

# Marble Falls Whitman Branch Watershed

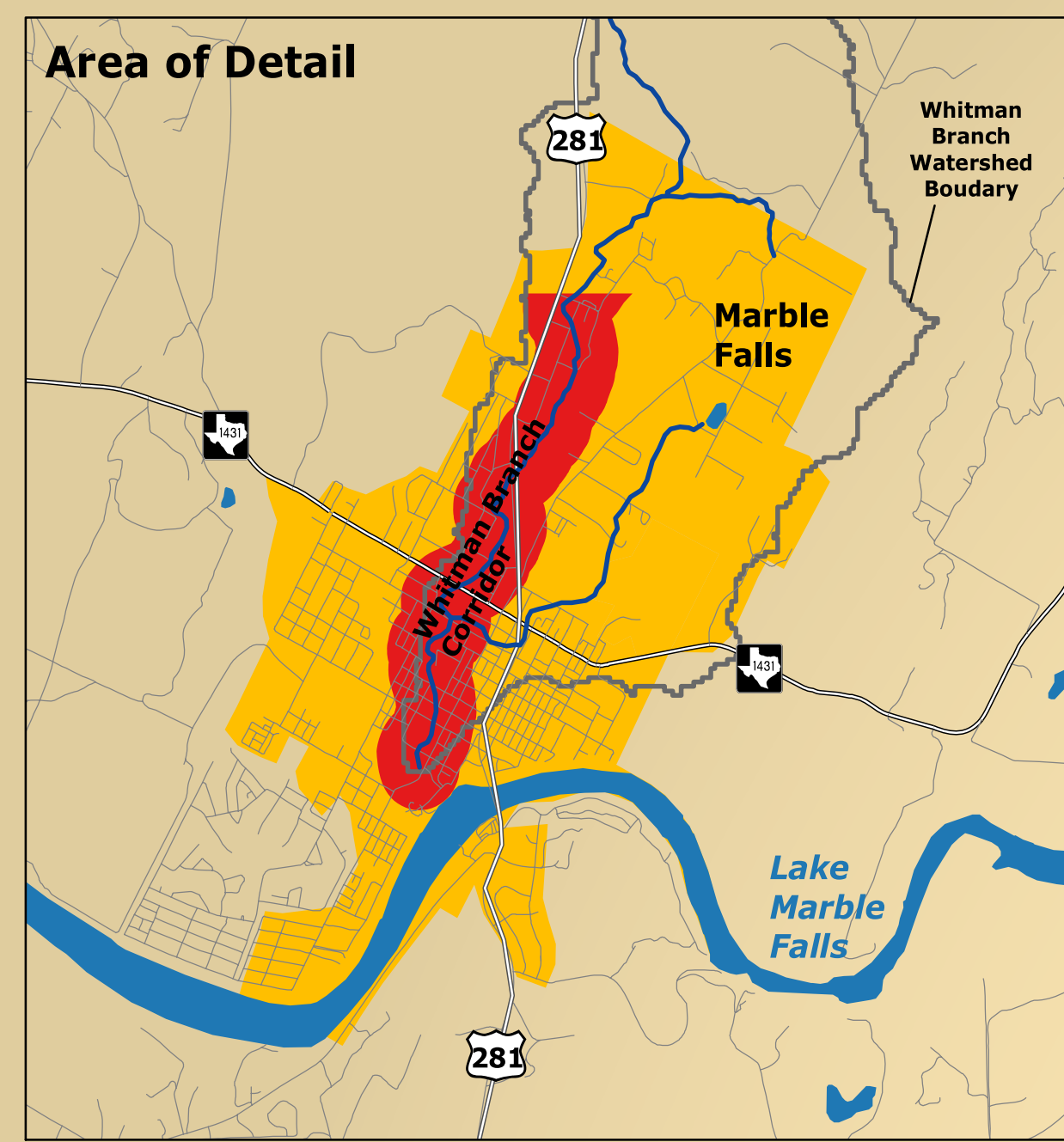


Photo 35. Looking downstream of Commerce Street, overgrown with willows, debris jams, poorly defined channel.



