

## 2.0 OBJECTIVES

The objective of this work was to conduct a geographic analysis and priority ranking of possible NPS sources and loads to Galveston Bay. The study area was defined by GBNEP and includes the entire Galveston Bay drainage area with the exception of the Lake Houston and Lake Livingston watersheds (see Table 2.1 for a list of the Texas Water Quality Segments in the study area). The primary elements for the NPS analysis included watershed hydrology, NPS load estimates, ranking of subwatersheds, upper watershed influences, and mapping. The approach for handling each element is discussed in more detail below.

- **Watershed Hydrology.** The entire Galveston Bay drainage basin (excluding watersheds draining into Lake Houston and Lake Livingston) would be mapped and divided into approximately 15 watersheds and 100 subwatersheds.
- **Land Use.** A detailed land cover/land use analysis would be developed to provide a basis for the non-point source load calculation.
- **Relative NPS Load Estimates by Land Use Category and NPS Parameters.** Empirical data, collected from local studies where possible, would be used as the basis of the NPS database for this study, and representative Event Mean Concentrations (EMCs) would be compiled to quantify water quality of runoff from different land uses.
- **Ranking of Subwatershed NPS Loads.** Based on the relative load estimates (developed as described above), subwatershed boundaries, and hydrologic features, each subwatershed would be ranked relative to other subwatersheds for each of the NPS parameter categories.
- **Upper Watershed Influence.** Because NPS loads entering Lake Houston and Lake Livingston are either greatly reduced or attenuated by the reservoirs, the upstream watersheds of the San Jacinto River and the Trinity River would be excluded by GBNEP from the mapping analysis. Existing water quality data, collected at regular periods below the reservoirs, would be statistically analyzed in detail and compared to the hydrologic record to estimate total pollutant loads (comprised of point source loads, low-flow loads, and NPS loads) from the two reservoirs.
- **Mapping.** A Geographic Information System (GIS) known as ARC/INFO would be used to process the land use and NPS database and prepare all final project maps. The final electronic versions of the GIS products would be delivered to the GBNEP so that other researchers could utilize the database for future projects.

The final project would be used to develop strategies for managing the water quality of Galveston Bay. Future environmental projects can utilize this information to assess the impacts of non-point source pollutants on the bay, and can employ the GIS system to help design pollution control measures as needed to achieve water quality goals.

**Table 2.1 - Subwatersheds by TWC Stream Segment Number**

Non-Point Source Characterization Project  
Galveston Bay National Estuary Program

Watershed	Subwatershed	TWC Stream Segment	TWC Name	
Chocolate Bayou	CH01	1108	San Jacinto - Brazos Coastal Basin	
	CH02	1108		
	CH03	1107		
Austin/Bastrop Bayous	AB01	1105		
	AB02	1105		
	AB03	1105		
Dickinson Bayou	DB01	1104		
	DB02	1103		
	DB03	1103		
	DB04	1103		
Clear Creek	CC01	1102		
	CC02	1102		
	CC03	1102		
	CC04	1101		
	CC05	1101		
Buffalo Bayou	BF01	1014	San Jacinto River Basin	
	BF02	1014		
	BF03	1013		
	BF04	1013		
	BF05	1007		
Greens Bayou	GR07	1007		
Brays Bayou	BR07	1007		
Sims Bayou	SM04	1007		
Ship Channel	SC02	1007		
	SC04	1007		
	SC06	1006		
	SC07	1006		
	SC08	1005		
San Jacinto River	SC09	1005		
San Jacinto River	SJ02	1001		
Cedar Bayou	CE01	0902		Trinity - San Jacinto Coastal Basin
	CE02	0902		
	CE03	0901		
	CE04	0901		
Trinity Bay	TB02	0802	Trinity River Basin	
	TB03	0802		
	TB04	0802		
Trinity River	TR02	0802		
	TR03	0802		
	TR04	0802		
	TR05	0802		
	TR06	0802		
	TR07	0802		
	TR08	0802		
	TR09	0802		
	TR10	0802		
	TR11	0802		
	TR12	0802		
TR13	0802			
	TR14	0801		

NOTES:

1. Bay and Estuary segments included in study: 2421 - Upper Galveston Bay, 2422 - Trinity Bay, 2423 - East Bay, 2424 - West Bay, 2425 - Clear Lake, 2426 - Tabbs Bay, 2427 - San Jacinto Bay, 2428 - Black Duck Bay, 2429 - Scott Bay, 2430 - Burnett Bay, 2431 - Moses Lake, 2432 - Chocolate Bay, 2433 - Bastrop Bay/Oyster Lake, 2434 - Christmas Bay, 2435 - Drum Bay, 2436 - Barbour's Cut, 2437 - Texas City Ship Channel, 2438 - Bayport Channel, and 2439 - Lower Galveston Bay.
2. See Section 6.1 for a definition of Watersheds and Subwatersheds.

