

## Views on Diversion

by Ronnie Paille

Although much of coastal Louisiana was built through deltaic processes, some argue that recent declines in sediment load have rendered diversion related land-building ineffective. Despite those sediment load reductions, diversion related land-building is still the most effective restoration tool available and would serve to actually address causes of land loss, not treat its symptoms. The reduction in riverine sediment load requires careful siting of diversions to maximize capture of sediment. Diversions should also be located in interior areas where subsidence rates are low and existing marshes and land forms provide greater sediment trapping than diversion discharge into open bays. Rather than focus on sand load and associated land-building, the more abundant fine mineral sediment appears to be important in not only land building but also marsh maintenance processes. Continuous high diversion discharges should be avoided because associated prolonged high water periods can cause excessive flooding and loss of existing marshes, where diversions are located in interior marsh areas. Depending upon operation, some fisheries impacts may also occur. Diversion operation may result in some freshening of estuaries, and as a result, may restore the historic salinity conditions where the white shrimp fishery dominated. Although impacts to some fisheries may occur, those impacts should not be impediments to diversion operation and associated coastal wetland restoration. Diversions should be pulsed/operated during periods of high riverine sediment loads. During periods of low sediment loads, diversion flows can be halted entirely as the land-building benefits are virtually nil during low sediment load periods. This would allow the existing marshes to recover, allow mud flats to vegetate, allow salinity to intrude and clean up invasive plants, and would promote increased fisheries production. Some compromises on

diversion operation to accommodate fisheries production should be enacted given the importance of commercial and recreational fisheries. Specifically, diversion operations should be conducted to avoid impacts to white shrimp recruitment and production to the greatest extent possible.

Paille Research: Marsh soil cores collected from west Terrebonne marshes reveal that clays are building new marshes many miles from the Atchafalaya River delta and it appears that rivers and diversion may build and maintain a solid expanse of marshes having little open water (in its healthy climax condition). Cores collected from the Davis Pond ponding area and from the Caernarvon area reveal that the soils in those marshes are becoming more mineral. These more mineral soils will likely be more resilient to storm surge damage than similar marshes deprived of river water input (and are more organic and fragile as a result).