Photo 36. Commerce Street, elevated wastewater line on downstream side of street.



Photo 24. At Highway 281, looking downstream at debris and trash.

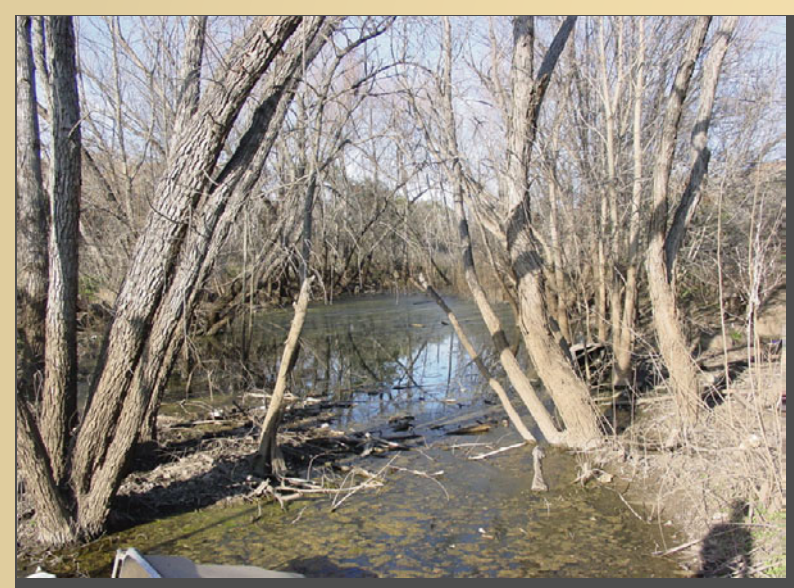


Photo 19. Looking upstream at stagnant water area above Mission Hill Drive.

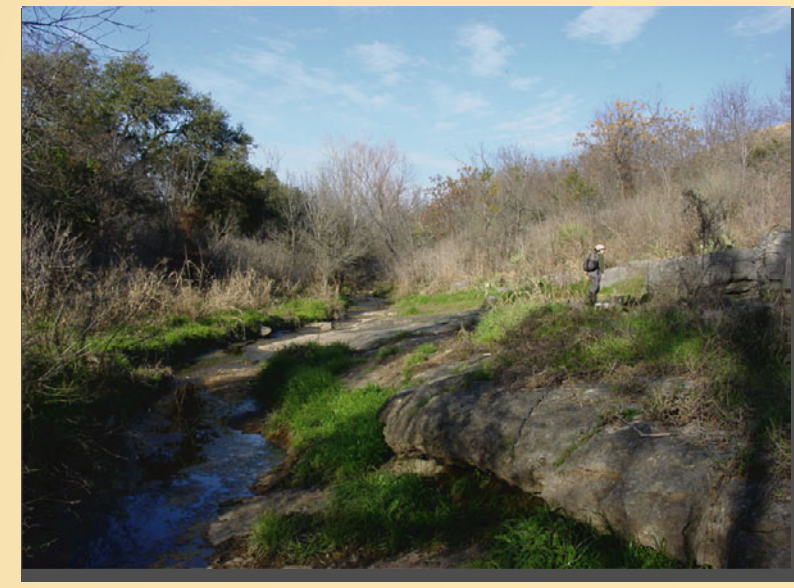


Photo 20. Upstream of Mission Hill Drive, looking upstream, good hike/bike trail potential.



Photo 13. Looking upstream at Broadway Street. Recent tree management by city crews.



Photo 14. Looking upstream at the FM 1431 Bridge.

