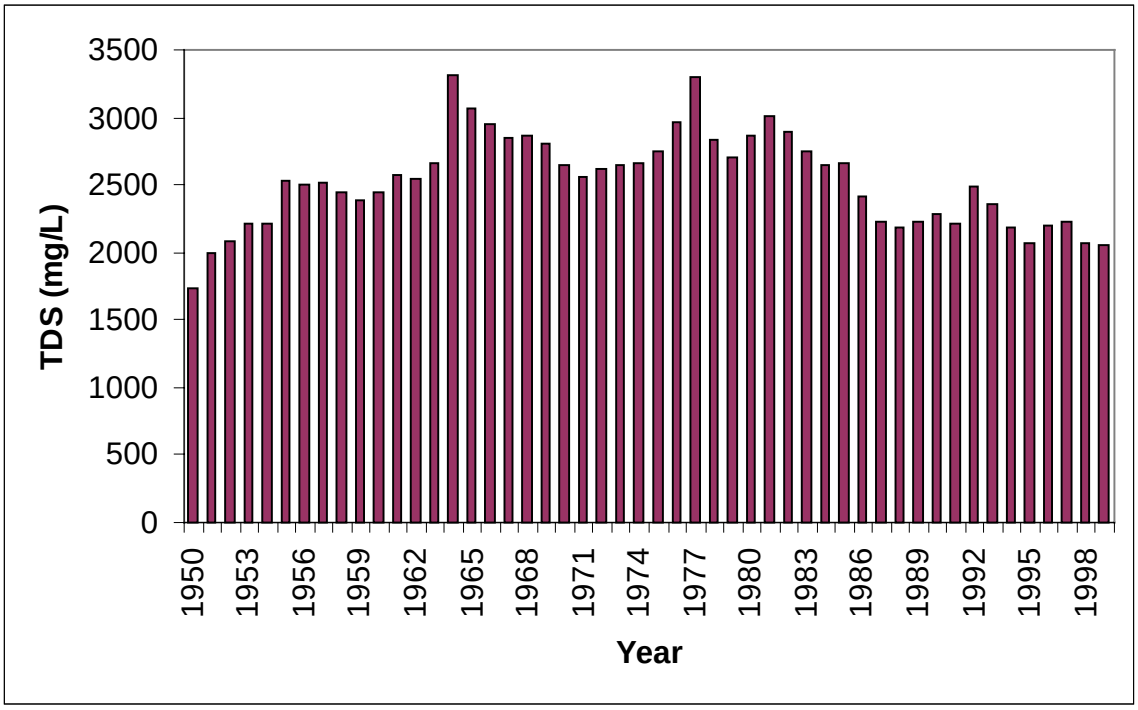
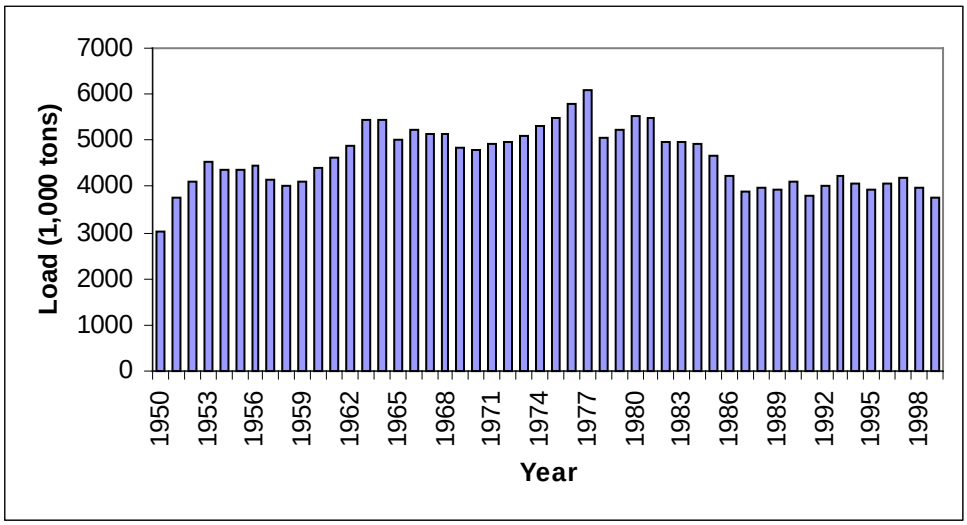


FIGURE 3.2-19 Total Dissolved Solids in Inflow to the Salton Sea (Source: Weghorst 2001)



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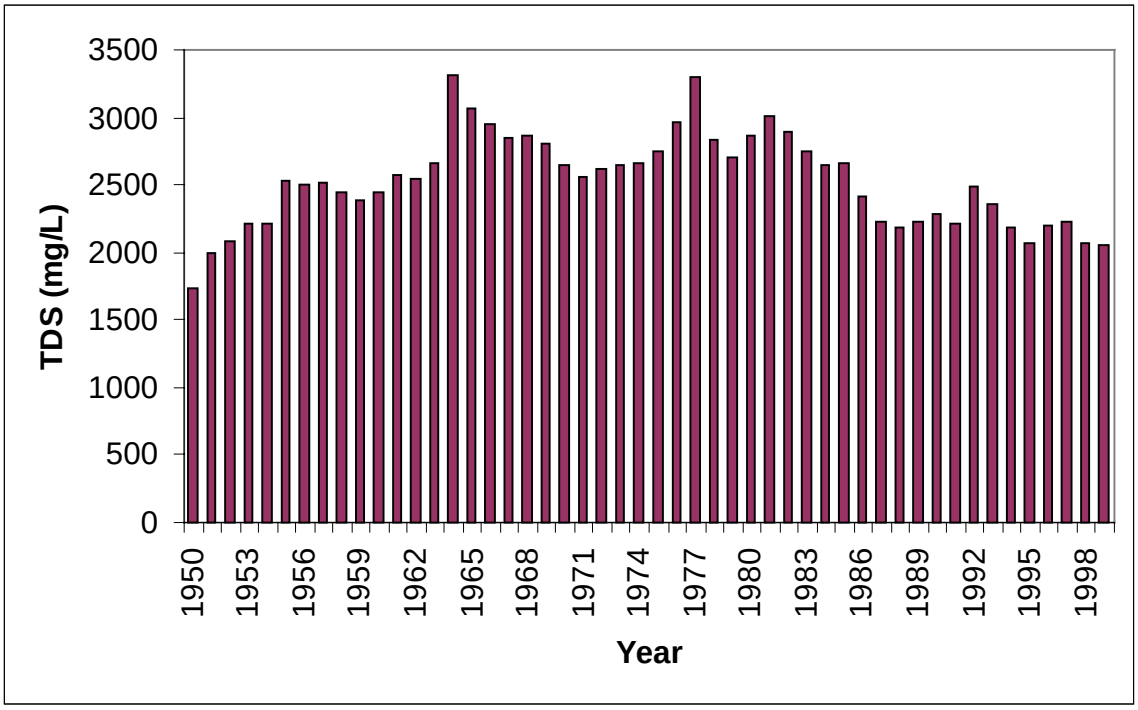

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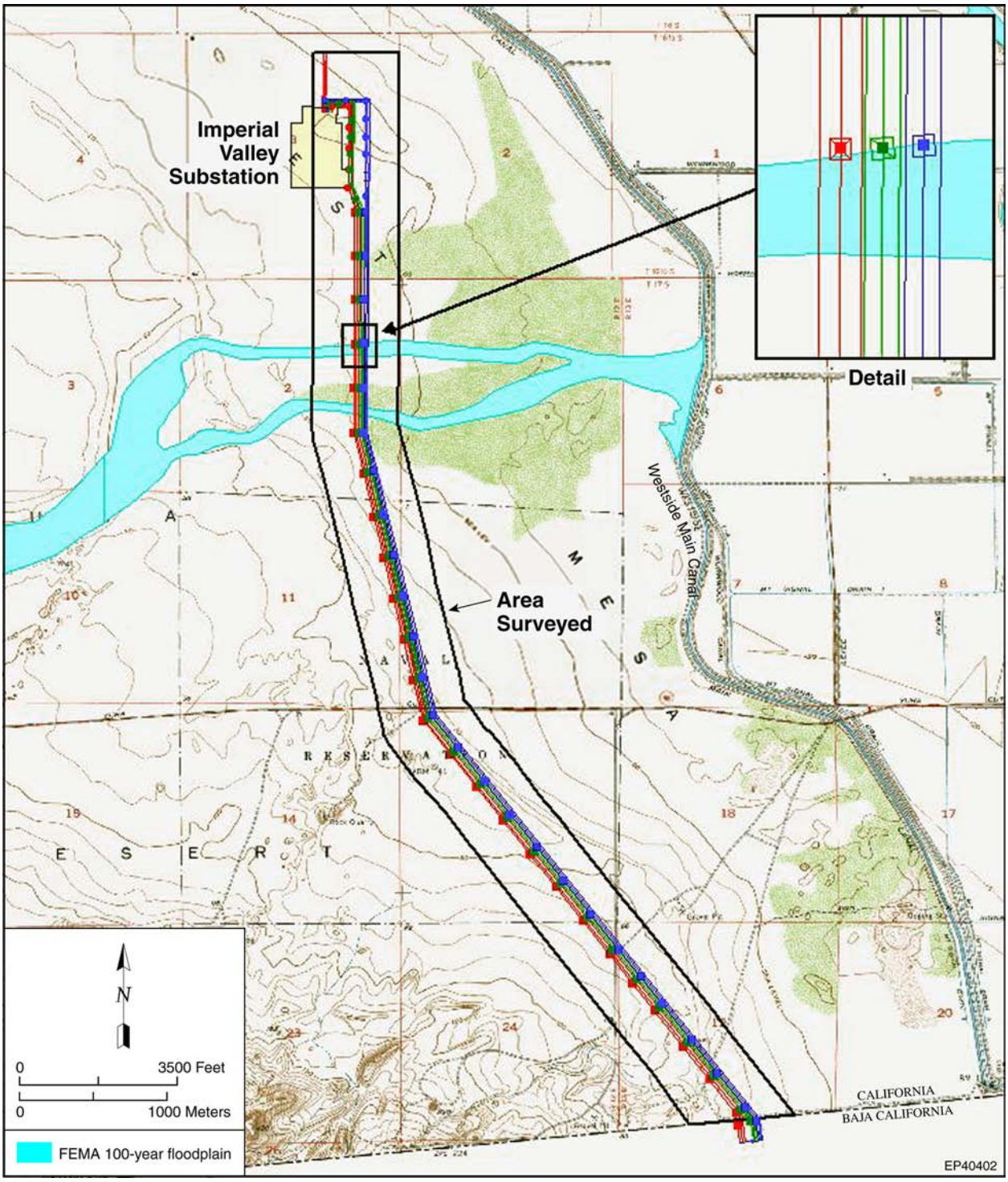

FIGURE 3.2-21 FEMA 100-Year Floodplain of Pinto Wash

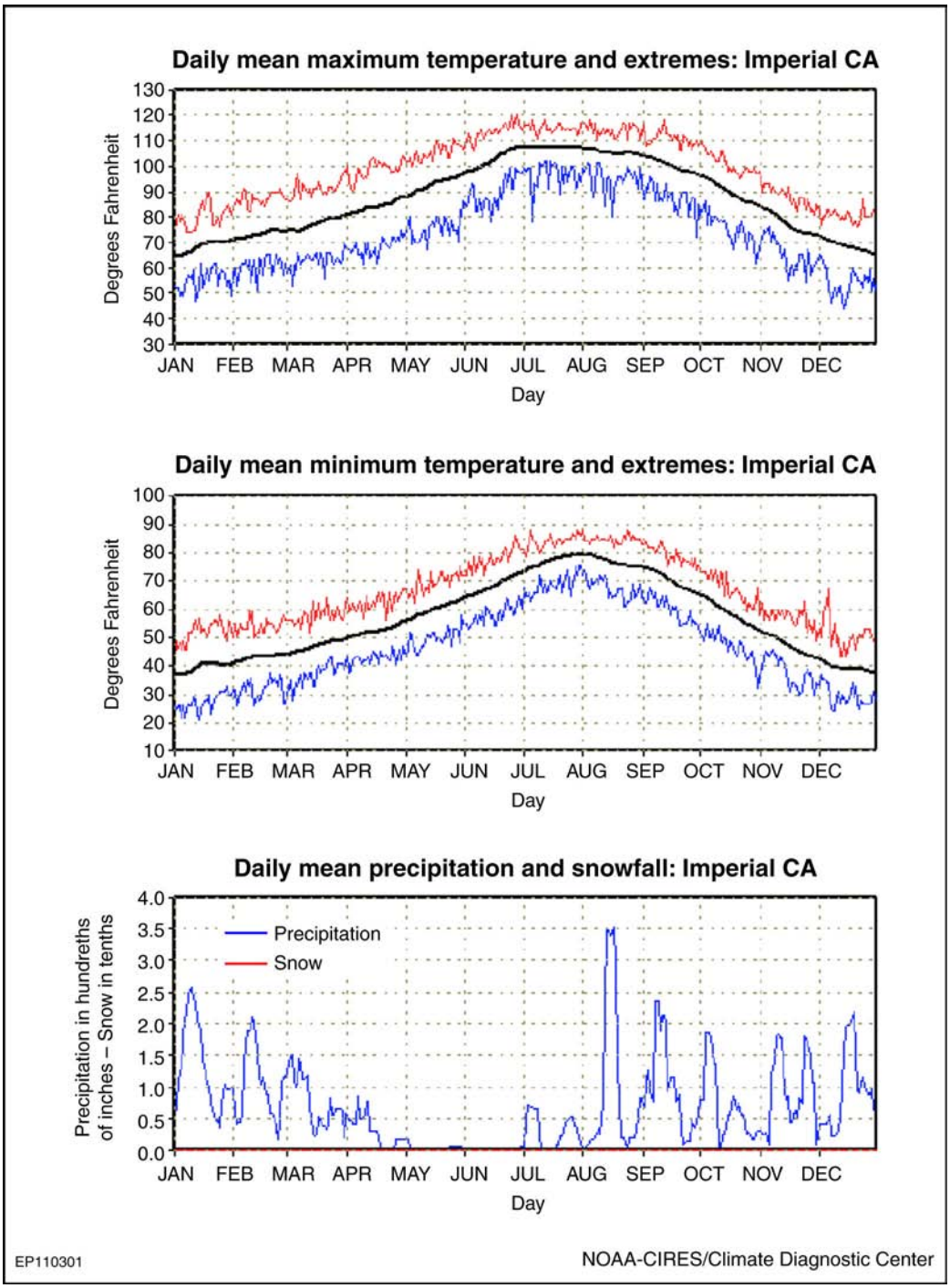

FIGURE 3.3-1 Annual Variation of Temperatures and Precipitation in Imperial County

