

# The Indicators

**Note: Clusters are in bold**

*Italics = data available from previous SCERP/IRSC research (“San Diego-Tijuana Regional Quality of Life Indicators”)*

(Parentheses) = strong linkage between clusters

**Data availability:**

**A** = good; fairly compatible binational data

**B** = o.k.; some data, but not necessarily compatible or binational

**C** = poor; very little or no data at all

Primary Indicators = Underlined

## **PRIMARY INDICATORS**

I. **AIR** (Environmental health, Energy, Pollution prevention, Waste, Pesticides, QoL)

1. Visibility as Measured by Transmissimeters (percent extinction) - **C**

Reference: 7/24/02 Focus Group

Sources: NARIP, National Weather Service, IMPROVE, National Park Service, Airports

2. Asthma Prevalence - **B**

Reference: U.S.-Mexico Border Health Commission: Healthy Border 2010

Program Objectives

Sources: PAHO, Secretaría de Salud, Salton Sea Restoration

Project/Salton Sea Database Program ([www.saltonsea.ca.gov](http://www.saltonsea.ca.gov))

3. Areas That Exceed, or Potentially Exceed, Ambient Air Quality Standards - **A**

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources: EPA, INE

4. Number of Exceedence Days of Each Ambient Air Quality Standard - A

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources: CARB, EPA, INE

5. Ambient Air Concentrations of Select Criteria Air Pollutants: PM 2.5, PM 10, Ozone, Lead (Pb), CO (Ambient Air Quality Measurements), Sulphur Dioxide Emissions (SO<sub>x</sub>), NO<sub>x</sub>, (Subset: Energy emissions) - A

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources: EPA, SCT, DOT, CARB, INE, NARIP

6. Percentage of Paved and Unpaved Roads - C

Reference: 7/24/02 Focus Group

Sources: Cities, counties/local government

7. Number of Sister Cities with Air Emissions Inventories/Ambient Monitoring - A

Reference: SCERP

Sources: State, Federal, EPA, CARB

8. Sources of Indoor Air Pollution (use of wood, kerosene, coal or dung for cooking and heating) - C

Reference: SCERP/WHO

Sources:

II. **WATER** (Environmental health, Natural resources, Waste, Pollution prevention)  
9. Quality of Transboundary Surface Waters (total dissolved solids, e coli,

nitrates) - **A**

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-  
2000

Sources:

10. Quality of Transboundary Subsurface Waters (total dissolved solids, e coli,  
nitrates) - **A**

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-  
2000

Sources:

11. Water Use by Sector - **B**

Reference: SCERP

Sources: SEMARNAT website

12. Per Capita Water Consumption - **B**

Reference: SEMARNAT: Sustainable Development Indicators of Mexico

Sources: San Diego County Water Authority

13. Revenues per Cubic Meter - **C**

Reference: SCERP

Sources: Local Water Utilities

14. Number and Percentage of People with Tap Water Treatment Systems-treated  
to meet local norms - **A**

Reference: EPA Presentation: U.S.-Mexico Border Program (2002-2012)

Sources: EPA OPW Water Report

15. Number and Percentage of People with Wastewater Sanitation Systems-  
treated to meet local norms - **B**

Reference: EPA Presentation: U.S.-Mexico Border Program (2002-2012)

Sources: EPA OPW Water Report

16. TMDL Levels in Watersheds in the Border Region - **B**

Reference: EPA Presentation: U.S.-Mexico Border Program (2002-2012)

Sources: BECC

17. Binational Waters Safe for Recreation/Human Contact - **B**

Reference: SCERP

Sources: EPA – Beach Watch

18. Drought/Flood Stage (severity, number of years) - **B**

Reference: SCERP

Sources:

III. **ENVIRONMENTAL HEALTH** (Waste, Pesticides, Water)

19. Infant Mortality Rate (IMR) - **A**

Reference: SEMARNAT: Sustainable Development Indicators of Mexico

Sources:

20. Incidence of Gastro-Intestinal Diseases (including Hepatitis A) - **A**

Reference: 7/24/02 Focus Group

Sources:

21. Elevated blood lead levels in children - **B**

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources: NARIP

22. Asthma Prevalence (note: also found at I 2) - **B**

Reference: U.S.-Mexico Border Health Commission: Healthy Border 2010 Program Objectives

Sources: PAHO, Secretaría de Salud, Salton Sea Restoration

Project/Salton Sea Database Program ([www.saltonsea.ca.gov](http://www.saltonsea.ca.gov))

IV. **ENERGY** (Air, Environmental health, Pollution prevention)

23. Electrical use per capita - **B**

Reference: SCERP

Sources:

24. Natural gas/propane/coal etc use per capita - **B**

Reference: SCERP

Sources:

25. Carbon & NOx emitted per capita, by sector (i.e. Transportation and

Electrical production) - **C**

Reference: SCERP

Sources:

26. Percent Alternative & Renewable Fuels - **B**

Reference: SCERP

Sources:

27. Energy use rate per capita - **B**

Reference: 7/24/02 Focus Group

Sources

28. Energy Use by Sector - **B**

Reference: SCERP

Sources:

29. Buildings Surveyed by Energy Companies - **C**

Reference: SCERP

Sources:

30. Improved Energy Efficiency (Appliances) - **C**

Reference: SCERP

Sources: CONE – state-level

V. **LAND USE** (Natural resources, Water)

31. Zoning or use of land for residential/industrial/commercial or open space -

**C**

Reference: SCERP

Sources: City, County (Municipio) General Land Use Plans

32. Density - **C**

Reference: Integrated Assessment of Human-Environmental Systems in  
the U.S.-Mexico Border Region, Working Draft

Sources:

33. Land Conversion (Percentage of Natural/Agricultural Land Lost to Urban Use) - **C**

Reference: 7/24/02 Focus Group

Sources: Time-series, infrared photos, GIS data, CESPT, SANDAG, Zoning Laws, Study from Mexico City at UCSD

34. Surface Area Not Covered by Human Activity - **C**

Reference: SCERP

Sources: GIS

35. Percentage Fallowed Agricultural Land & Acreage - **C**

Reference: SCERP

Sources:

VI. **NATURAL RESOURCES** (Land Use, Water)

36. Percentage of Species Rare; Percentage Endemic - **B**

Reference: 7/24/02 Focus Group

Sources: SANDAG

37. Land Affected by Desertification - **B**

Reference: SEMARNAT: Sustainable Development Indicators of Mexico

Sources:

38. Percentage of Natural Land Lost to Urban Use - **C**

Reference: 7/24/02 Focus Group

Sources: Time-series, infrared photos, GIS data, CESPT, SANDAG, Zoning Laws, Study from Mexico City at UCSD

39. Deforestation in Natural Forests and Wood Plantations - **C**

Reference: SEMARNAT: Sustainable Development Indicators of Mexico

Sources:

40. Number of Protected Areas: Number of Acres and Acres per Inhabitant - **B**

Reference: 7/24/02 Focus Group

Sources: SANDAG

VII. **POLLUTION PREVENTION** (Air, Waste, Water, Energy)

41. Percentage of Wastewater Collected Receiving Wastewater Treatment

(type of treatment); Number of Treatment Plants - **B**

Reference: U.S.-Mexico Border Environmental Indicators 1997

Sources: Utilities, Treatment Plants

42. Amount of Waste Generated in the Border Area and by Sector or Industry

After Implementing Pollution Prevention Methods; Ratio: Solid/Hazardous -

**C**

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources:

43. Number of ISO 14000 Certifications - **A**

Reference: 7/24/02 Focus Group

Sources: DGN (Mexico), American National Standards Institute (U.S.)