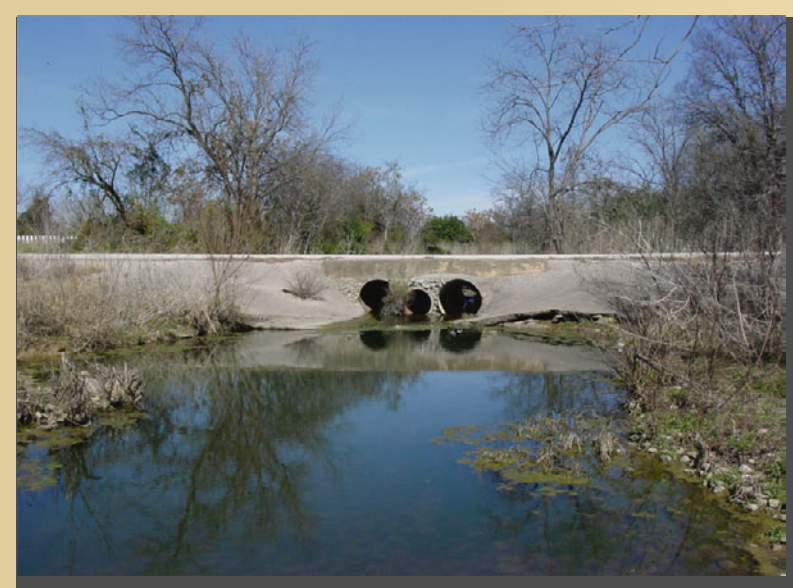


Photo 4. Looking upstream at Yett Street, scour hole approximately 4 feet deep, concrete rip rap failing.



Photo 8. Fallen trees upstream of Third Street.

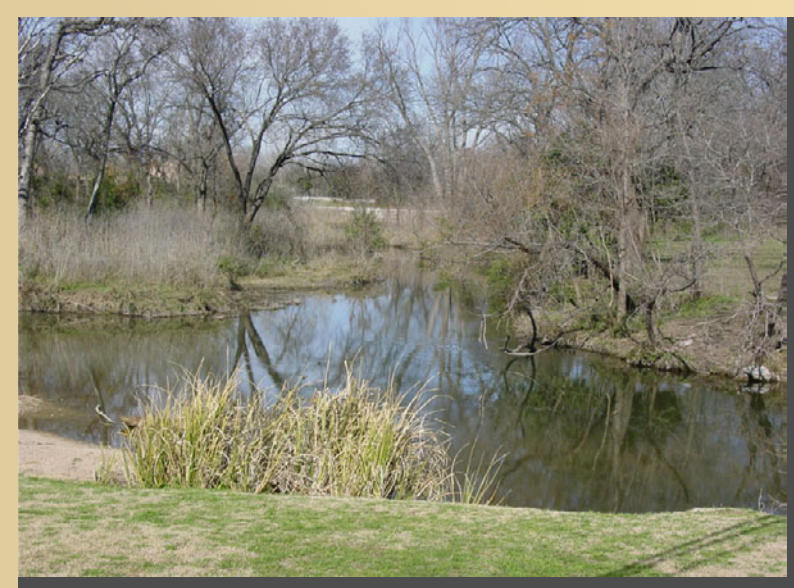


Photo 1. Whitman Branch at Backbone Creek confluence looking upstream at Whitman Branch.