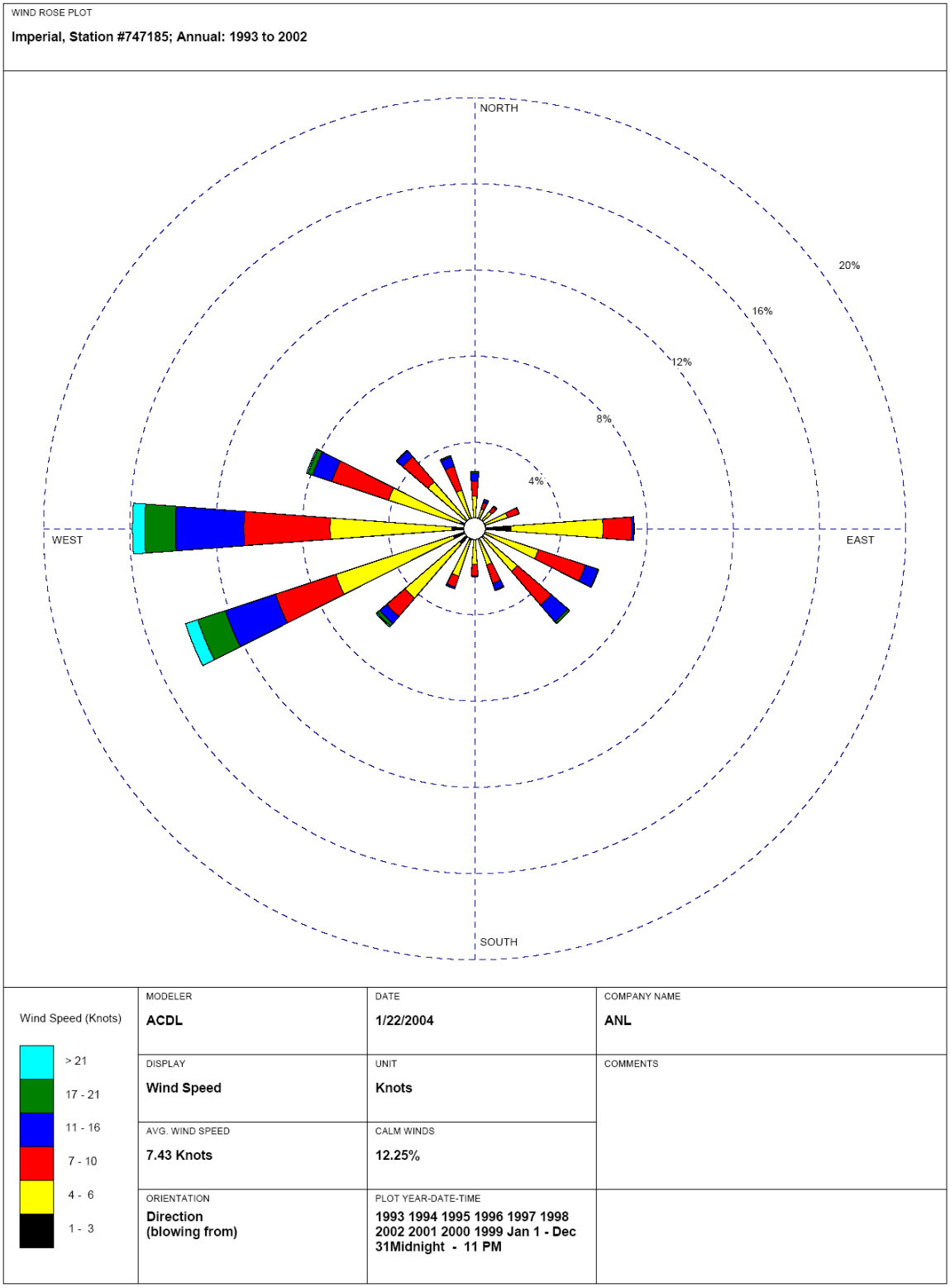

FIGURE 3.3-2 Imperial, Imperial County: Annual Winds from 1993 through 2002

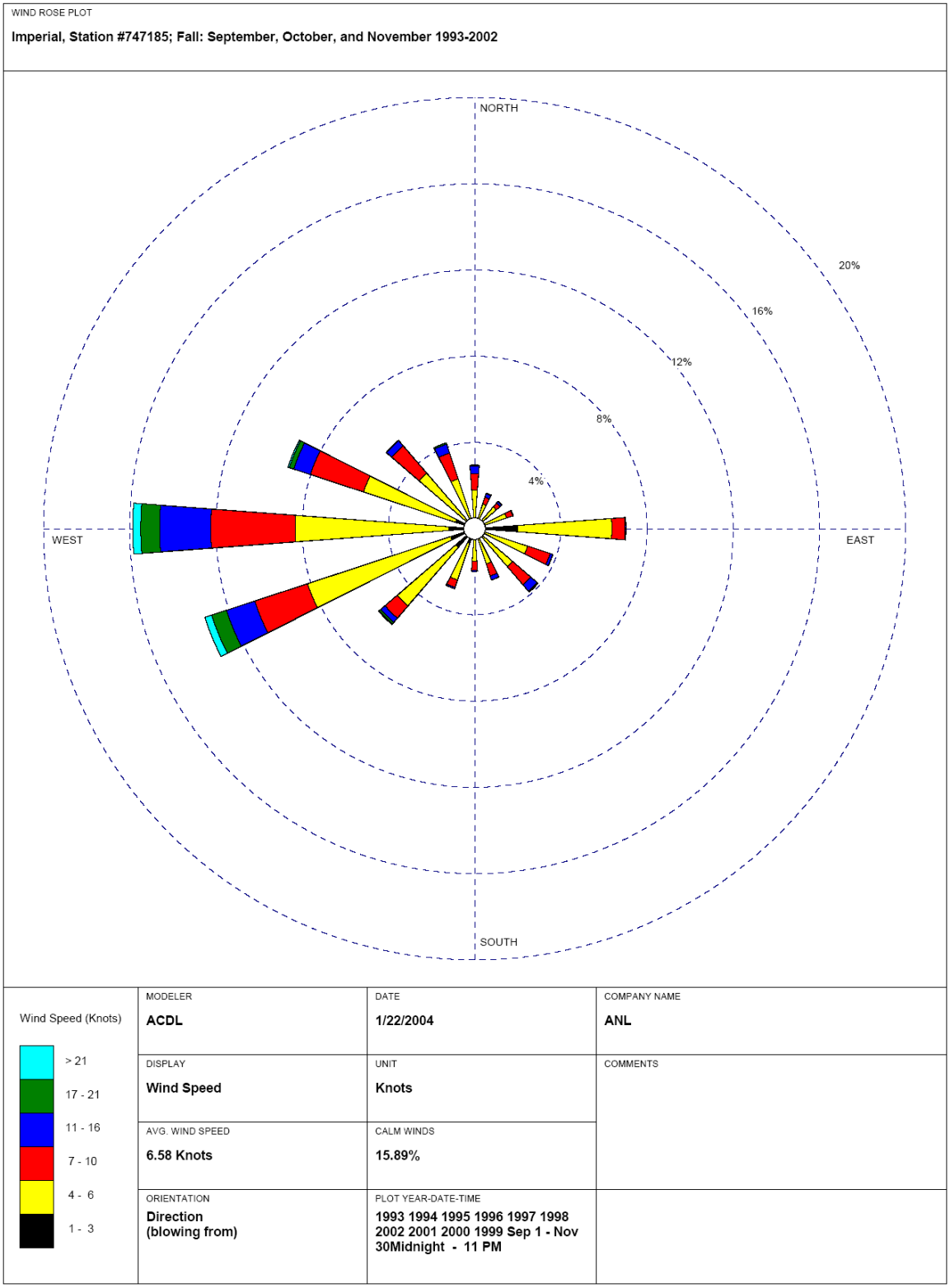

FIGURE 3.3-3 Imperial, Imperial County: Fall (September, October, and November) Winds from 1993 through 2002

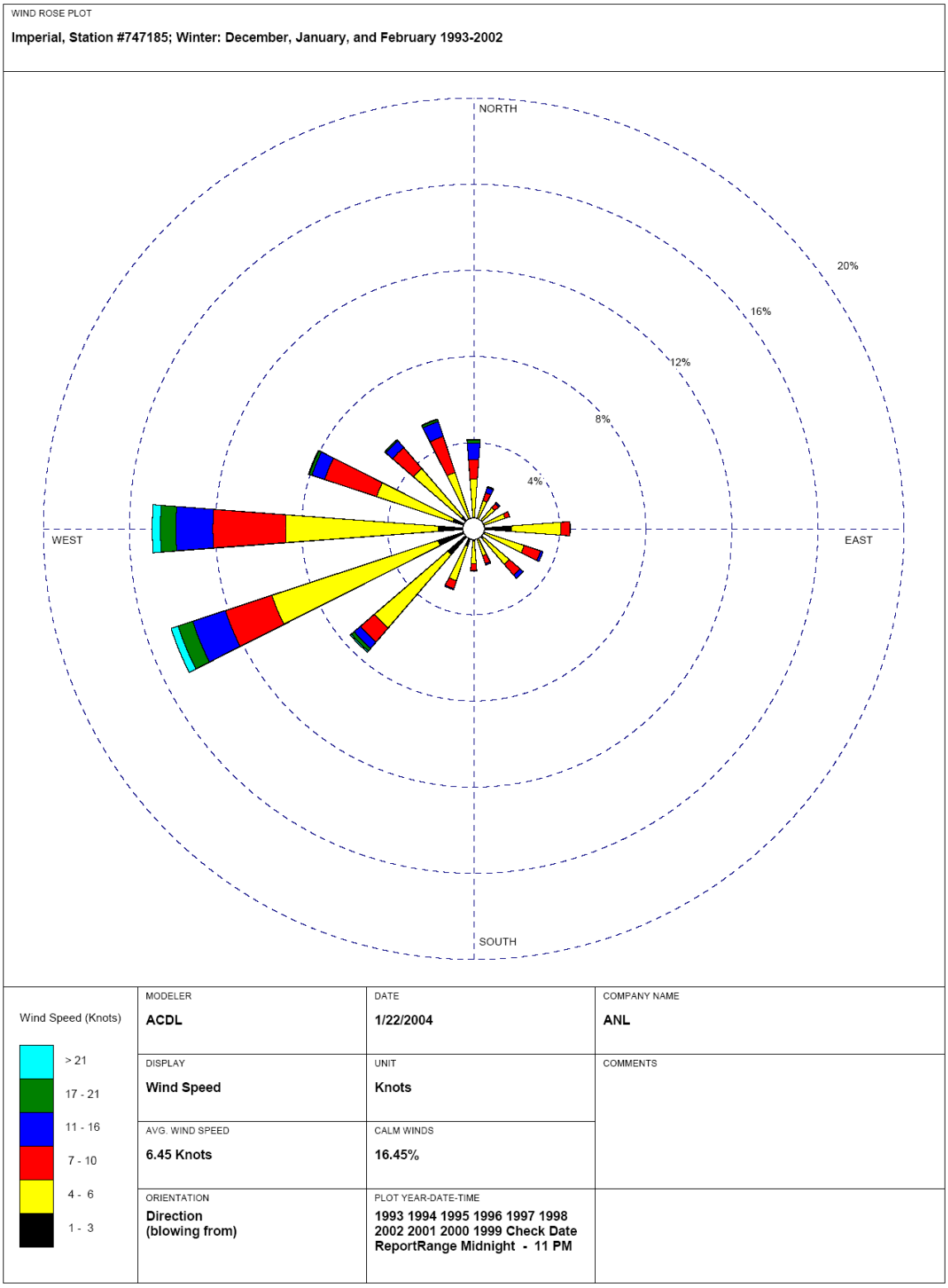

FIGURE 3.3-4 Imperial, Imperial County: Winter (December, January, and February) Winds from 1993 through 2002

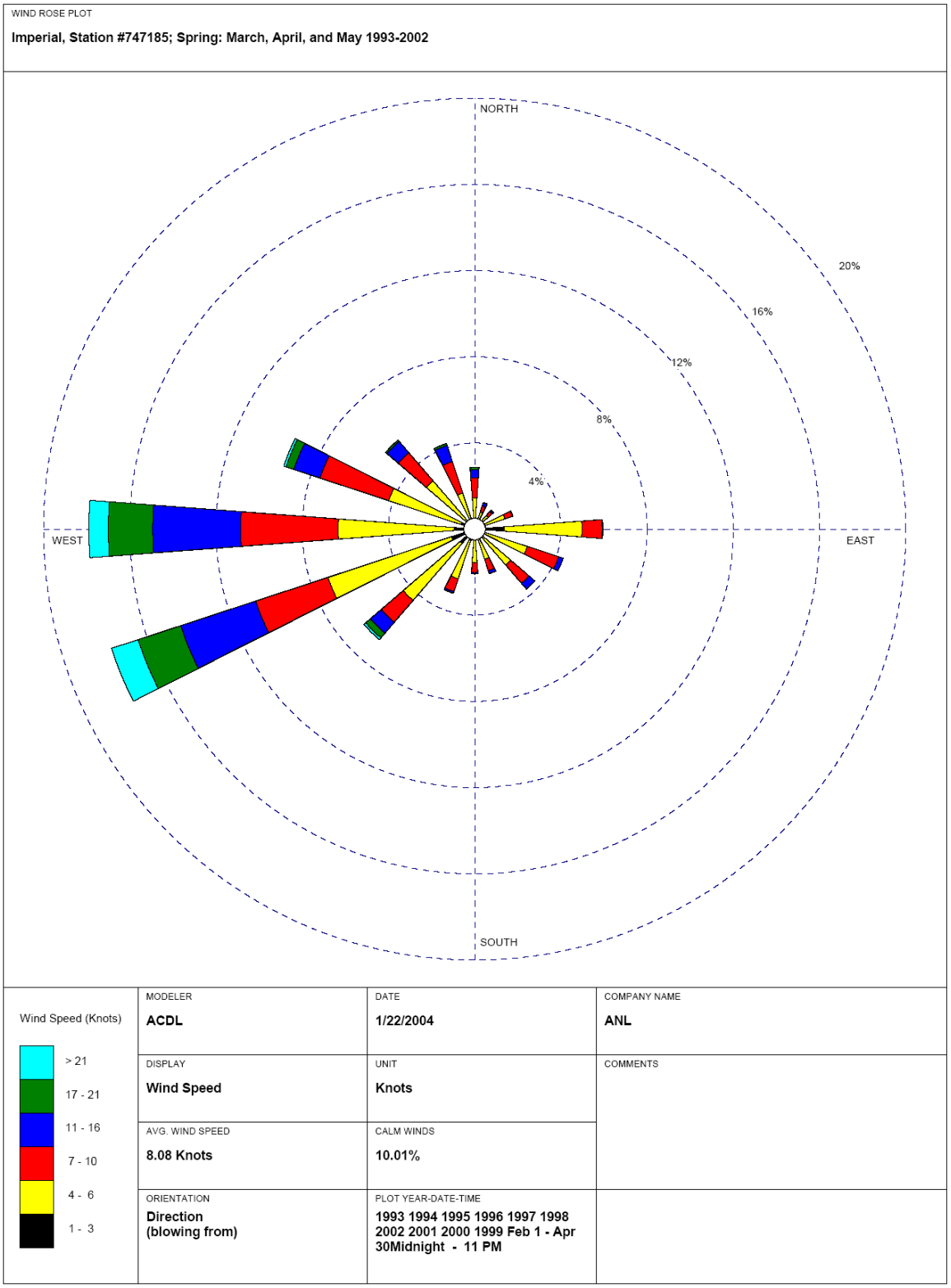

FIGURE 3.3-5 Imperial, Imperial County: Spring (March, April, and May) Winds from 1993 through 2002

