

Environmental Issues of the Lower Rio Grande Valley

Below is an attempt to list the environmental issues for the Lower Rio Grande Valley. The Center for Subtropical Studies at the University of Texas Pan American will endeavor to prepare a “white paper” for as many of the issues as possible to establish what is and is not known about each topic. If you have comments about the list, please send them to Dr. Hudson DeYoe, Director of the Center for Subtropical Studies at hdeyoe@utpa.edu.

I. Water issues

a. Water quantity: Little/no water allocated for environmental use

i. Contributing causes:

1. Over allocation of Rio Grande water
2. Variability in rainfall
3. Inefficient use of water

ii. Effects of little/no environmental water:

1. Impaired/loss of estuarine habitat
2. Loss of wetlands

b. Poor water quality

i. Rio Grande and Rio Grande estuary

1. Contributing causes:

- a. Eutrophication
- b. High bacteria levels
- c. Pollutants- metals, organics?

2. Effects of degraded water quality:

- a. Loss of biodiversity
- b. High bacteria levels
- c. Taste and odor of drinking water
- d. Increased water processing costs

ii. Arroyo Colorado

1. Contributing causes:

- a. Storm water run-off
- b. Point source pollution
 - i. Sewage treatment plants
 - ii. Shrimp farms
- c. Non-point source pollution
- d. Channel bathymetry

2. Effects of degraded water quality

- a. Eutrophication
- b. Low dissolved oxygen
- c. Decreased biodiversity
- d. High bacteria levels

iii. Degraded groundwater quality

1. Contributing causes:

- a. Overharvest of ground water

2. Effects of:

- a. Salt water intrusion
 - b. Natural (?) arsenic contamination in selected areas
 - iv. Drainage canal degradation
 - 1. Contributing causes:
 - a. Lack of oversight
 - b. Illegal dumping
 - 2. Effects of degradation:
 - a. Loss of wildlife habitat
- II. Air pollution
- a. Contributing causes:
 - i. Exhaust from vehicles
 - ii. Industry-caused air pollution
 - iii. Agricultural-caused air pollution: dust and pesticides
 - iv. Wind-borne dust from natural areas (eastern Cameron County)
 - v. Smoke from fires in Mexico
 - vi. Red tide aerosol at South Padre Island
 - b. Effects of air pollution
 - i. Health issues
 - ii. Loss of tourism
- III. Introduced exotic species (plant and animal, aquatic and terrestrial)
- a. Contributing causes:
 - i. Natural migration from south and north
 - ii. Trucking industry
 - iii. Ocean currents
 - 1. Prevailing S-N longshore current
 - iv. Ship ballast water
 - v. Recreational boaters
 - vi. Federal and state wildlife agencies
 - vii. Hobbyists, tourists, landowners
 - b. Effects of introduced exotic species:
 - i. Loss of native species
 - ii. Disruption of ecosystems
 - iii. Cost of controlling pest species
- IV. Habitat fragmentation, loss and degradation
- a. Contributing causes:
 - i. Urban development/sprawl
 - ii. Agricultural practices
 - iii. Conversion of agricultural land to urban use
 - iv. Gas and petroleum operations
 - 1. Oil spill risk
 - 2. Deep water petroleum operations
 - 3. Gas well operations
 - v. Wind farms, land and ocean
 - vi. Development on barrier island (SPI)
 - vii. Driving on beaches and in dunes
 - viii. Littering

- ix. Game fences
- x. Border wall
- xi. TxDot roadway barriers to wildlife passage
- xii. Construction of 2nd causeway
- xiii. Dredging and destructive boat usage
 - 1. Prop scarring near channels and shallow water
- xiv. Clear cutting of embankments of Arroyo Colorado and floodways
- b. Effects of habitat fragmentation, degradation/loss
 - i. Disappearance of native species
 - ii. Loss or potential loss of native plant communities
 - iii. Increase of opportunistic and nuisance species
 - iv. Increased fragility and reduced functioning of ecosystems
- V. Infrastructure issues
 - a. Colonia sewage collection and treatment
 - b. Water drainage
 - i. Inadequate and/or not utilized
 - ii. Inadequate management and planning
 - iii. Environmental use of drainage channels
 - c. Water supply and water reuse
 - i. Ag, industry and urban water use inefficiency
 - d. Transportation
 - i. Over-dependence on conventional transportation
 - ii. Inadequate public transportation
 - iii. Inadequate planning, development and funding of alternative transportation
 - iv. Lack of coordinated planning among cities/counties
- VI. Littering, dumping and improper waste disposal
 - a. Contributing causes:
 - i. Insufficient recycling effort
 - ii. Toxic waste contaminated areas- McAllen, Edinburg, Donna
 - b. Effects of littering, dumping and improper waste disposal:
 - i. Esthetic
 - ii. Health
 - iii. Decrease in property values
- VII. Unsustainable use of natural resources
 - a. Contributing causes:
 - i. Overfishing
 - ii. Development of coastal habitats esp. barrier islands
 - iii. Agriculture
 - iv. Timber industry
 - v. Mining industry
 - b. Effects of unsustainable use of natural resources:
 - i. Loss of commercial and recreational fish harvest
 - ii. Loss of habitat
 - iii. Reduced tourism

- VIII. Global climate change
 - a. Contributing causes:
 - i. Burning of fossil fuels
 - ii. Natural processes
 - b. Effects of global climate change:
 - i. Sea level rise
 - ii. Change in species distributions
 - iii. Alteration of agriculture practices
 - iv. Increased energy needs