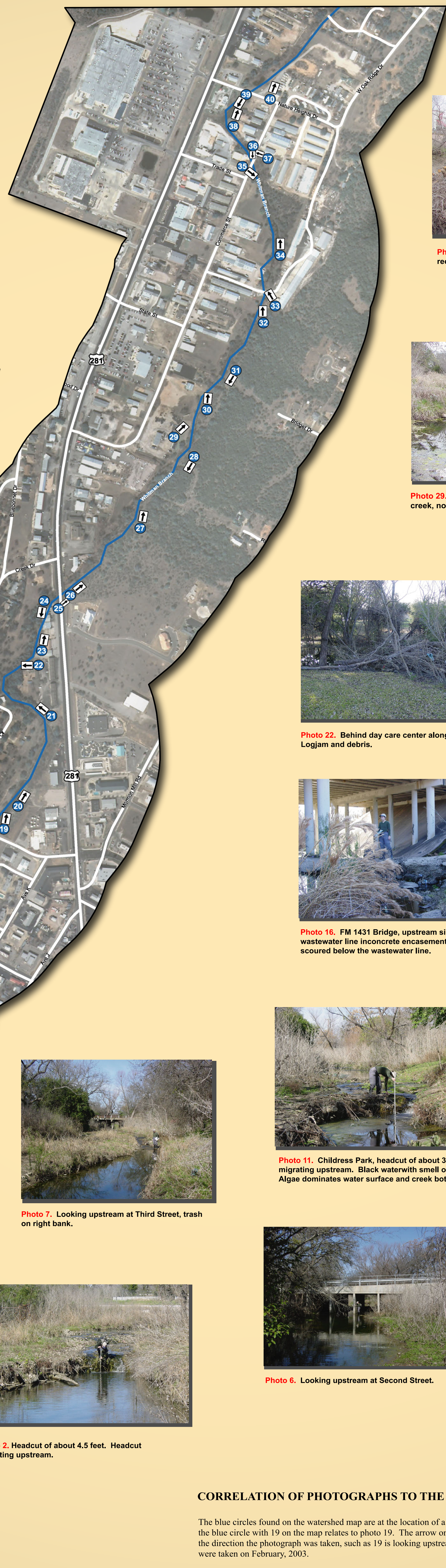


Photo 38. Looking upstream at Nature Heights Drive, recent tree management by city crews.



Photo 37. Looking upstream of Commerce Street, disturbed channel below sand & gravel operation, milky water, trash and debris.



Photo 29. Looking downstream at culvert across creek, notice trash and algae, flow is impeded.



Photo 31. Extension of Bridget Lane, looking downstream at elevated wastewater line above creek, crossing is creating a pond.



Photo 22. Behind day care center along U.S. 281. Logjam and debris.

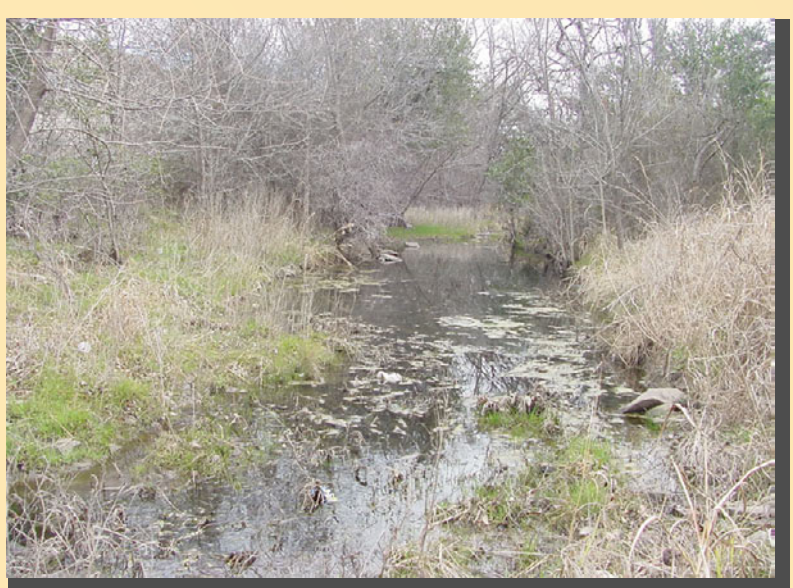


Photo 26. Highway 281, looking upstream, much less trash, more natural appearance, deer tracks, excellent hike/nature trail potential.



Photo 16. FM 1431 Bridge, upstream side, exposed wastewater line in concrete encasement, creek has scoured below the wastewater line.