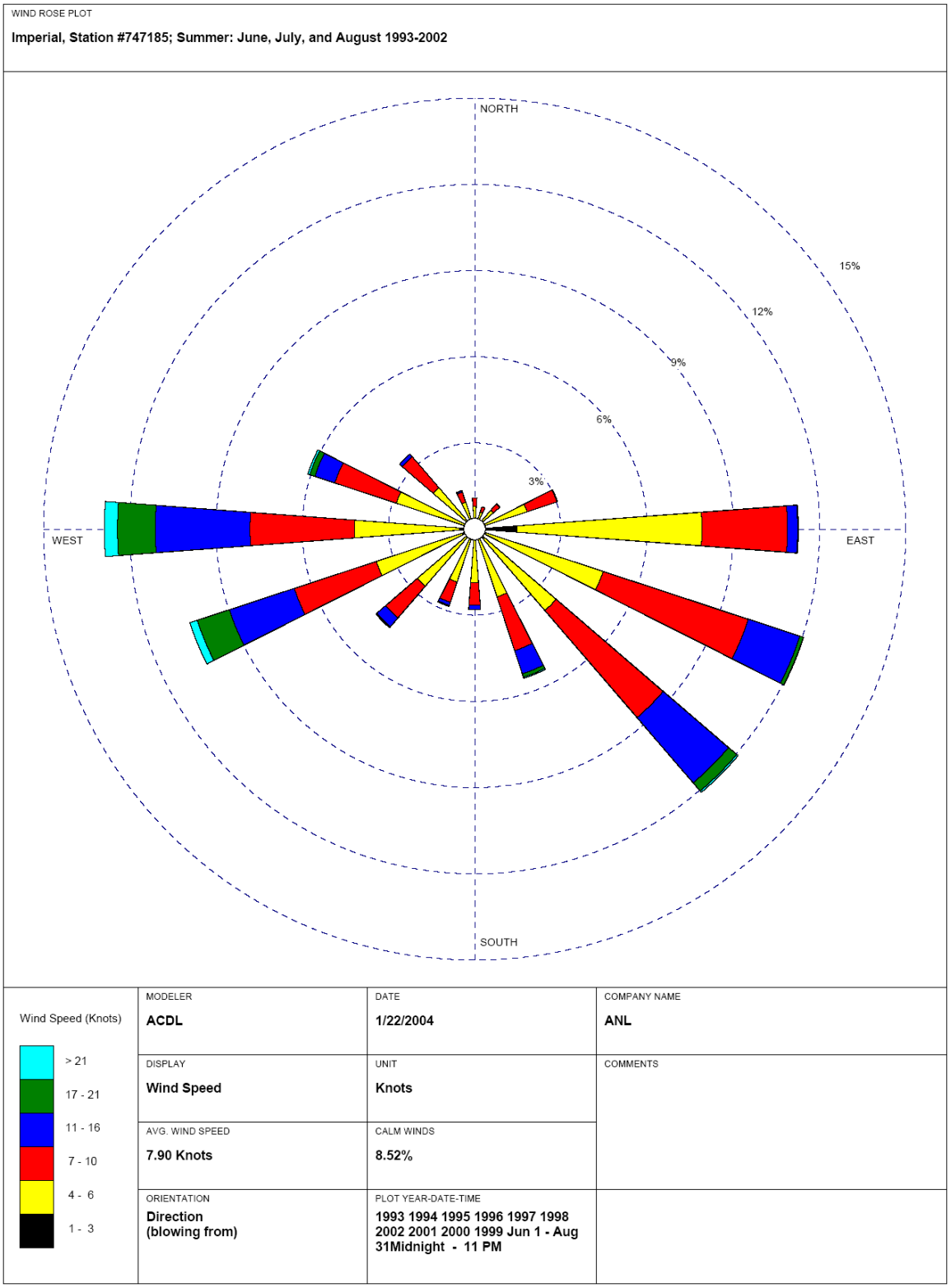

FIGURE 3.3-6 Imperial, Imperial County: Summer (June, July, and August) Winds from 1993 through 2002

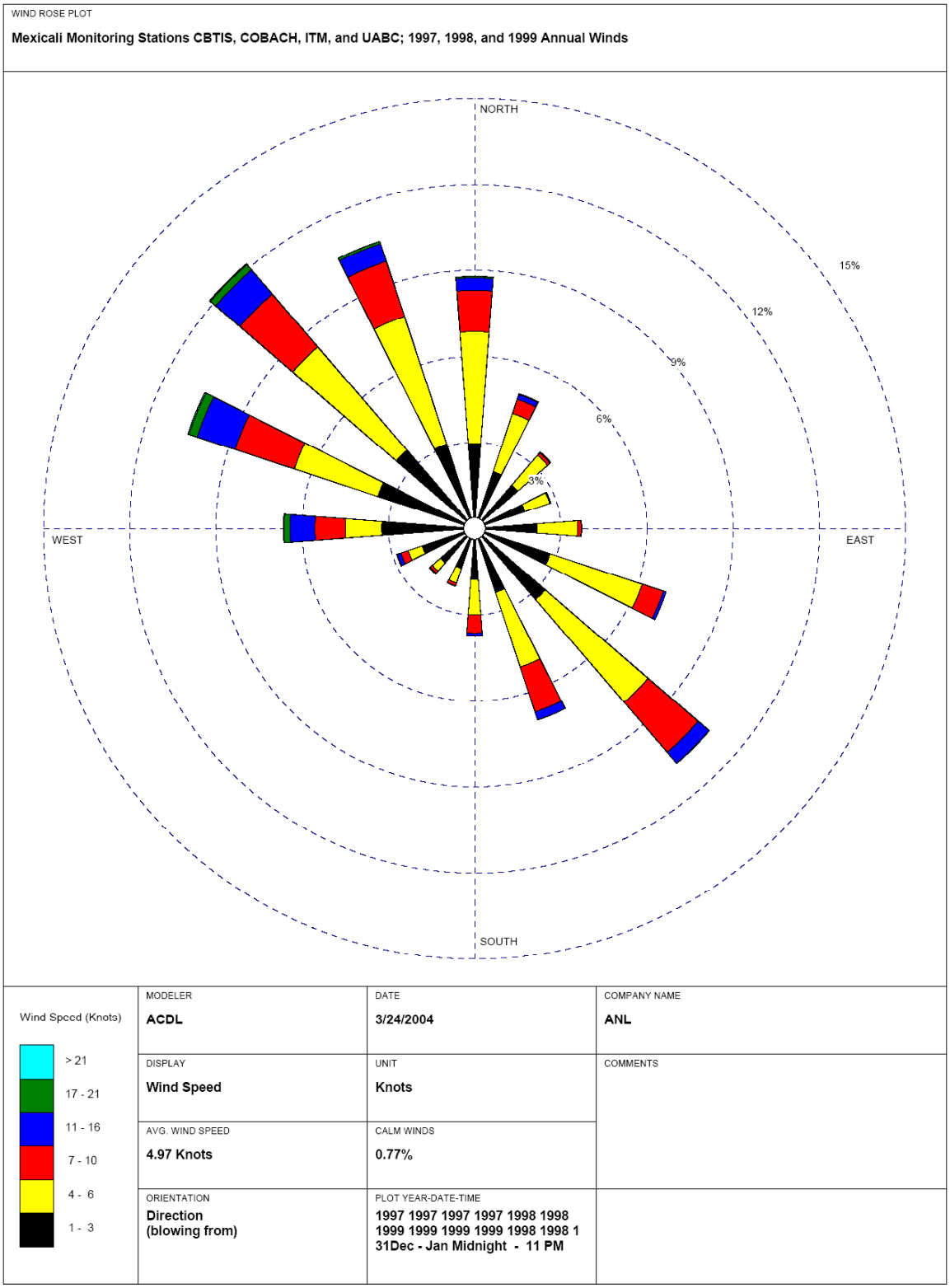

FIGURE 3.3-7 Mexicali Monitoring Stations CBTIS, COBACH, ITM, and UABC: Annual Winds, 1997, 1998, and 1999

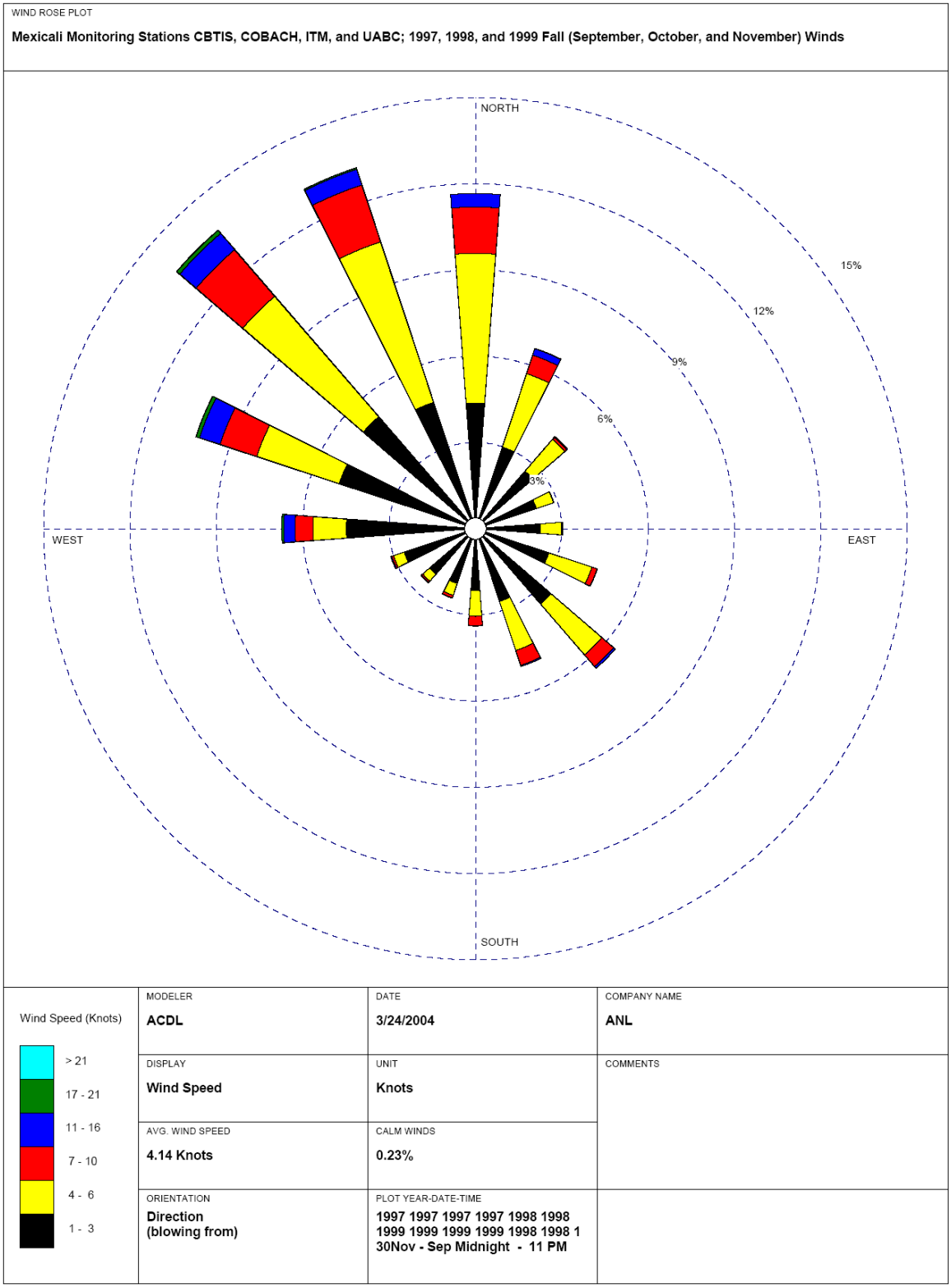

FIGURE 3.3-8 Mexicali Monitoring Stations CBTIS, COBACH, ITM, and UABC: Fall (September, October, November) Winds, 1997, 1998, and 1999

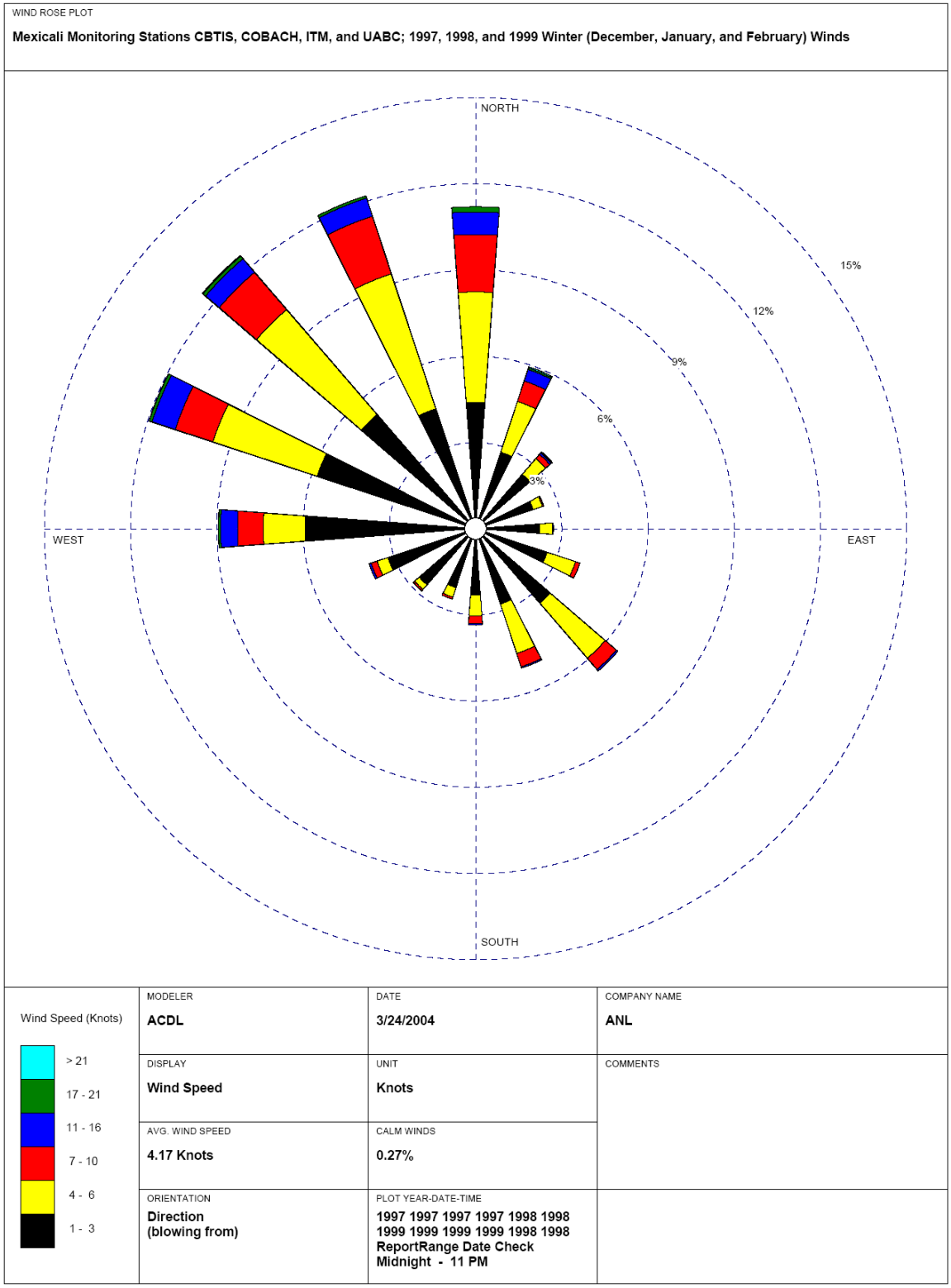

FIGURE 3.3-9 Mexicali Monitoring Stations CBTIS, COBACH, ITM, and UABC: Winter (December, January, and February) Winds, 1997, 1998, and 1999

