Possible Human Impact on Degradation of Surface Water Quality: Novel Bacterial Analysis with Ongoing Chemical and Macroinvertebrate Analyses of Weeks' Bayou Subwatershed

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Purpose: A series of biomonitoring techniques were used to assess the surface water quality of Weeks Bayou subwatershed using chemical, macroinvertebrate, and bacterial analyses. The aquatic health of estuary waterways affects the health of the Sound and Gulf of Mexico. This project measured the local surface water quality, particularly in areas with high human impact. Procedures: The reach was defined from a freshwater pond at the top of Weeks Bayou to the inlet into the Mississippi Sound. Four sites were established at equal intervals. Water and macroinvertebrate samples were collected annually. Chemical analyses were performed using LaMotte® Earthforce water monitoring kit. The bacterial classification/quantities were measured using the Coliscan MF biochemical kit protocol. Bioassessment for macroinvertebrates followed the Adopt-A-Stream protocol. Data: The highest contamination is in the upper portions of the reach, closest to ongoing development. Sites 2 and 3 show dense E. coli growth as well as other coliforms. Site 2 receives not only run-off from the neighborhood at site 1, but also from two other neighborhoods and a farm pond. This creek was recently widened by city backhoes upstream from Site 2, resulting in greater runoff and less natural filtering. Site 3 has new development adjacent to it. Conclusion: Human development can damage an estuary. Even in the small study area, E. coli contamination and water quality degradation are identified. There are many ways to lessen negative impacts of humans on surface water quality and restore aquatic health of the bayou. Limiting further development and preventing loss of natural/vegetative filtration is highly beneficial but unlikely to occur as city growth continues. Mitigation techniques are required.

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