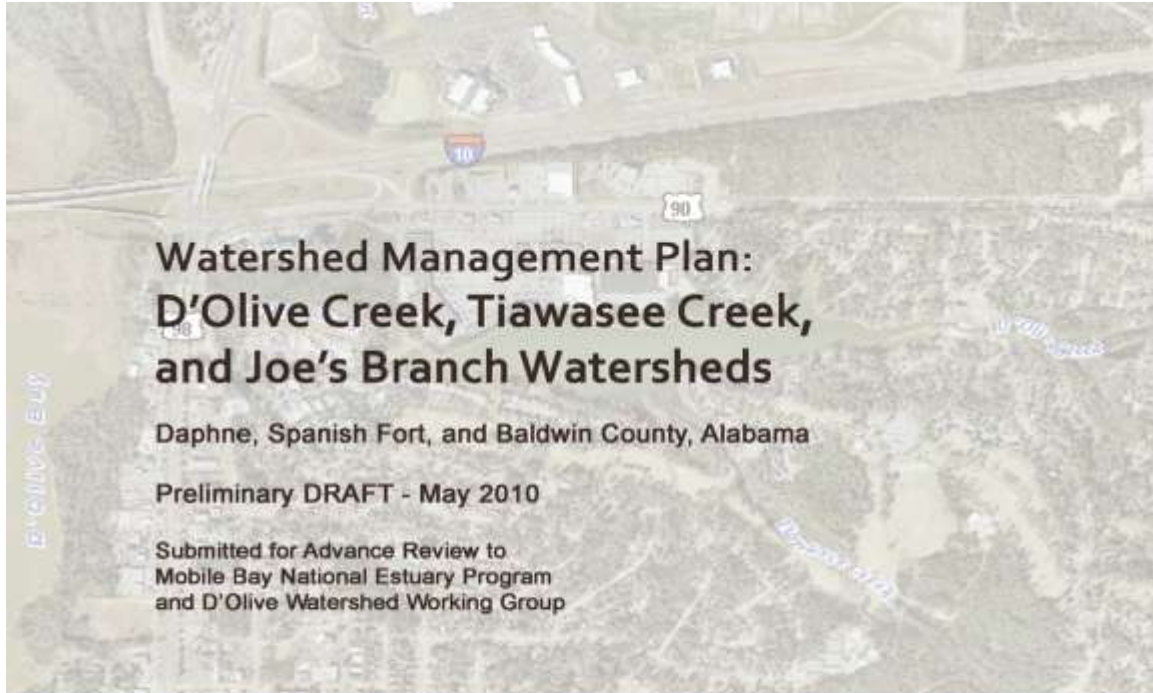


This a small part of a several hundred page DRAFT plan. The plan will be discussed on June 29, 2010 from 6:00 p.m to 8 p.m. at the 5 – Rivers facility on the Causeway.



thompson
ENGINEERING

1.0 Introduction

1.1 Purpose

Excessive erosion and sedimentation have plagued the approximately 7,700-acre D'Olive Watershed since the 1970s. Population growth and urban development have continued to intensify problems in each of the Watershed's three principal drainages (D'Olive Creek, Tiawasee Creek, and Joe's Branch) within the Cities of Daphne and Spanish Fort and associated unincorporated areas of Baldwin County. Increased volume and velocity of stormwater runoff, as well as changes to local drainage patterns, have exacerbated concerns over erosion and sedimentation within the Watershed's stream network, Lake Forest Lake, D'Olive Bay, and Mobile Bay.

To respond to these concerns, the D'Olive Watershed Working Group (DWWG), a coalition of federal, state, and local agencies; county and local governments; property owners; developers; and commercial interests, reached the collective decision that a comprehensive Watershed Management Plan (WMP) was needed for the Watershed.

This WMP outlines a holistic approach to (1) reduce sediment sources; (2) repair degraded stream channels; and (3) restore the Watershed's hydrology to the maximum extent technically feasible (METF). To accomplish these broad goals, this WMP identifies a broad range of measures that can be applied to more efficiently manage urban development within the D'Olive Watershed. This WMP can also serve as a tool to assist in preparing the Total Maximum Daily Load (TMDL) to reduce sediment that is scheduled for 2013. Development of the TMDL should contribute to removing the D'Olive Watershed streams from the State of Alabama's 303(d) list of impaired streams. By successfully addressing the co-related problems of excessive stormwater runoff and sediment transport within the D'Olive Watershed, the long-term health of D'Olive Bay and Mobile Bay will be enhanced.