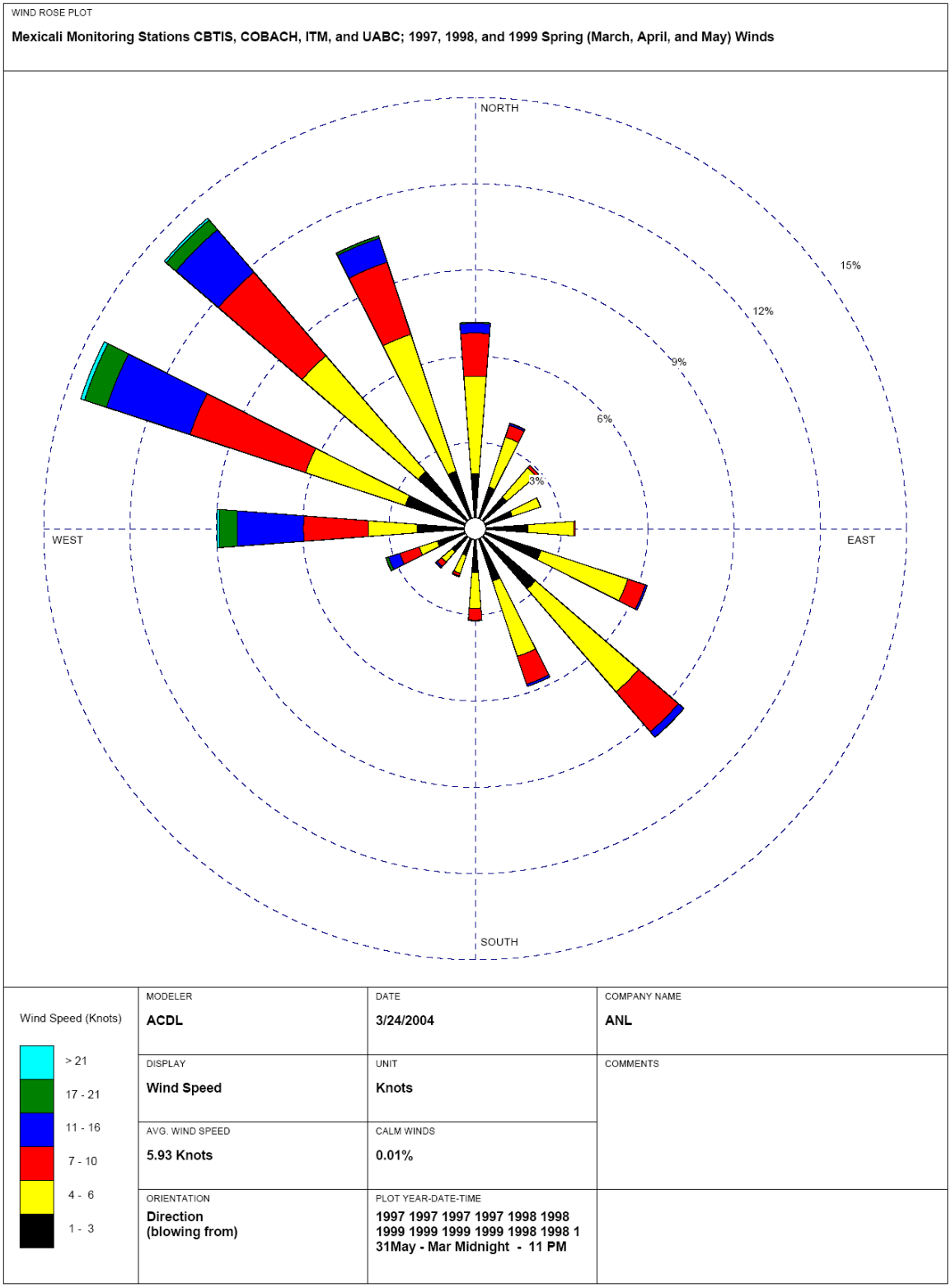

FIGURE 3.3-10 Mexicali Monitoring Stations CBTIS, COBACH, ITM, and UABC: Spring (March, April, and May) Winds, 1997, 1998, and 1999

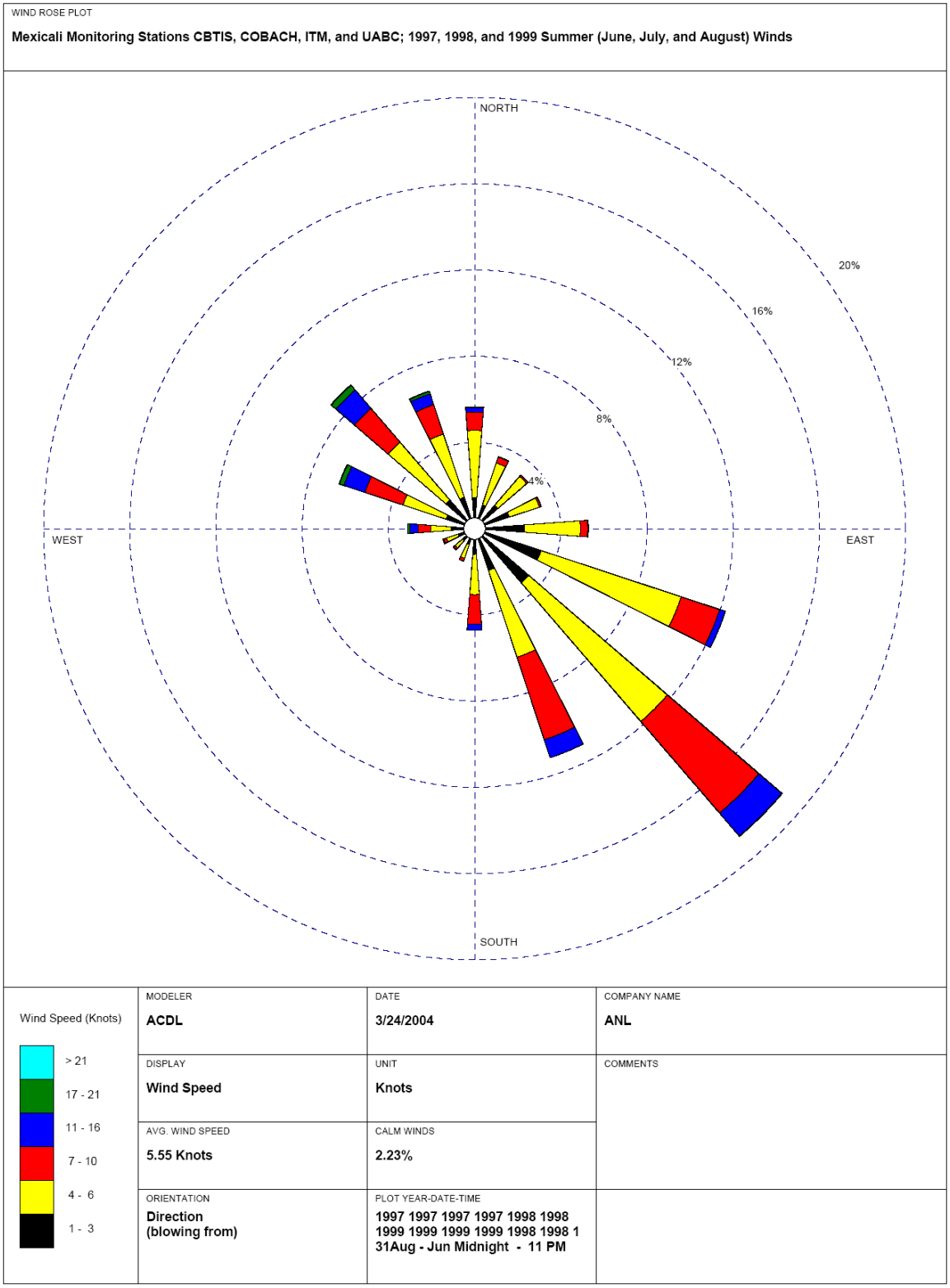

FIGURE 3.3-11 Mexicali Monitoring Stations CBTIS, COBACH, ITM, and UABC: Summer (June, July, and August) Winds, 1997, 1998, and 1999