44. 7 Principles of Environmental Stewardship (EPA & SEMARNAT) - **C**

Reference: SCERP

Sources: U.S.-Mexico Chamber of Commerce

45. Pollution Prevention Training: Number of Classes; People Trained - B

Reference: SCERP

Sources:

VIII. **WASTE**-Hazardous and Solid  
(Environmental health, Water, Energy, Pollution prevention)

Hazardous Waste

46. Number of Tires at Dump Sites - B

Reference: SCERP

Sources: Aduana, Assoc. of Dealers, SEMARNAT, the states, SCERP

47. Number of Illegal Tire Dump Sites - C

Reference: SCERP

Sources: SCERP

48. Total and Unit Generation of Hazardous Waste in the Border Region -

**B**

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-  
2000

Sources:

49. Permitted Commercial Disposal Capacity for Hazardous Waste in the  
Border Region (by SIC codes) - B

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-  
2000

Sources:

50. Number of Vehicles Licensed to Transport Hazardous Waste Material

– C

Reference: 7/24/02 Focus Group

Sources: State Transportation Dept.

51. Quantities of Hazardous Waste Sent from Mexico to the United States for Treatment and/or Disposal - B

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources:

52. Quantities of Hazardous Waste Exported from the United States to Mexico for Recycling - B

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources:

#### Solid Waste

53. Number of Municipal Land Fills; Remaining Capacity (in years) of Municipal Land Fill(s) - C

Reference: 7/24/02 Focus Group

Sources:

54. Recycling and Recovery Rates: Domestic/Industry - B

Reference: 7/24/02 Focus Group

Sources: Tijuana Public Works (“Programa Educativo”)

55. Amount of Solid Waste Generated in the Border Area Delineated by Specific Sectors or Industries - C

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources:

56. Amount of Solid Waste Generated per Household - C

Reference: 7/24/02 Focus Group

Sources:

IX. **PESTICIDES** (Waste, Environmental health, Water, Pollution prevention, Air)

57. Number of People Trained on Proper Handling of Pesticides - C

Reference: EPA Conference Call 9/25/02

Sources:

58. Pesticide Exposures - C

Reference: EPA Conference Call 9/25/02

Sources:

59. List of Legal and Illegal Pesticides in the United States and Mexico -

**B**

Reference: SCERP

Sources: OECD

60. Toxic Health Effects Screening Levels (TCEQ) - C

Reference: SCERP

Sources:

X. **CONTINGENCY PLANNING and EMERGENCY RESPONSE** (Waste, Environmental health)

61. Number of Sister City Joint Contingency Plans in Place, Exercised, and Tested. Training conducted. Incidents addressed - B

Reference: SCERP

Sources:

62. Number of Border Area Accidents of Record per Year, Classified By Type, Frequency, and Hazardous Substance - B

Reference: U.S.-Mexico Border XXI Program: Progress Report 1996-2000

Sources:

63. Threat Assessment of Waters - C

Reference: EPA Conference Call 9/25/02

Sources:

64. Chemical Emergency Advisory/Notification Mechanism – C

Reference: Border 2012 Goals and Measurable Objectives

Sources:

XI. **ENFORCEMENT**

65. Number of actions, fines, warnings, shutdowns, and clean-ups; Number of permittees meeting standards - C

Reference: SCERP

Sources:

**XII. ENVIRONMENTAL EDUCATION**

66. Number of bilingual curricula - C

Reference: SCERP

Sources:

67. Number of training events - C

Reference: SCERP

Sources:

68. Number of binational environmental education groups - C

Reference: SCERP

Sources:

**XIII. ENVIRONMENTAL INFORMATION**

69. Percent Presence & Data Collection at Tribal Nations - C

Reference: EPA Conference Call 9/25/02

Sources:

70. Type of Air Monitoring & Number of Air Monitors at Tribal Nations - C

Reference: SCERP

Sources:

71. Citizen access to environmental quality/monitoring data - C

Reference: SCERP

Sources:

XIV. **QUALITY OF LIFE (All)**

Demographic

*72. Population change and data by gender, age, etc. - A*

Reference: SCERP-IRSC

Sources:

73. Population in Colonias - **B**

Reference: HUD e-Colonias

Sources:

74. Population in Tribal Lands - **B**

Reference: 7/24/02 Focus Group

Sources:

Economic

75. Percentage of federal tax revenue returned to local government: Tax Base, Amount Available for Capital Investments, Amount Going into Environment -

**B**

Reference: SCERP-IRSC

Sources:

76. US-Mexico bilateral trade - **B**

Reference: 7/24/02 Focus Group

Sources: U.S. Dept. of Commerce, Secretaría de Economía

77. Share of trade between US and Mexico - **B**

Reference: Arizona-Sonora Indicators of Progress, p. 21

Sources:

78. Gross Regional Product - **A**

Reference: SCERP-IRSC

Sources:

79. Per Capita Income distribution - **A**

Reference: SCERP-IRSC

Sources:

80. Real per capita personal income - **B**

Reference: Integrated Assessment of Human-Environmental Systems in the U.S.-Mexico Border Region, Working Draft

Sources: SANDAG, "Evaluating Economic Prosperity in the San Diego Region: 1998 Update"

81. Unemployment rate - **A**

Reference: SCERP-IRSC

Sources:

82. Employment by industry - **A**

Reference: SCERP-IRSC

Sources:

83. Cost of energy, water - **B**

Reference: 7/24/02 Focus Group

Sources:

Public Safety

84. Homicides - **A**

Reference: SCERP-IRSC

Sources:

85. Violent crime - **A**

Reference: SCERP-IRSC

Sources:

Education

86. School enrollment - **A**

Reference: SCERP-IRSC

Sources:

87. School drop-out rates - **B**

Reference: Draft Indicators, Time Series

Sources: San Diego Quality of Life Indices: "Calculating the Social Indicators of Risk and Protective Factors"

88. Educational attainment (percent of graduates at various levels) - **B**

Reference: 7/24/02 Focus Group

Sources:

Housing

89. Median sales price of existing homes - **A**

Reference: SCERP-IRSC

Sources:

90. Percentage with:

running water - A

drainage - A

electricity - A

Reference: SCERP-IRSC

Sources:

Transportation

91. Number of border crossings - A

Reference: 7/24/02 Focus Group

Sources: CEC

92. Traffic congestion at border - A

Reference: SCERP-IRSC

Sources:

93. Average roadway congestion index at POE Based on Acceptable Wait - C

Reference: Integrated Assessment of Human-Environmental Systems in the U.S.-Mexico Border Region, Working Draft

Sources: CALTRANS, SD Dialogue, INS, CHP, U.S. Customs, DOT, SCT, Texas Transportation Institute

## AUXILIARY INDICATORS

### Air

- IMECA Air Quality Index

### Water

- Percentage of Total Water Used That is Imported into the Region
- Amount of Water for Ecosystems
- Non-point Source Pollution
- Quality of Tap Water at the Tap

### Natural Resources

- Erosion: Tons Lost Per Hectare/Year
- Invasive Species
- Habitat Fragmentation

### Land Use

- Agricultural Land Productivity (sales/hectare)

### Quality of Life

- Housing Deficit
- Crowding
- Substandard Housing
- Per Capita Gross Regional Product
- Average Weekly Wage
- Workers With a Living Wage
- Real Maquiladora Wages
- Public Participation

**Note: “Reference” indicates the sources that were utilized in producing this list. The primary sources used include:**

- *Healthy Border 2010 Program Objectives* U.S.-Mexico Border Health Commission n.d.
- *San Diego-Tijuana Regional Quality of Life Indicators (Working Draft)* Institute for Regional Studies of the Californias, SDSU, 2001.
- *Sustainable Development Indicators of Mexico* SEMARNAT n.d.
- *U.S.-Mexico Border XXI Program: Progress Report 1996-2000* U.S.-Mexico Border XXI Program 2001.
- *U.S.-Mexico Border Environmental Indicators 1997* U.S.-Mexico Border XXI Program 1999.
- *U.S.-Mexican Border Environment: U.S.-Mexican Border Communities in the NAFTA Era SCERP Monograph Series, no. 4, 2002.*
- *U.S.-Mexico Border Program (2002-2012)* EPA Presentation 7/24/02.
- 7/24/02 Focus Group notes and comments.