1.2 Period Addressed by the Plan

Based on the intense growth that the Baldwin County's Eastern Shore has consistently experienced since the 1990s, there is a strong possibility that the D'Olive Watershed could reach a 100% "build out" condition by 2020. At the time the WMP was prepared, approximately 45% of the Watershed was covered in forest and agriculture. Over the 10-year period leading to 2020, it is anticipated that most of the remaining forest and agricultural lands will be converted to urban development, primarily residential uses. Therefore, this WMP was developed to address the 10-year period ending in 2020.

2.0 Watershed Description

2.1 Watershed Boundary

The D'Olive Creek Watershed is located in Baldwin County, Alabama (see Figure 2-1). Draining a total area of over 7,700 acres, the Watershed consists of three principal tributaries: D'Olive Creek, Tiawasee Creek, and Joe's Branch. The overall Watershed receives its name from D'Olive Creek which is considered to be the drainage's major stream. Tiawasee Creek and Olive Creek flow into Lake Forest Lake. Immediately downstream of the Lake Forest Lake Dam, Joe's Branch joins D'Olive Creek. The D'Olive Watershed empties directly into Mobile Bay by way of a small embayment also known D'Olive Bay.

Mobile Bay is Alabama's principal estuary, receiving drainage from all but the extreme northern and southeastern portions of the State as well as portions of northwestern Georgia, and northeastern Mississippi. Mobile Bay is included in the National Estuary Program, one of only 28 officially designated estuaries across the nation that enjoy that status as authorized by the 1987 amendments to the Clean Water Act.

Numerous unnamed 1st and 2nd order tributaries, many of which are intermittent in nature, flow into the three named streams comprising the D'Olive Watershed. Because these smaller tributaries in the Watershed are unnamed, an alphabetical naming convention was employed for the purposes of this Watershed Management Plan (WMP). The main stems of D'Olive Creek, Joe's Branch, and Tiawasee Creek were all assigned their first letters; D, J, and T respectively (see Figure 2-2). Starting downstream and working upstream, each unnamed tributary was named alphabetically. Thus, the first unnamed tributary encountered on D'Olive Creek was named DA, and the second, DB, and so on. Tributaries to these tributaries were also named alphabetically, with DAA being an example of the first and DAB being the second tributaries to DA. The same naming convention was employed to identify even the smallest of the unnamed tributaries (i.e., DACA) that were recognized on topographic mapping and in the field.

The D'Olive Watershed is divided into 9 subwatersheds (Table 2-1 and Figure 2-2). The subwatershed were delineated to reflect sampling locations originally defined during previous sediment and water quality studies of the Watershed performed by the Geological Survey of Alabama (Cook, 2007; Cook and Moss, 2008). Because sediment load data are available at the most downstream point of each subwatersheds, the subwatersheds are useful for determining the sources of sediment and for future load monitoring.