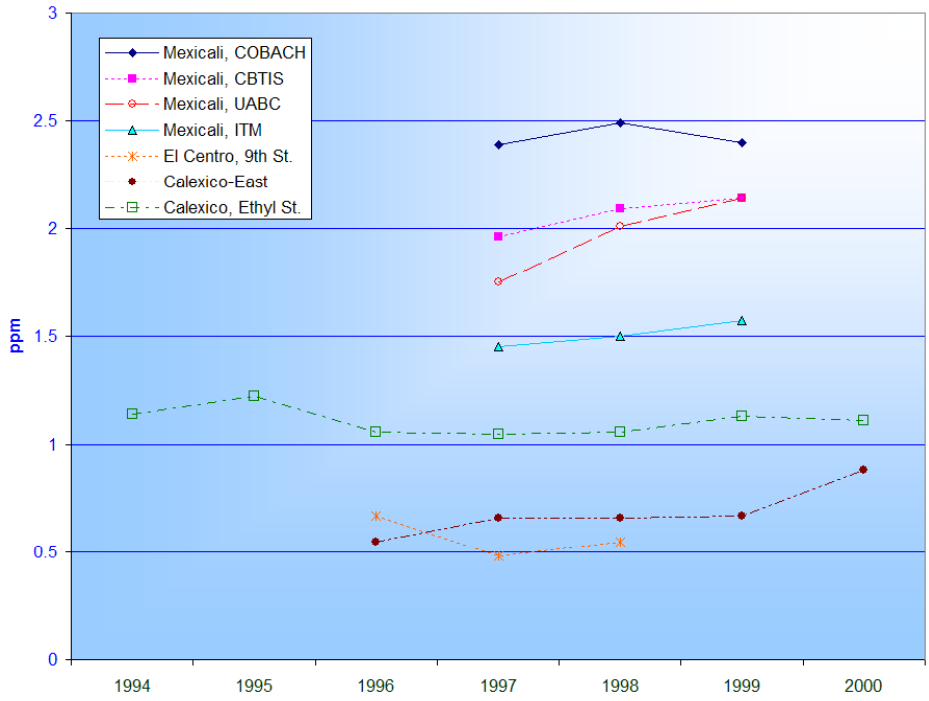

FIGURE 3.3-14 Carbon Monoxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

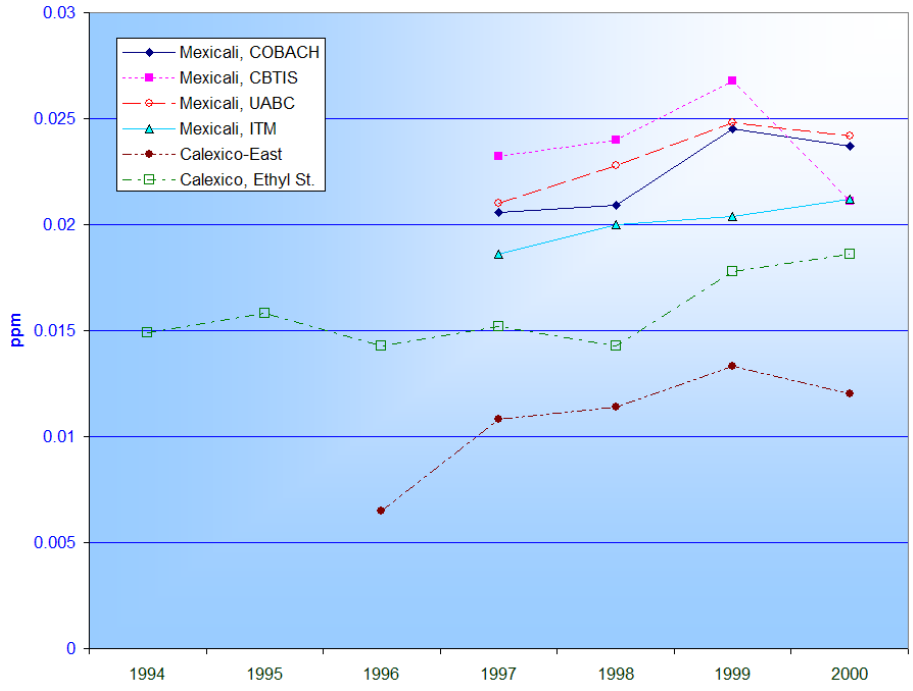

FIGURE 3.3-15 Nitrogen Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

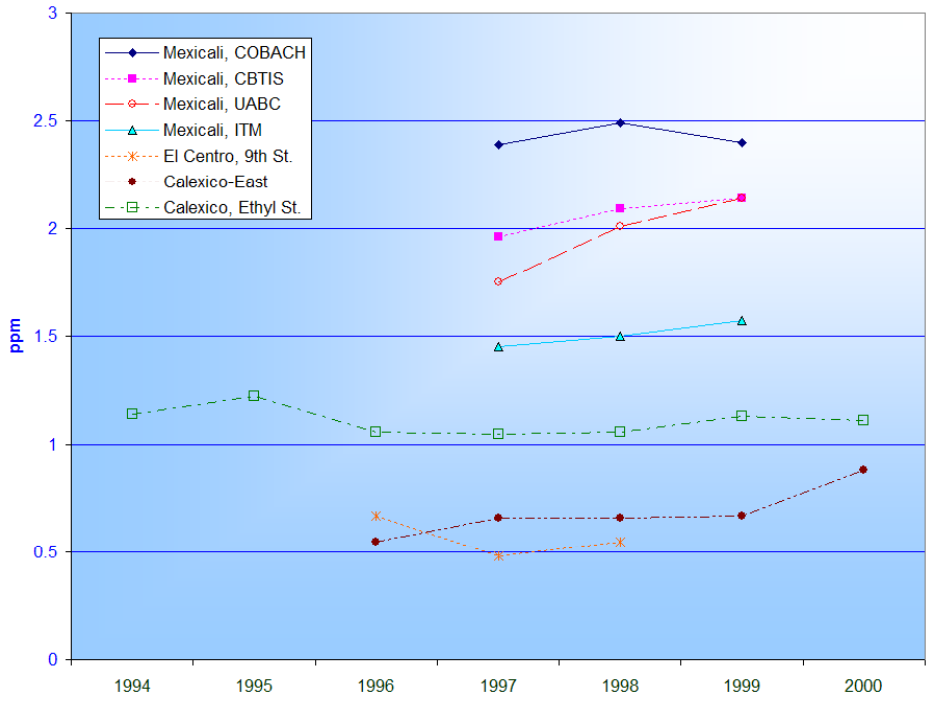

FIGURE 3.3-14 Carbon Monoxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

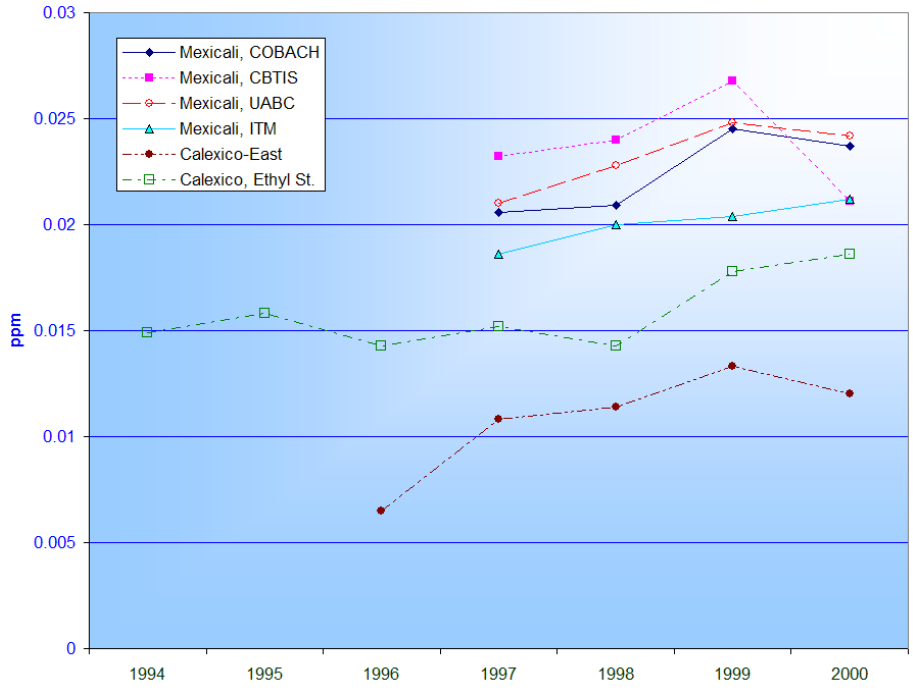

FIGURE 3.3-15 Nitrogen Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

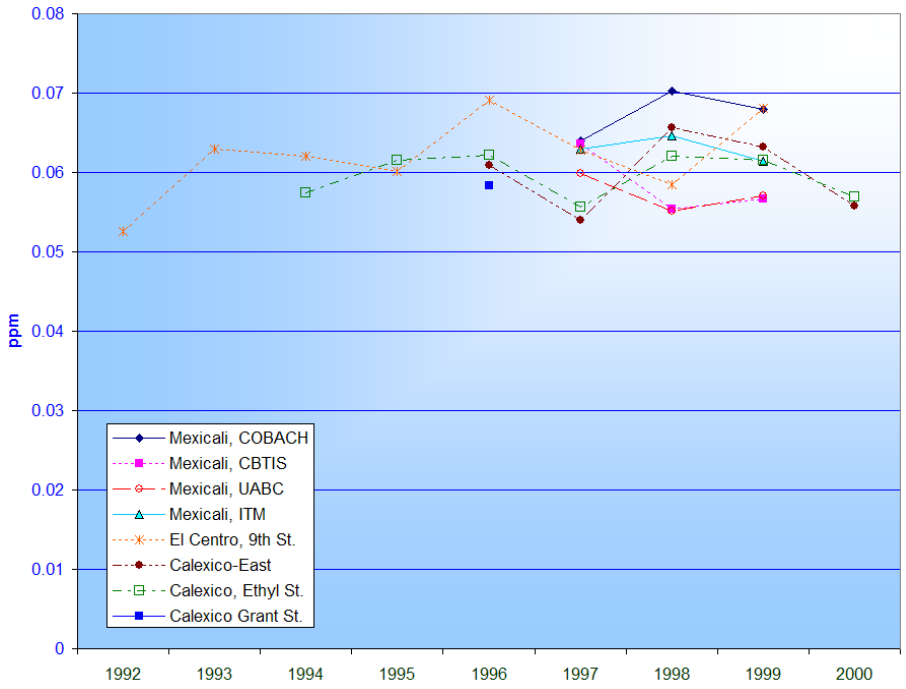

FIGURE 3.3-16 Ozone Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

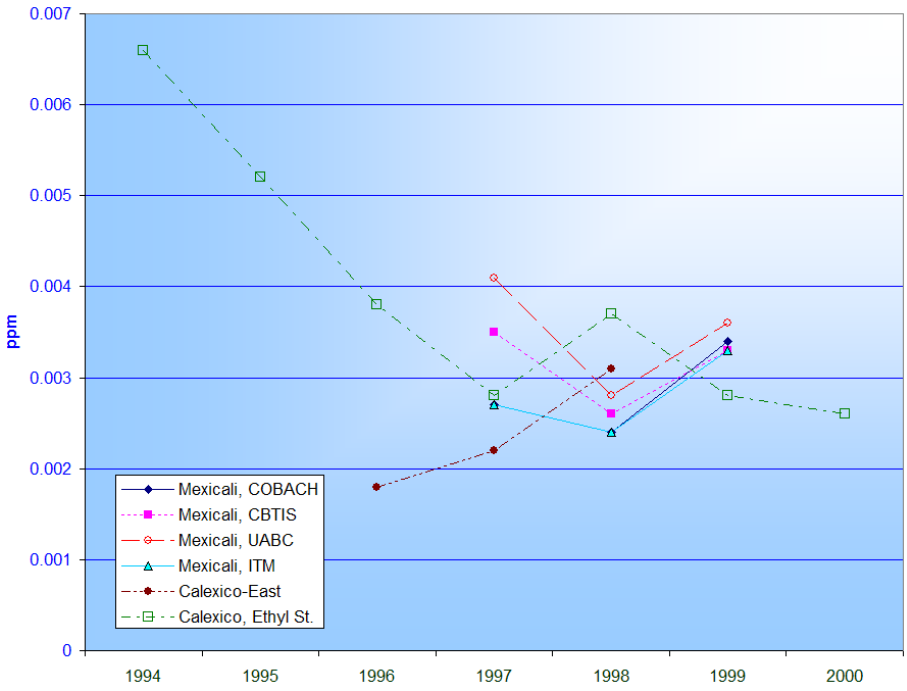

FIGURE 3.3-17 Sulfur Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

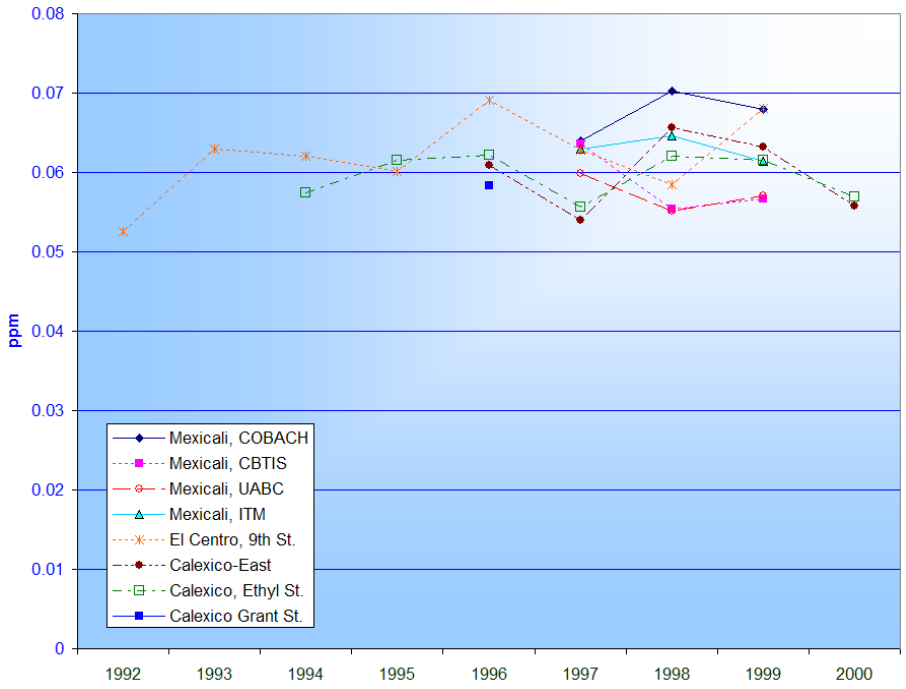

FIGURE 3.3-16 Ozone Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

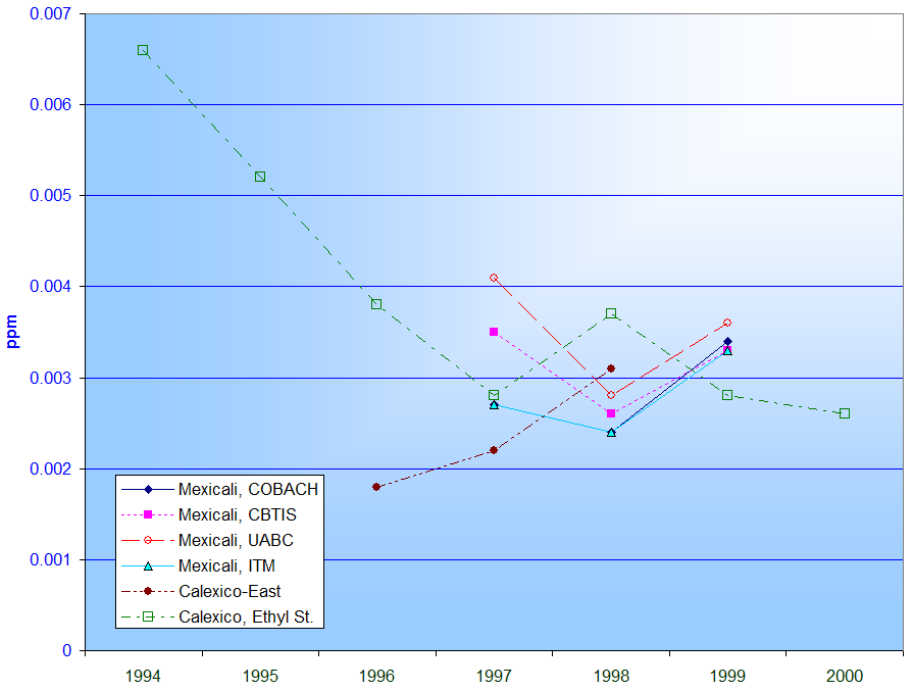

FIGURE 3.3-17 Sulfur Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

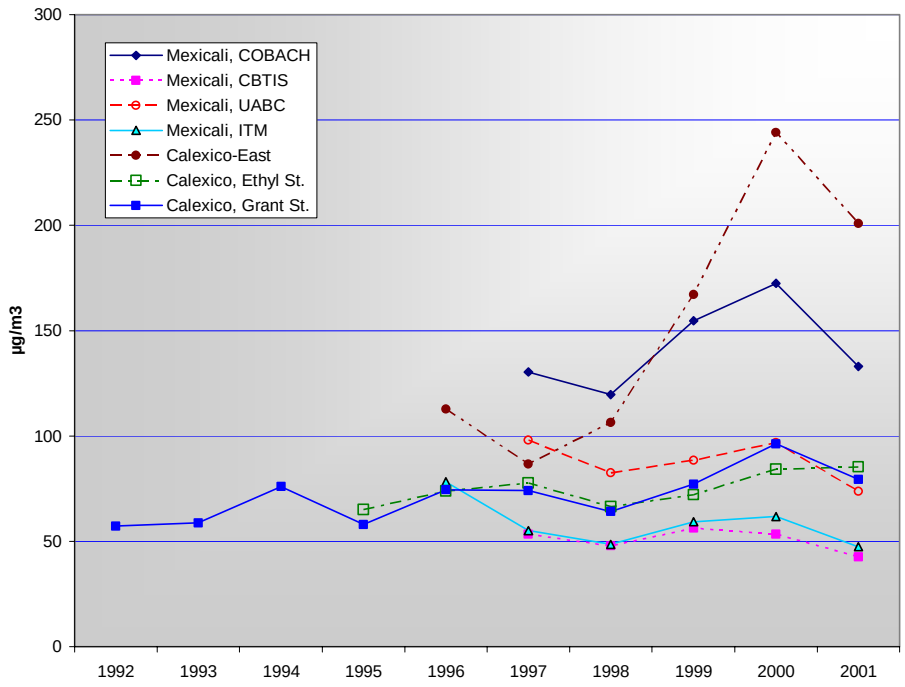

FIGURE 3.3-18 PM_{10} Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

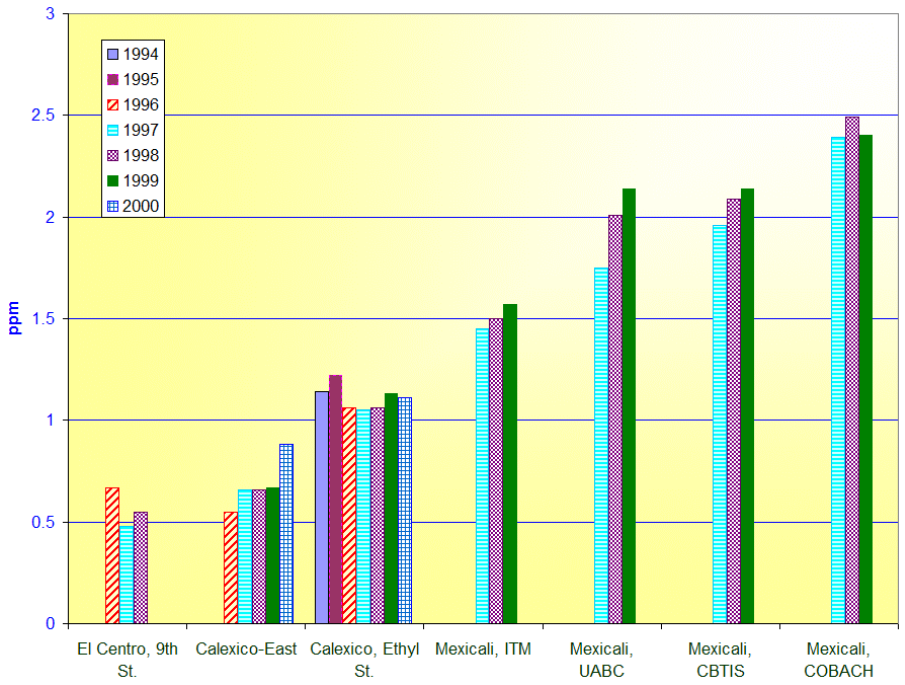

FIGURE 3.3-19 Bar Graph of Carbon Monoxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

