

Four Mile Creek: Adams Park
NW SE NE
Section 7-12N-7W
Canadian County
Latitude 35.53243
Longitude -97.97684
WBID# OK500530-00-0060M

Blue Thumb Volunteer Monitoring Data Review – February 27, 2012
Written by Reonna Slagell Gossen

Description of Watershed and Monitoring Site

Four Mile Creek flows from Lake El Reno which was part of the Four Mile Creek Watershed Project consisting of one flood control dam that was constructed in 1966 by the City of El Reno and the East Canadian County Conservation district with the assistance of the Oklahoma Conservation Commission and the USDA Natural Resources Conservation Service (NRCS) Watershed Protection and flood Prevention Program. The watershed starts approximately 5 miles southwest from the inlet of Lake El Reno. The monitoring site is located in Adams Park (northwest side of the City of El Reno) which is below the dam less than a mile. The creek follows around the northwest side of El Reno along the peripheral edge of the residential area of the city and eventually flows into the North Canadian River approximately 4 miles northeast of El Reno. The North Canadian River eventually flows into Lake Overholser located on the northwest side of Oklahoma City and serves as a water source for the residents.

Stream Condition and Habitat Overview

A habitat assessment was conducted on Four Mile Creek at Adams Park on 6/19/2009. The overall habitat assessment score was about 40% lower than the Central Great Plains Reference Average. The creek has high stream side cover with grass and other vegetation at the creek's edge. There is medium instream cover which allows for adequate habitat for fish and aquatic invertebrates. A few trees on the creek banks help to give Four Mile Creek a little bit of shade. With this being a city park, the grounds are pretty much mowed right up to the edge of the creek. This leaves the banks a little unstable and aids in erosion. The creek bottom substrate consists of small gravel and sand with very little pool variability on depth. Four Mile Creek shifts its flow in this unstable sandy bottom channel creating point bars. The flow rate is very low.

Biological Condition

-Fish: Fish sampling occurred June 19, 2009. Four Mile Creek does not have a high amount of diversity of species of fish, approximately 50% less than the Central Great Plains Reference Average. The species that are found are species of sunfish and shiners and catfish. The majority of the fish population was from Mosquitofish. The species that are present are smaller sized fish that are generalists and insectivorous and very tolerant to pollution and sediment.

-Benthic Macroinvertebrates: Macroinvertebrate sampling occurred on March 4, 2009. Four Mile Creek has a diversity score of near double the Central Great Plains reference conditions. There are high numbers of species of mayflies and caddis flies; these are the "sensitive to pollution" bugs. The species that are present are very intolerant to high organic pollutants. This one collection on Four Mile Creek had an overall score well above reference conditions.

Chemical Condition

This is based on three testing episodes in October and November, 2009.

-Dissolved Oxygen: All data is within the normal range; 80%-130%.

-pH: The pH ranges from 7.3 to 7.75, within normal range.

-Nitrate: The nitrate levels ranged from below detection to 3mg/L N. Normal range is below 0.8mg/L N.

-Nitrite: The nitrite levels ranged from 0.3mg/L N to 3mg/L N. Normal range is below 0.8mg/L N.

-Ammonia: The ammonia levels were undetected.

-Orthophosphate: The phosphorus ranged from 0.012mg/L P to 0.213mg/L P. Normal range is below 0.05mg/L P, caution is between 0.05mg/L P and 0.1mg/L P, poor is above 0.1mg/L P.

-Chloride: The chloride readings were in the normal range.

Synopsis

Four Mile Creek is a very small, shallow creek that curves through a well utilized park and residential area that has a high amount of mowed vegetation along the water's edge. From the one bug collection, Four Mile Creek has high numbers and a wide variety of macroinvertebrates. The 2009 fish collection gave average numbers of fish but few varying species. The habitat and nature of the creek alone is indicative of the type of macroinvertebrates and fish that live in the waters. The types of sunfish, shiners, and mosquitofish may be attributed to the fact that they can occupy a great variety of habitats, require a relatively short period of time to reach breeding age, their small size allows them to occupy a small space in the shallow water, find shelter in the bottom vegetation, and feed on the large number of diverse species of insects that are present. The fish are all very tolerant species which is indicative of their survival. The high chemical pollutants are possibly from runoff of well-maintained yards, various park activities, waste of migratory birds that occupy Lake El Reno and the decaying matter that falls into the creek during seasonal changes. Four Mile Creek is very shallow with low flow capacity which does not allow for much movement of the pollutants. The high amount of vegetation surrounding and in the creek and low amount of water may account for the high amount of dissolved oxygen. Four Mile Creek is an urban creek that is having problems from nonpoint source pollution from human city life and a poor habitat condition from being in a city park.