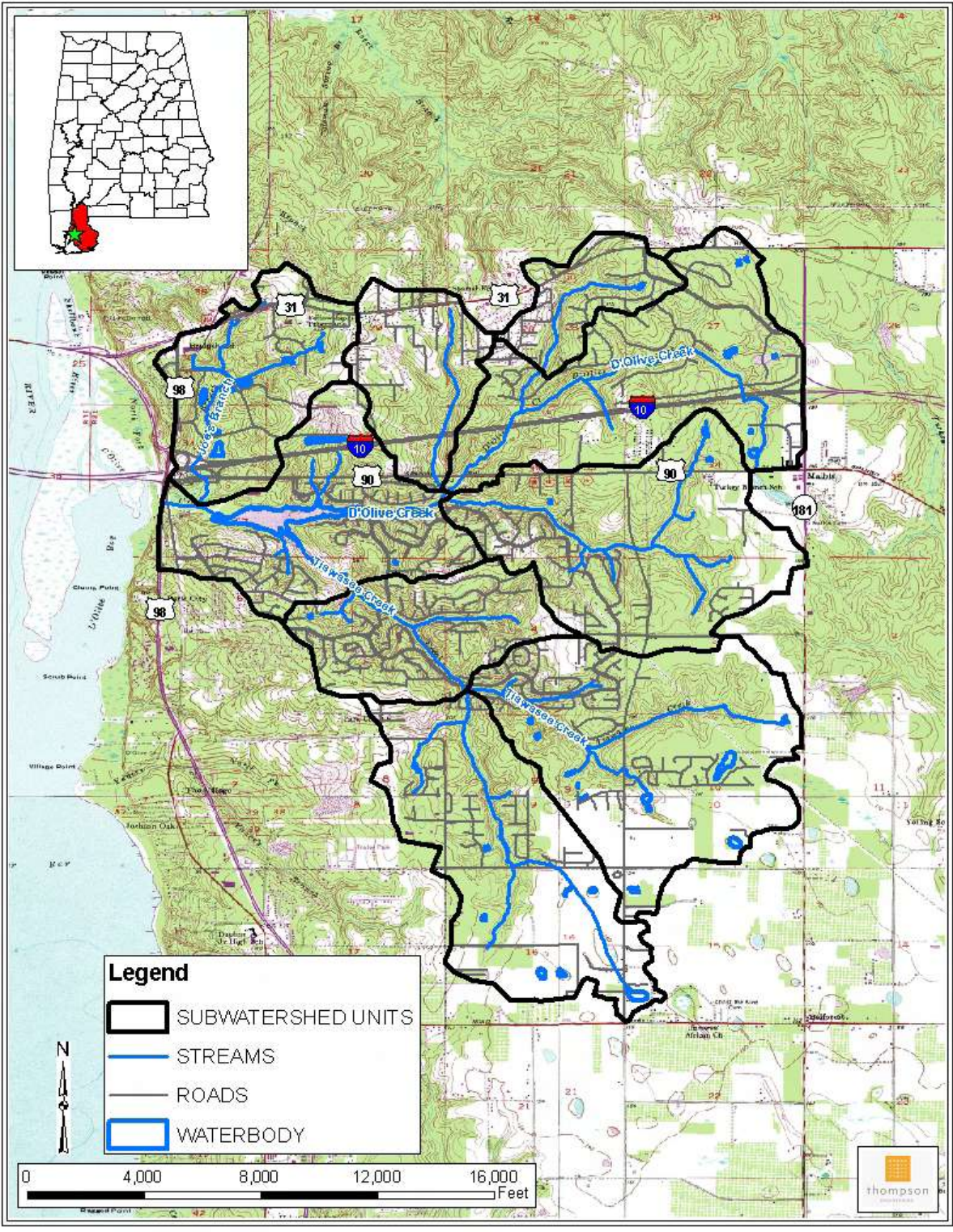




Figure 2-7. Head-cut through Erosion Resistant Streambed Materials on Tributary DA

2.7 Floodplains

Figure 2-10 shows the extent of the 100-year floodway which closely reflects the narrow width of floodplains within the D'Olive Watershed. The extent of floodplains within the D'Olive Watershed is limited by the relatively rugged terrain depicted in Figure 2-6 and as further illustrated in Figure 2-9. The steep slopes that closely flank the Watershed's three major streams and their principal tributaries result in their associated floodplains being very narrow in width. In those cases where specific stream segments have gentle gradients and somewhat wider floodplains, sediments generated by upslope sources have often become deposited to varying depths.

A strip of riparian vegetation of varying widths depending upon the location within the Watershed and the neighboring land uses is generally associated with the floodplains. An even narrower strip of wetlands occurs at the lowest elevations within the floodplains. When the process of head-cutting causes a specific stream segment to incise deeper into its bed, its contiguous floodplain is often left to remain at its historic elevation. In such situations, the floodplain may no longer experience periodic overbank flows during high rainfall events. This results in most, if not all, of the high flow events and their associated energies being confined within the incised channel. The concentration of hydraulic energy contributes to further channel incision, streambed erosion, and overall increase in channel instability.

2.8 Wetlands

2.8.1 404(b)(1) Jurisdictional Wetlands

The occurrence of wetlands within the D'Olive Watershed is limited by the extreme topographic conditions and the relatively narrow floodplains and limited riparian habitat flanking the Watershed streams. Despite these physical habitat limitations, the Watershed still supported 477 acres of wetlands in 2005 according to the Baldwin County GIS database (see Table 2.8). It should be noted that the wetland acreage datalayer contained in the Baldwin County GIS likely under estimates the actual amount of wetlands in the D'Olive Watershed due to the inherent difficulty involved in mapping seepage slope wetlands. Even in the face of intense urbanization, analysis of remote sensing data indicates the overall acreage of wetlands within the Watershed has remained relatively consistent since the 1970s.



Recent mass wasting of streambank in Lake Forest. Site DA23a.



Trees recruited to channel by bank mass wasting. Site D5.