

development-induced hydrological modifications; (7) remediate and restore waterways, wetlands, and floodplains which have been adversely impacted by sediment deposition and accumulation; and (8) minimize further alteration of hydrology within undeveloped or low-development areas by establishing more effective standards and criteria for runoff retention and erosion control.

Management Measures. Without more effective stormwater management, the projected level of growth will greatly constrain viable stream restoration options. Time is of the essence, given the ongoing channel degradation problems that are being exacerbated with each significant rain event.

This WMP outlines a holistic approach to accomplish the above stated goals and objectives. The WMP identifies a broad range of conceptual measures that can be applied to more effectively manage stormwater and urban development within the D'Olive Watershed. By successfully addressing the co-related problems of excessive stormwater runoff and sediment transport within the D'Olive Watershed, the long-term health of the Watershed's streams and wetlands (and also D'Olive Bay and Mobile Bay) will be enhanced.

The conceptual management measures described in the WMP could be implemented individually or combined to create comprehensive approaches to address both short-term and long-term solutions to the problems being experienced within the D'Olive Watershed over the 10-year life (i.e. through 2020) of this WMP and beyond. The measures include those that can be implemented by individual property owners; neighborhoods and property owner associations; future developers; and/or governmental institutions having jurisdictional responsibility within the Watershed.

The following categories of conceptual management measures are addressed in the WMP:

- Repair immediate problems:
 - Stream restoration
 - Restoration of Lake Forest Lake
 - Wetland restoration/enhancement
- Restore Watershed hydrology
 - Stormwater retrofits for existing developed areas
 - "Smart Growth" concepts for new developments and re-developments
 - Land use planning as the first BMP
 - Low Impact Development/Green Infrastructure (LID/GI) techniques
 - Green Streets concepts
 - Forest preservation
 - Rainwater harvesting
 - Rain gardens

- Bioretention areas
 - Regional stormwater facilities
 - Preservation of green space
 - Preserve/restore riparian buffers
 - Alternative vegetation management on a variety of land uses
- Strengthen regulatory controls of land development and stormwater runoff

Cost Estimates. Where possible, rough-order-of-magnitude (ROM) cost estimates were developed for each of the management measures presented in the WMP. Preparation of detailed cost estimates were not possible due to the conceptual level of planning that guided development of this WMP. The ROM cost estimates are intended only for preliminary budgetary considerations. However, what is clear is that the costs of correcting the significant hydrological and sediment problems affecting the D'Olive Watershed will be substantial, and are anticipated to range between \$22 and \$44 million.

What must be acknowledged by D'Olive Watershed interests is that the costs of doing nothing, or at greatly reduced scales, will also result in deferred costs that will eventually have to be paid at some time in the future. The piecemeal actions that have traditionally been undertaken in the Watershed after major storm events to repair road stream crossings, stabilize stream channels, and address eroded streambanks that threaten private property are representative of such deferred costs.

Although governmental entities will out of necessity be required to take a lead role in addressing many of the existing problems, these governmental entities can also pursue regulatory changes to reform future development practices. Such changes could make significant contributions to reducing the likelihood for similar problems to occur in the future as the remaining 2,500 acres of the Watershed zoned for development are converted primarily to residential and commercial uses. That can be accomplished by strengthening regulatory controls and adopting an enhanced land use development philosophy that emphasizes restoration/preservation of the Watershed's hydrology and by requiring developmental interests to design their facilities accordingly and to bear the upfront costs during development to reduce the likelihood of their development projects causing long-term harm to the hydrology of the D'Olive Watershed.

Implementation Strategies. Successful implementation of the management measures presented in the WMP will require that a diverse array of implementation strategies be employed. These strategies will involve all levels of stakeholders within the Watershed: appropriate State agencies (Alabama Department of Environmental Management (ADEM), Department of Transportation, etc.); Baldwin County and the Cities of Daphne and Spanish Fort; other organizations (Mobile Bay National Estuary Program (MBNEP), non-governmental organizations, etc.); property owners associations, and individual property owners. The following implementation strategies should be pursued. They should be initiated as soon as possible and pursued in a concurrent fashion.