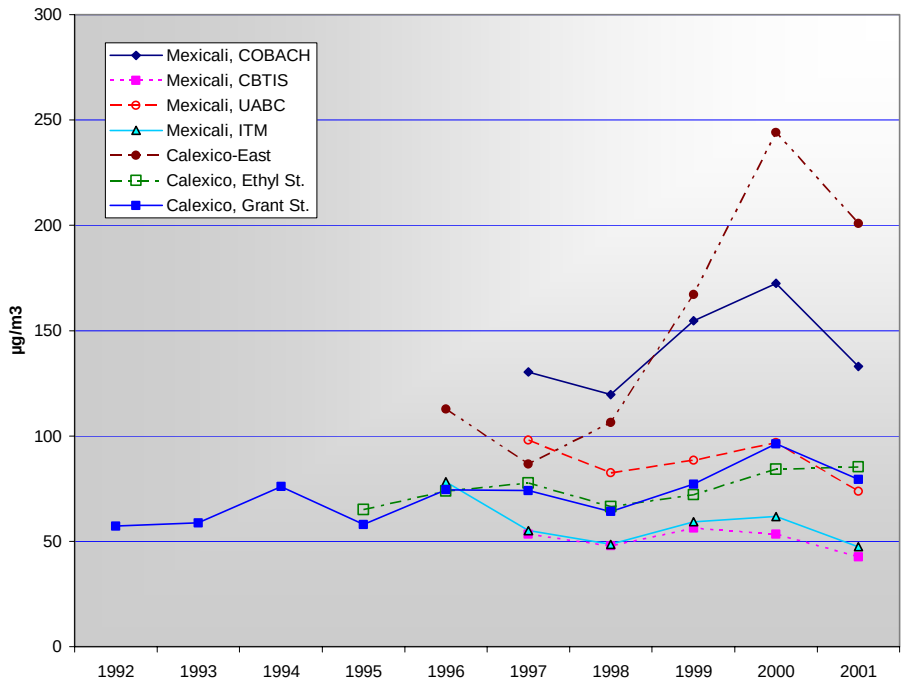

FIGURE 3.3-18 PM_{10} Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

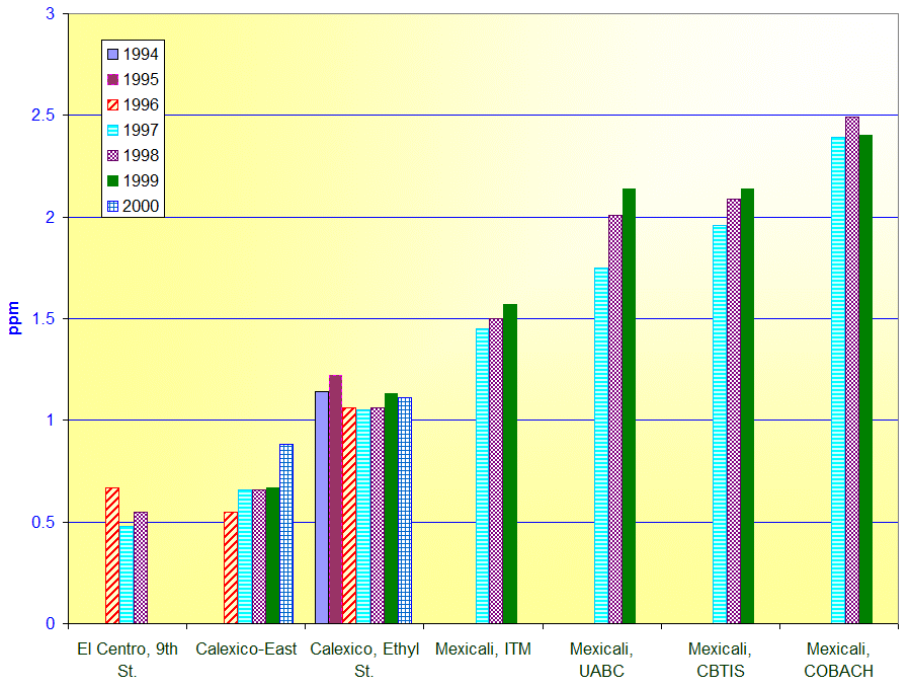

FIGURE 3.3-19 Bar Graph of Carbon Monoxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

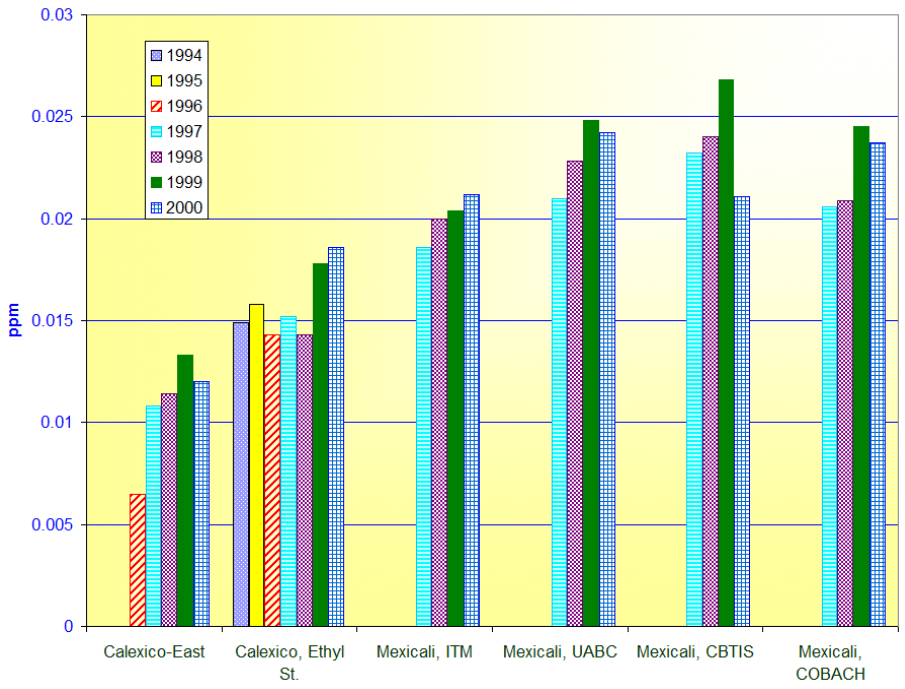

FIGURE 3.3-20 Bar Graph of Nitrogen Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

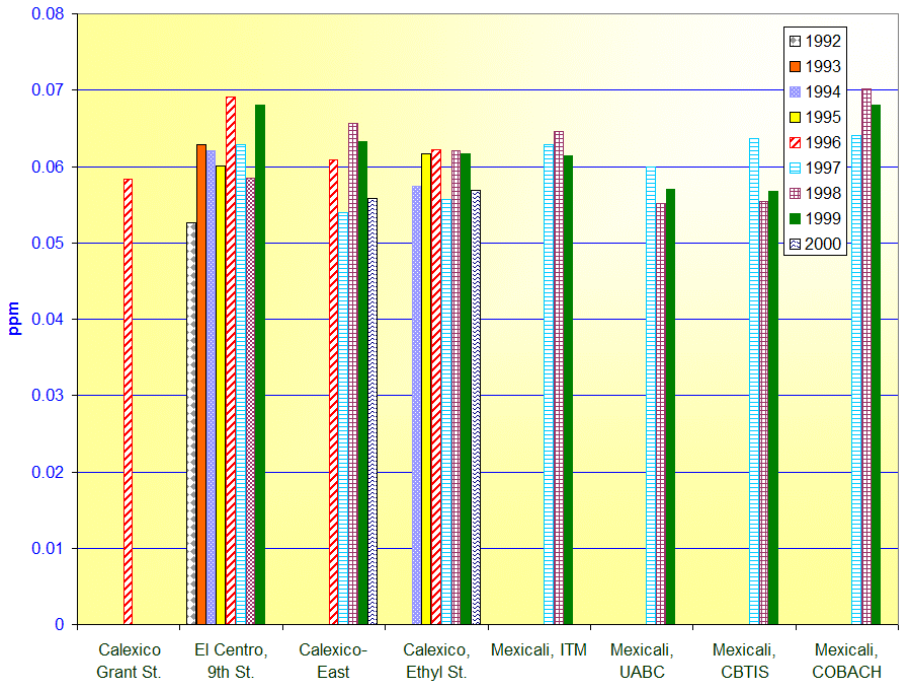

FIGURE 3.3-21 Bar Graph of Ozone Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

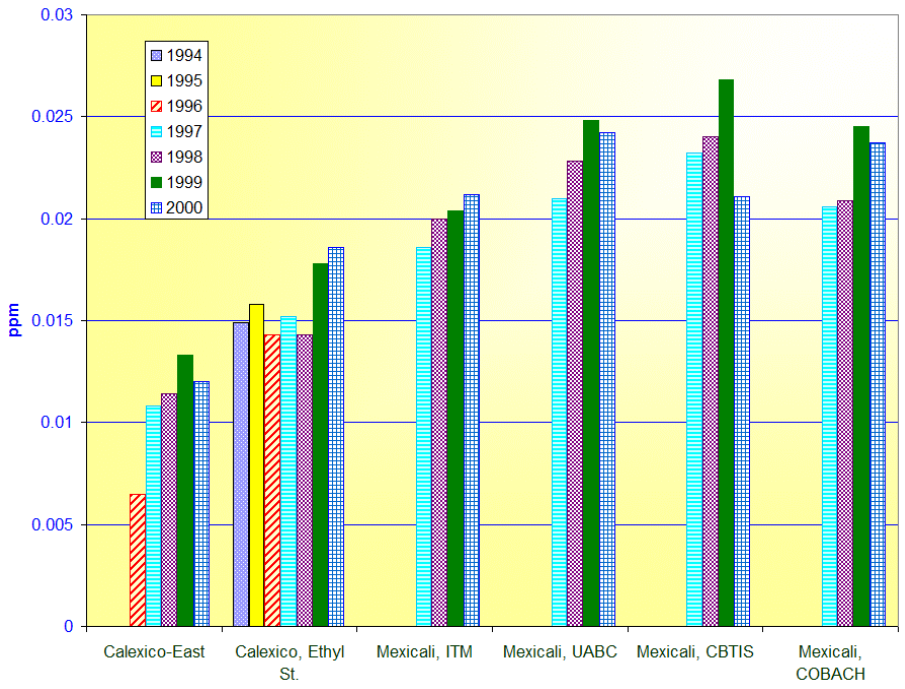

FIGURE 3.3-20 Bar Graph of Nitrogen Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

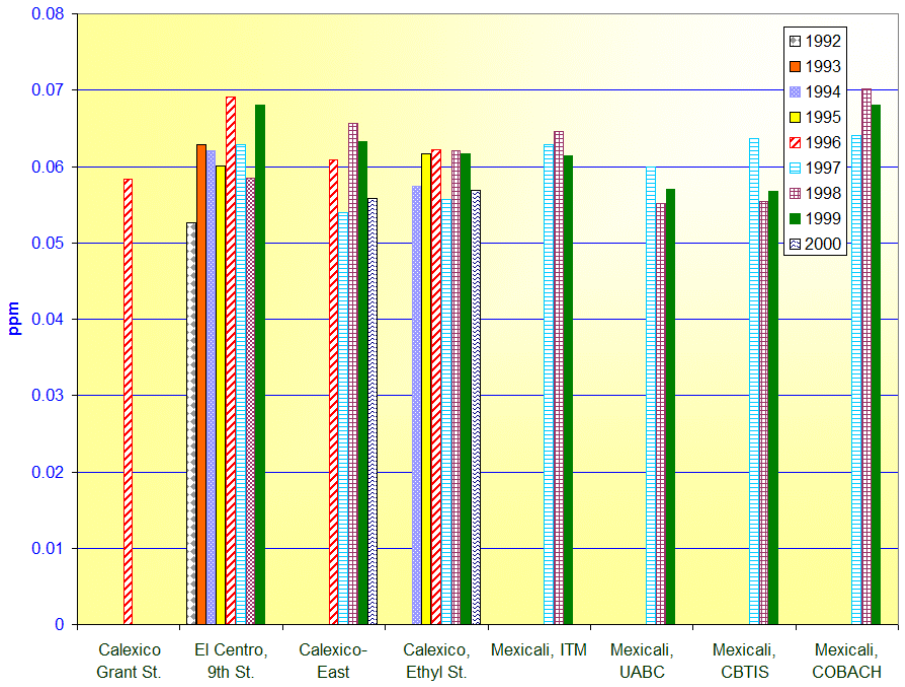

FIGURE 3.3-21 Bar Graph of Ozone Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

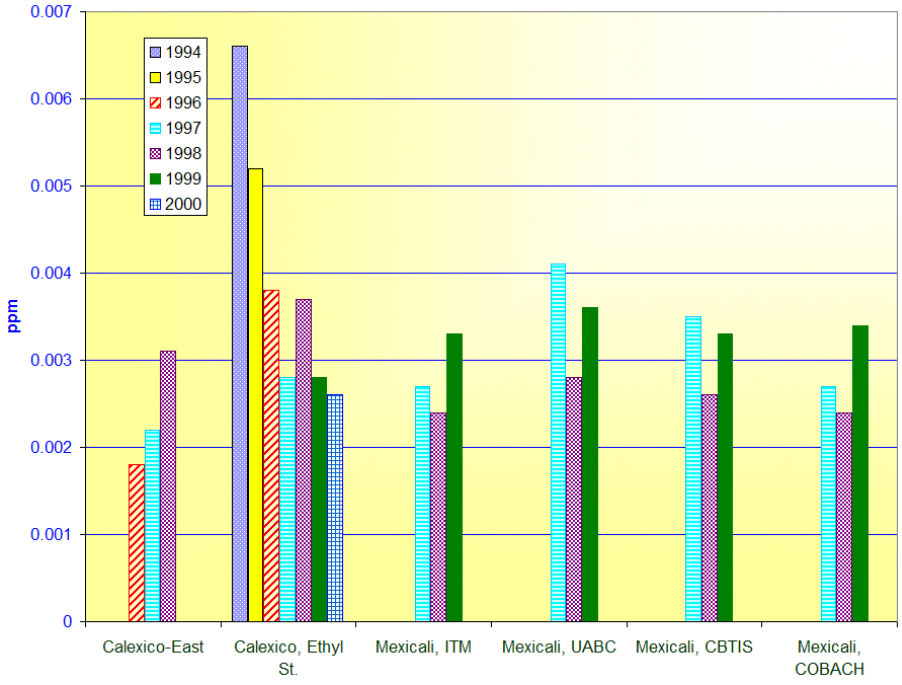

FIGURE 3.3-22 Bar Graph of Sulfur Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