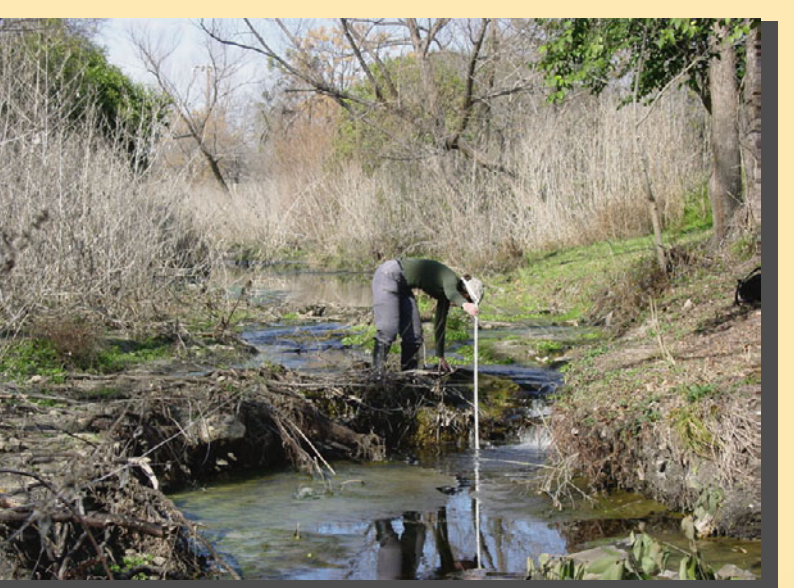


Photo 11. Childress Park, headcut of about 3 feet migrating upstream. Black water with smell of sewage. Algae dominates water surface and creek bottom.

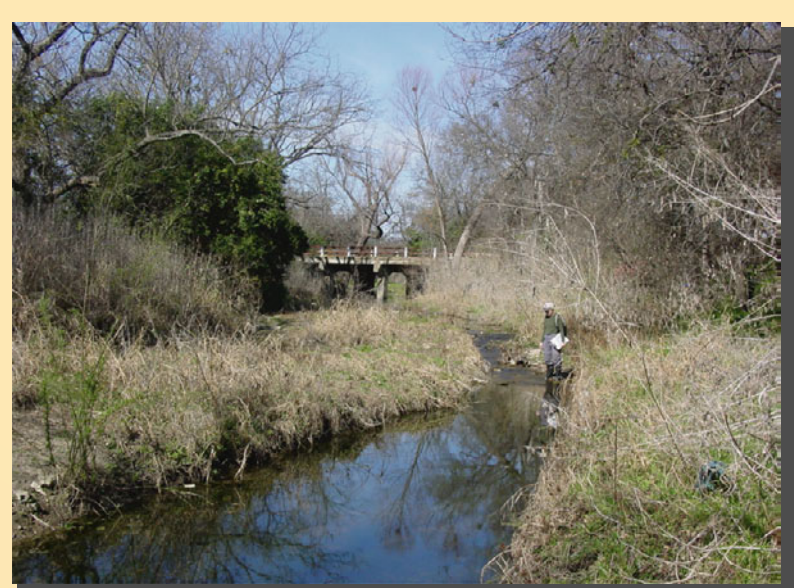


Photo 7. Looking upstream at Third Street, trash on right bank.



Photo 6. Looking upstream at Second Street.

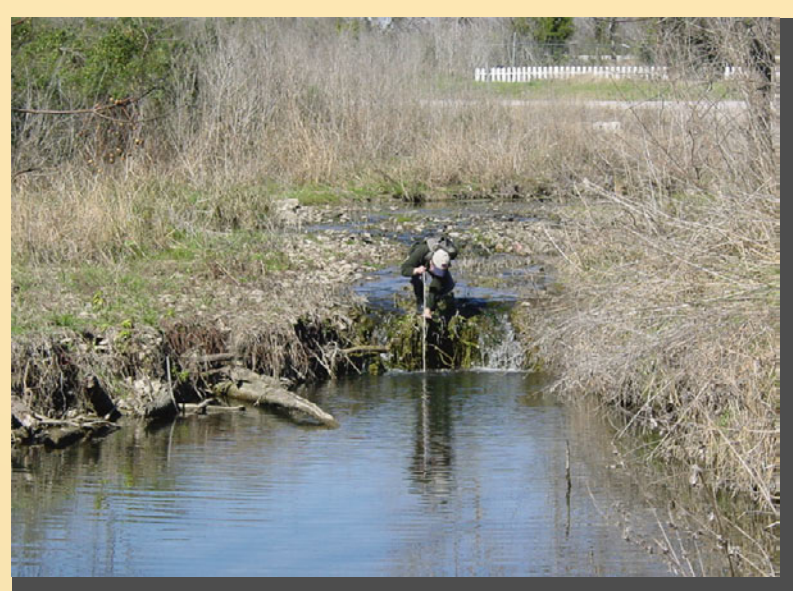


Photo 2. Headcut of about 4.5 feet. Headcut migrating upstream.