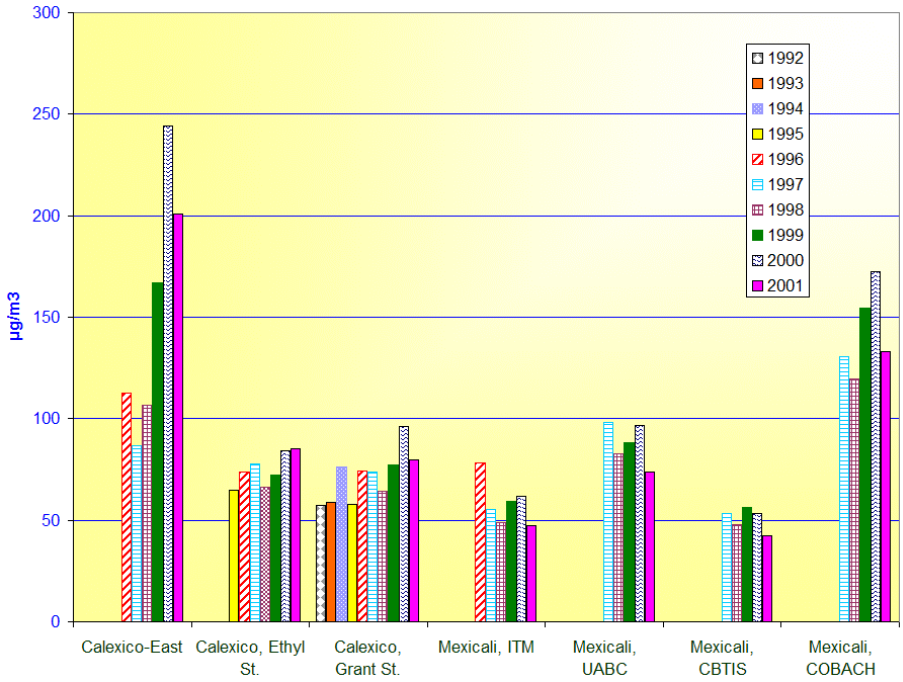

FIGURE 3.3-23 Bar Graph of PM_{10} Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

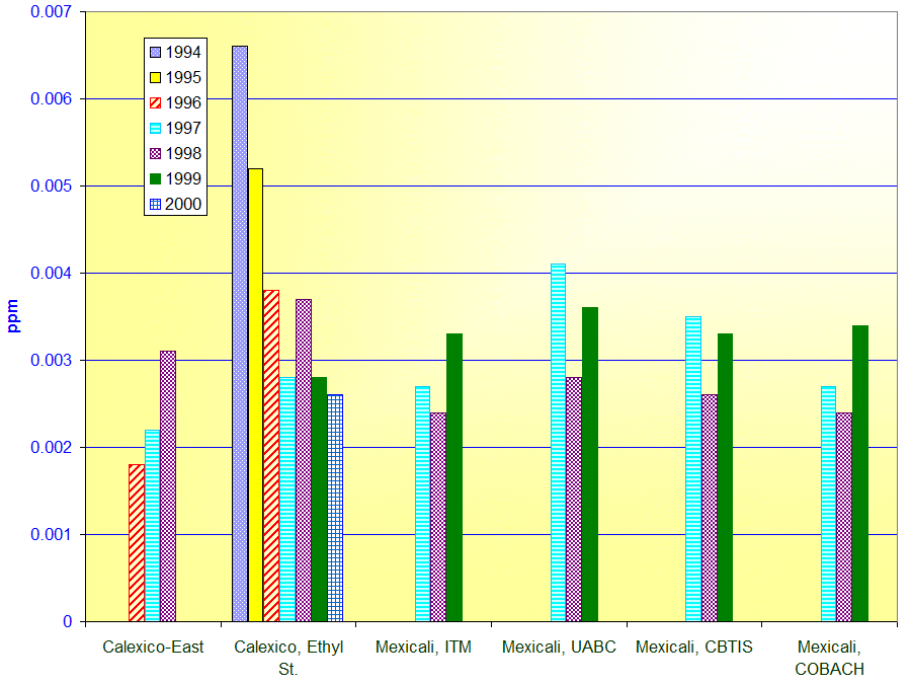

FIGURE 3.3-22 Bar Graph of Sulfur Dioxide Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

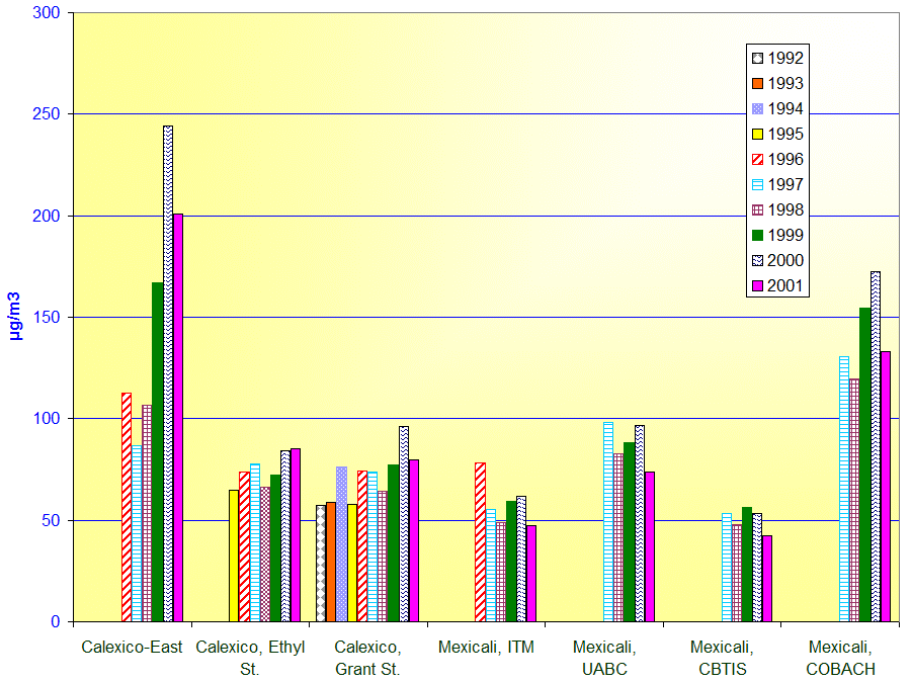

FIGURE 3.3-23 Bar Graph of PM_{10} Annual Arithmetic Means for U.S. and Mexico Monitoring Stations

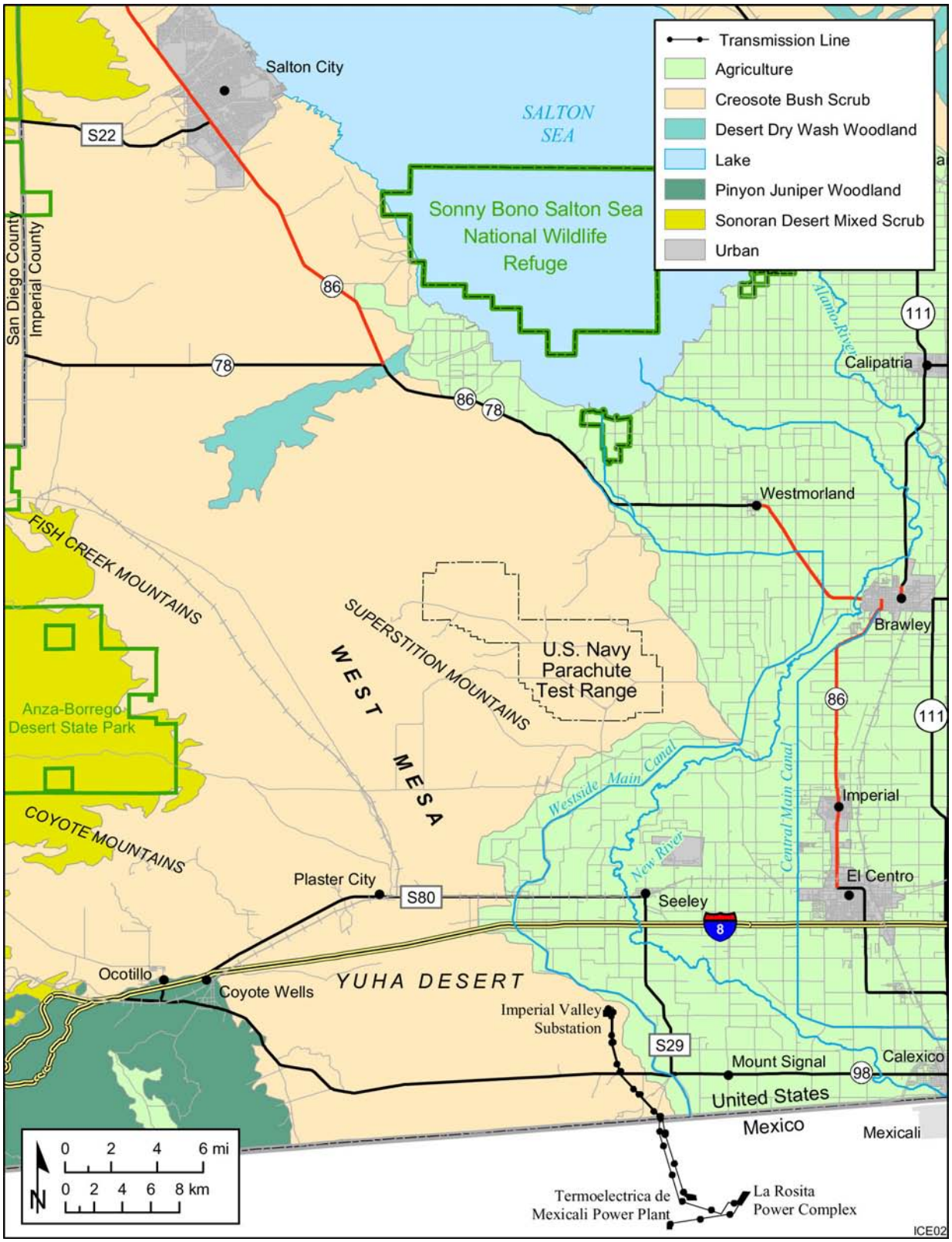

FIGURE 3.4-1 Biological Community Types in the Vicinity of the Proposed Transmission Line Routes (Source: adapted from Loeffler 2001)

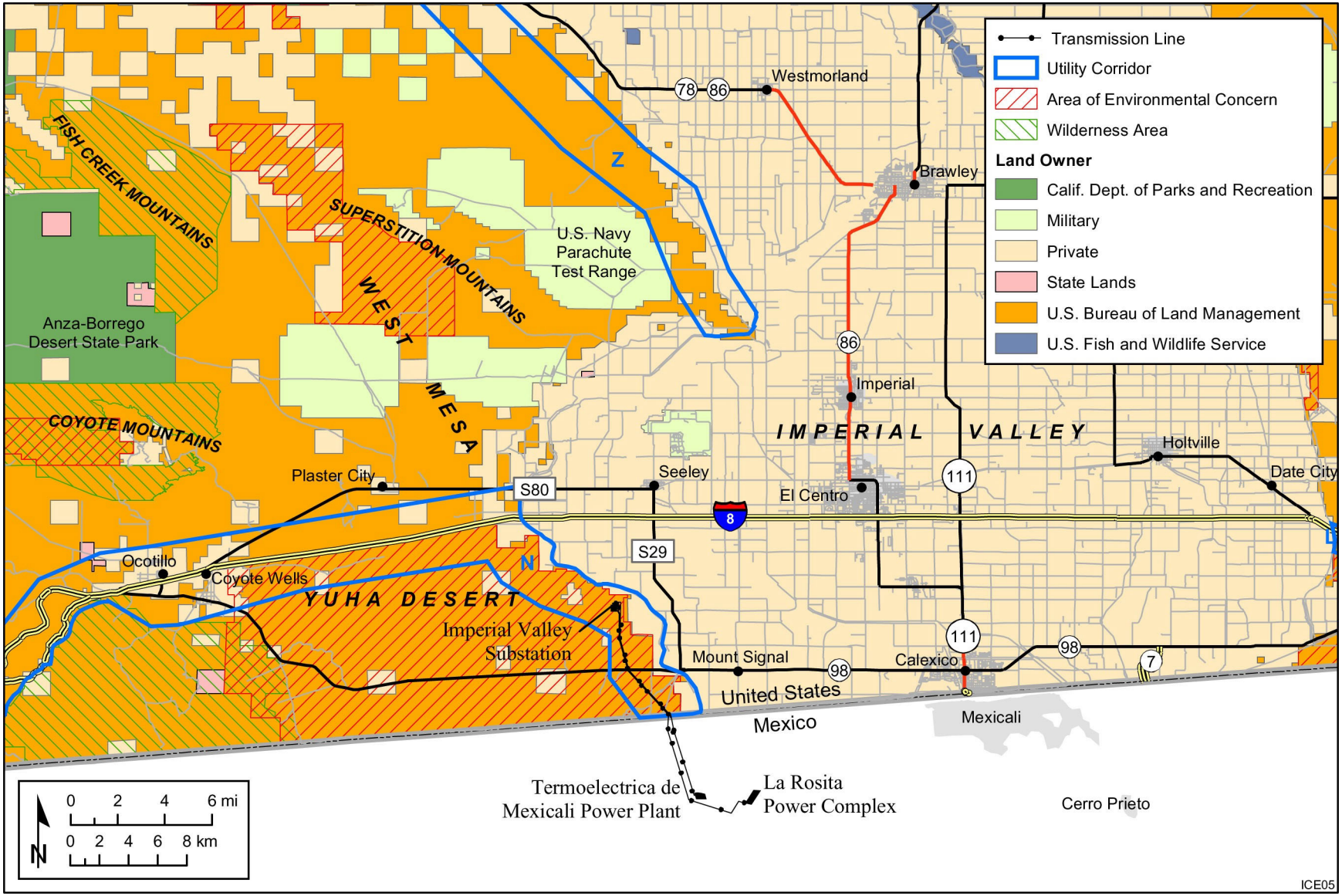

FIGURE 3.6-1 Land Use and Ownership Map (Note: Corridor 2 is a contingent corridor)