## WATERSHED DESCRIPTION

A watershed can be defined as a land area that contributes stormwater runoff to a particular point along a waterway. A watershed can be a few acres in area or hundreds of thousands of square miles such as the Mississippi River.

Another way to think about watersheds is to think of rainfall. When rain lands in your backyard, it can flow from the property as surface water runoff to a neighbor's property, creek, or river. Watersheds are important because they connect our activities on the land with water quality, erosion, and flooding. The concept, "everyone lives downstream" is a good way of thinking about how our actions within a watershed can affect someone else. For example, the runoff from the Walmart Store is conveyed under US 281 into Whitman Branch, which runs south back under US 281, then below FM 1431, through Childress Park and into Backbone Creek in Johnson Park. This in turn flows into Lake Marble Falls, down the Colorado River, eventually into the Gulf of Mexico.

## FLOOD ISSUES

### Areas Subject to Flooding During Rainfall Events

- Nature Heights Drive from US 281 to Commerce Street.
- Commerce Street from Trade Street toward Nature Heights Drive.
- Mission Hill Drive below Avenue K towards Blaubonnet Drive.
- Broadway Street from Avenue L to Avenue N.
- Main Street from Broadway Drive to Ninth Street.
- Avenue L from Broadway Drive to Ninth Street.
- Mormon Hill Road near Cedar Ridge Drive.

## THE INFLUENCE OF IMPERVIOUS COVER

As a watershed develops, the new impervious cover (streets, roofs, parking lots) dramatically increases surface runoff during storm events. This can lead to higher flooding levels, more creek bank erosion, poor water quality, and loss of habitat. Therefore, the unmanaged placement of impervious cover can have significant adverse impacts upon the local creeks and adjacent neighbors, and should be managed in a way to minimize negative effects. As for the creek, this increase in runoff due to impervious cover accelerates the flow velocity and elevates the flow depth, putting pressure on the creek banks and bottom. Soil and gravel are washed downstream leading to the enlargement of the channel through downcutting and widening processes.

Using field reconnaissance data and information correlating impervious cover to land use, it appears that impervious cover within lower Whitman Branch (downstream of Coach Drive) is in the 20 to 30 percent range. This high level of impervious cover is due to the downtown center and commercial development along US 281, FM 1431, and Mormon Hill Road. Upstream of Coach Drive, the watershed is relatively undeveloped and has a low amount impervious cover (less than 5%), therefore, stormwater runoff is much less frequent than in the downstream portion of the watershed. A watershed classification system established by the Center of Watershed Protection bases watershed and creek health upon impervious cover levels. In their ranking system, if impervious cover is less than 10%, then the creek is classified as a sensitive stream, one that is typified by stable channels, excellent habitat, and high water quality. If impervious cover is in the 11-25% range, it is labeled an impacted creek. In this condition, creeks begin to show clear signs of degradation with erosion, channel widening, and fair water quality. Finally, impervious cover levels greater than 25% lead to a creek with fair to poor water quality, increased nutrients, and unstable and eroded creek banks. The creek is more of a conveyance system instead of a natural resource that is compatible with parkland, trails, and recreation. This type of drainage-way is called a non-supporting creek.

## WHITMAN BRANCH FINDINGS

From the creek assessment in February and March 2003, Whitman Branch downstream of US 281 to Johnson Park appears to fit the non-supporting category. As seen in the photographs, significant channel erosion has occurred and will continue to do so, few aquatic insects were found, and poor water quality dominated this creek segment. These problems are found in the area of the highest impervious cover levels in the watershed. In addition, a wastewater utility line is located within the Whitman Branch corridor, allowing for the potential discharge of sewage to the creek.

Upstream of US 281 to West Oak Ridge Drive, evidence of sedimentation in the creek can be found. However, the level of urbanization impact is much less than downstream of US 281. This could be due to the lack of development on the east-side of the creek and the large buffer zone between existing commercial developments and the creek on the west. This portion of the creek has excellent potential for a hiking/nature trail that could be connected to future developments along the eastern ridge line.

From West Oak Ridge Drive to near Coach Drive, the creek is significantly impacted by commercial and industrial activities that have channeled the creek and encroached into the floodplain. Trash, flood debris, and creek bank erosion are prevalent throughout this creek segment. An elevated wastewater line crosses the creek at Commerce Street and runs parallel to Commerce Street.

With the acquisition of easement, vegetation management, and trash removal, the potential exists to create a hiking/nature trail from West Oak Ridge Drive through Childress Park to Johnson Park. The trail would pass through diverse geologic zones and connect neighborhoods, apartments, and commercial areas to the Marble Falls Park System.

## WATER QUALITY (STORMWATER POLLUTION)

Stormwater runoff pollution is called nonpoint-source pollution and it comes from everywhere, as it is washed off the land into the creeks, rivers, and lakes. Rainfall runoff carries soil, pesticides, chemicals, oil, and other residues of everyday human activity into the water. The effect is a deluge of dirt, trash, and toxics that produce more water pollution than all the sewage and industrial plants in the nation according to the EPA.

Nonpoint source pollution can seriously affect water quality. Sediment, pesticides, fertilizers, debris, and oil can enter waterways reducing the oxygen in the water and disrupting habitat for the plants and animals that make the creeks and rivers their home. In addition, these pollutants can carry diseases that cause health problems.

Nonpoint source pollution can come from: improper disposal of chemicals, oils, and other waste, litter and trash, overgrazing and certain cultivation practices that can increase soil erosion and carry pesticides, fertilizers, and animal wastes into our creeks, earth disturbance such as land development, placement of impervious cover, mining, and highway construction.

## HERE'S WHAT YOU CAN DO TO PREVENT POLLUTION

Water quality education can be an effective and low cost approach to improving the water quality and conditions in Marble Falls' creeks. Education programs such as those developed at LCRA can be delivered at schools, community service group meetings, homeowner association meetings, and City Council meetings to inform the public of simple measures to protect water quality and the creeks. The message to homeowners could include:

- Keep pet wastes, leaves, and debris out of the streets and creeks,
- Divert roof runoff to grassed areas rather than on pavement,
- Apply lawn and garden chemicals sparingly, and never fertilize before a rain,
- Dispose of used motor oil, antifreeze, paints, and hazardous materials properly,
- Control soil erosion by planting ground cover and stabilizing erosion prone areas.

The message to farmers and ranchers could include:

- Keep livestock out of streams since their wastes pollute water,
- Leave crop residues in the field to hold and fertilize the soil,
- Apply chemicals at the proper rate and at appropriate water conditions,
- Leave natural vegetation along creeks to act as a buffer to filter pollutants,
- Make sure ranch workers know the procedures to use and dispose of waste materials and leftover chemicals.

## CORRELATION OF PHOTOGRAPHS TO THE MAP

The blue circles found on the watershed map are at the location of a photograph. For example, the blue circle with 19 on the map relates to photo 19. The arrow on the blue circle indicates the direction the photograph was taken, such as 19 is looking upstream (north). The photographs were taken on February, 2003.



0 500 1,000 Feet



Data Source: Aerial Photography CAPCOG, 2006; Watersheds derived from USGS digital elevation model; Main Roads - TxDot

This map has been produced by the Lower Colorado River Authority for its own use. Accordingly, certain information, features, or details may have been emphasized over others. LCRA does not warrant the accuracy of this map, either as to scale, accuracy or completeness.