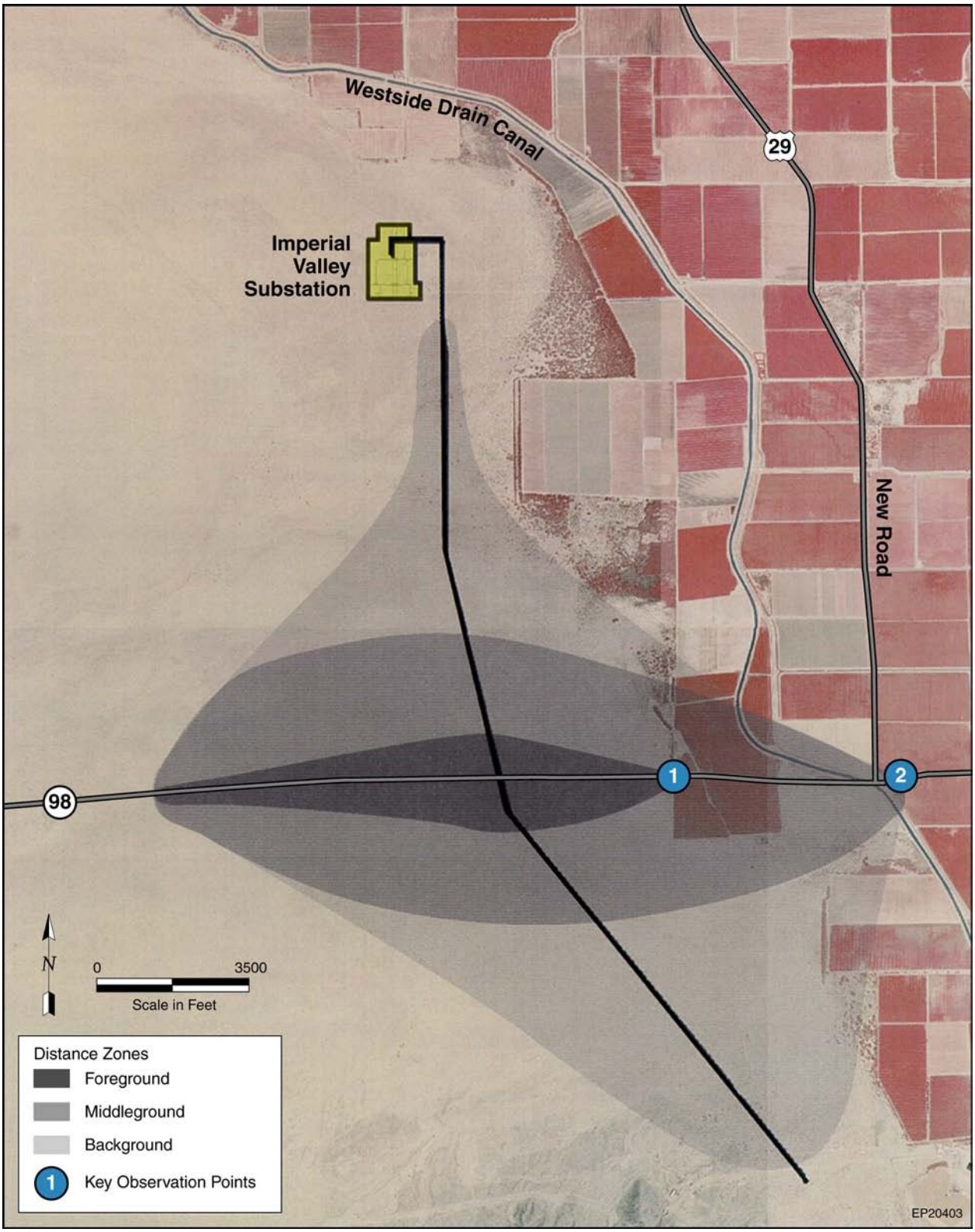

FIGURE 3.8-1 Distance Zone Map

TABLE 3.10-1 Minority and Low-Income Population Characteristics in Imperial County

Parameter	Imperial County
Total Population	142,361
White	28,768
Total minority	113,593
Hispanic or Latino	102,817
Not Hispanic or Latino	10,776
One race	9,502
Black or African American	5,148
American Indian and Alaska Native	1,736
Asian	2,446
Native Hawaiian and Other Pacific Islander	75
Some other race	97
Two or more races	1,274
Total low-income	29,681
Percent minority	79.8%
Percent low-income	22.6%

Source: U.S. Bureau of the Census 2001a.

TABLE 3.2-1 Annual Mean Flows for the New River, 1980–2001

	Year	Calexico Gage (ft^3/s)[a,b]	Westmorland Gage (ft^3/s)[a,b]	Calexico Gage (ac-ft/yr)[c,d]	Westmorland Gage (ac-ft/yr)[c,d]
New River	1980	215	626	155,653	453,203
	1981	223	598	161,445	432,932
	1982	226	569	163,617	411,937
	1983	326	659	236,013	477,094
	1984	364	706	263,524	511,121
	1985	340	676	246,149	489,402
	1986	365	708	264,248	512,569
	1987	350	687	253,388	497,365
	1988	300	685	217,190	495,917
	1989	219	617	158,549	446,688
	1990	188	594	136,106	430,036
	1991	185	578	133,934	418,453
	1992	198	575	143,345	416,281
	1993	263	678	190,403	490,850
	1994	199	642	144,069	464,787
	1995	197	639	142,621	462,615
	1996	163	614	118,007	444,516
	1997	217	667	157,101	482,886
	1998	249	676	180,268	489,402
	1999	254	675	183,888	488,678
	2000	225	634	162,893	458,995
	2001	201	633	145,517	458,271
Mean flow		249	643	179,906	465,182
Standard deviation[e]		63	42	45,813	30,757
Minimum		163	569	118,007	411,937
Maximum		365	708	264,248	512,569

[a] Data are from USGS gages near Calexico and Westmorland, California.

[b] To convert ft^3/s to m^3/s, multiply by 0.02832; to convert ft^3/s to acre-ft/yr, multiply by 723.967.

[c] These values are only accurate to three significant figures (e.g., 453,203 ac-ft/yr is only meaningfully represented as 453,000 ac-ft/yr).

[d] To convert acre-ft/yr to m^3/s, multiply by 0.0000391.

[e] Standard deviation represents the variability of flow rate.

Source: USGS (2003a,b).

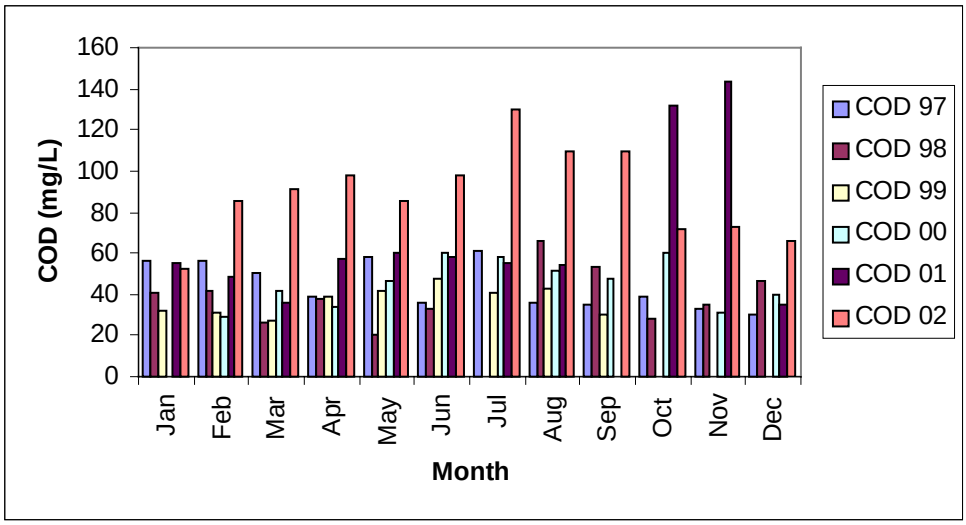

FIGURE 3.2-9 COD (mg/L) Measured at the Calexico Gage on the New River at the U.S.-Mexico Border (Source: CRBRWQCB 2003a)

TABLE 3.2-3 Average Values for TSS, BOD, COD, and Phosphorus

						Load (tons)		
Year	TSS (mg/L)	BOD (mg/L)	COD (mg/L)	P (mg/L)	Flow (ft^3/s)	TSS	BOD	COD
1997	59.3	19.5	44.1	2.3	217	12,670	4,170	9,420
1998	60.4	17.9	39.0	1.8	249	14,810	4,390	9,560
1999	61.8	23.1	37.0	1.9	254	15,460	5,780	9,250
2000	44.0	48.5	45.4	1.6	225	9,750	10,750	10,060
2001	52.2	23.3	66.8	2.3	201	10,330	4,610	13,220
2002	38.6	32.5	89.2	1.3	–[a]	–	–	–
Mean	52.7	27.5	53.6	2.0				
Standard deviation	9.6	11.5	20.4	0.27				

[a] A dash indicates no data available.

Source: CRBRWQCB (2003a).

TABLE 3.4-2 Federal- and State-Listed Threatened and Endangered Species

Species	Federal Status[a]	State Status	Distribution and Habitat	Occurrence within Projects Area
Plants				
Peirson's milk-vetch *Astragalus magdalanae* var. *peirsonii*	FT, PCH	SE	Slopes and hollows of windblown sand dunes, known only from the Algodones Dunes (Imperial Sand Dunes), and in nearby Mexico from a limited area of dunes within the Gran Desierto, in the northwestern portion of the State of Sonora.	No suitable habitat; not expected to occur in the vicinity of the proposed transmission lines, the New River, or the Salton Sea.
Algodones Dunes sunflower *Helianthus niveus* ssp. *tephrodes*	–	SE	Unstabilized sand dunes in the Algodones Dunes of Imperial County.	No suitable habitat; not expected to occur in the vicinity of the proposed transmission lines, the New River, or the Salton Sea.
Fish				
Desert pupfish *Cyprinodon macularius*	FE	SE	Found in some agricultural drains that discharge directly into the Salton Sea, shoreline pools of the Salton Sea, and desert washes at San Felipe Wash and Salt Creek. Prefer shallow, slow-moving waters with some vegetation.	Not known or expected to occur in the New River because of the high sediment loads, excessive velocities, and presence of predators. May occur in some shallow areas of the Salton Sea near agricultural drainages and near the mouth of Salt Creek.
Reptiles				
Desert tortoise *Gopherus agassizii*	FT	ST	Mohave and Sonoran desert areas, especially areas of creosote bush scrub.	Out of known range for species not expected to occur in the vicinity of the proposed transmission lines, the New River, or the Salton Sea.
Barefoot gecko *Coleonyx switaki*	–[b]	ST	Rock outcrops on arid hillsides and canyons in desert scrub vegetation types.	No suitable habitat; not expected to occur in the vicinity of the proposed transmission lines, the New River, or the Salton Sea.
Flat-tailed horned lizard (*Phrynosoma mcallii*)	BLM-SS	–	Mohave and Sonoran desert areas in desert scrub vegetation types.	Suitable habitat exists along the proposed and alternative transmission line routes.

TABLE 3.4-2 (Cont.)

Species	Federal Status	State Status	Distribution and Habitat	Occurrence within Projects Area
Birds				
Bald eagle *Haliaeetus leucocephalus*	FT, PD	SE	Riparian areas containing large trees suitable for roosting. Occasionally visit the Salton Sea area during annual migrations.	Nonbreeding individuals occur in the Salton Sea area during the winter. Could occasionally roost on transmission towers within the transmission line or on large trees along the New River routes.
Swainson's hawk (nesting) *Buteo swainsoni*	–	ST	Plains, range, opens hills, sparse trees. Uncommon winter migrant.	Local breeding population now extirpated; not expected to occur in the vicinity of the proposed transmission lines, the New River, or the Salton Sea.
Brown pelican *Pelecanus occidentalis*	FE	SE	Primarily in estuarine, marine subtidal, and open waters; nesting colonies on the Channel Islands, the Coronado Islands, and on islands in the Gulf of California.	The Salton Sea currently supports a year-round population, sometimes reaching 5,000 individuals. Successfully nested at the Salton Sea in 1996. No suitable habitat and not expected to occur in the vicinity of the proposed transmission lines.
Yuma clapper rail *Rallus longirostris yumanensis*	FE	ST	Nests in emergent vegetation in freshwater and saltwater marshes and wetlands. Year-round resident at the Salton Sea and along the lower Colorado River into Mexico.	No suitable habitat and not expected to occur in the vicinity of the proposed transmission lines. Although nesting has not been reported, there is a potential for individuals to occur in wetlands along the New River. Occur at the south end of the Salton Sea near the New and Alamo River mouths, at the Sonny Bono Salton Sea National Wildlife Refuge, at the Wister Waterfowl Management Area, the Imperial Wildlife Area, and other locations.

TABLE 3.4-2 (Cont.)

Species	Federal Status	State Status	Distribution and Habitat	Occurrence within Projects Area
California least tern *Sterna antillarum browni*	PE	–	Nests on coastal beaches and estuaries near shallow waters. The terns prefer open areas where they have good visibility for long distances to see the approach of both ground and avian predators. The substrate is usually sand or fine gravel and can be mixed with shell fragments.	No suitable habitat and not expected to occur in the vicinity of the proposed transmission lines; not considered likely to occur within the New River; rare spring and summer visitors to the Salton Sea.
Southwestern willow flycatcher *Empidonax traillii extimus*	FE	SE	Summer breeding resident in riparian habitats in southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and northwestern Mexico. Nests in riparian habitat characterized by dense stands of intermediate-sized shrubs or trees.	Low potential for nesting in tamarisk-dominated riparian areas along the New River, although this is not the preferred riparian vegetation type.
Least Bell's vireo *Vireo bellii pusillus*	FE, CH	SE	Riparian areas along the lower Colorado River basin. Nests in well-developed overstories and understories, and low densities of aquatic and herbaceous cover.	Occurs accidentally in the Salton Sea and New River area during migration.
Yellow-billed cuckoo *Coccyzus americanus*	FC	ST	Riparian areas. Remnant populations breed along sections of seven rivers, including the Colorado River in the southern part of California.	Has not been seen recently in the Salton Sea area, but suitable habitat does exist in some of the upper reaches of streams draining into the Sea, such as Whitewater River.
Elf owl *Micrathene whitneyi*	–	SE	Desert trees. Very localized populations are present to the east of the Colorado River.	Out of range from known breeding locations; not expected to occur in the vicinity of the proposed transmission lines, the New River, or the Salton Sea.

TABLE 3.4-2 (Cont.)

Species	Federal Status	State Status	Distribution and Habitat	Occurrence within Projects Area
Western burrowing owl *Speotyto cunicularia hypugaea*	BLM-SS	–	Year-round resident and nests throughout most of California from March through August. Inhabits burrows in desert-scrub, grassland, and agricultural areas.	Single individual observed within the proposed transmission line routes, and there is appropriate habitat for nesting and overwintering; may occur in desert scrub and agricultural areas along the shorelines of the New River and the Salton Sea.
Gila woodpecker *Melanerpes uropygialis*	–	SE	Saguaro and willow-cottonwood desert habitats. Date palms, tamarisk. Known to occur in the vicinity of the Colorado River and near Brawley.	Not expected to occur within the vicinity of the proposed transmission line routes due to lack of suitable habitat. Could occur in riparian areas of the New River near Brawley.
Bank swallow *Riparia riparia*	–	ST	Nests in northern California and overwinters in South America. Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam.	Not expected to occur within the vicinity of the proposed transmission line routes due to lack of suitable habitat. Migrating individuals may occur in some areas along the New River or Salton Sea during April and September.
Mammals				
Peninsular bighorn sheep *Ovis canadensis*	FE	ST	Inhabit dry, rocky, low-elevation desert slopes, canyons, and washes from the San Jacinto and Santa Rosa mountains near Palm Springs, California, south into Baja California, Mexico.	Out of typical range; not expected to occur in the vicinity of the proposed transmission line routes, the New River, or the southern portions of the Salton Sea.
Palm Springs Ground Squirrel *Spermophilus tereticaudus chlorus*	FC	–	Occurs from San Gorgonio Pass to the vicinity of the Salton Sea. It has not been reported to occur in areas surrounding the southern portion of the Salton Sea or the Yuha Desert, and suitable habitat does not occur along the New River. Typically associated with sand fields and dune formations.	Out of known range; not expected to occur in the vicinity of the proposed transmission line routes, the New River, or the southern portions of the Salton Sea.

TABLE 3.4-2 (Cont.)

[a] Status codes: BLM-SS = BLM-designated sensitive species; CH = designated critical habitat; FC = proposed for listing as threatened or endangered by the Federal government; FT = listed as threatened by the Federal government; FE = listed as endangered by the Federal government; PCH = proposed critical habitat; PD = proposed delisting; ST = listed as threatened by the State of California; and SE = listed as endangered by the State of California.

[b] A dash indicates not listed.