

MUSTANG CREEK

SE NE SE

Section 11-11N-5W

Canadian County

Lat N 35° 26' 20.9"

Long W 97° 41' 19.1"

WBID #: OK520520-00-0240G

Mustang Creek is a second order stream that flows west to east in the south part of Yukon and the north part of Mustang. It drains into the North Canadian River. The watershed drains approximately 26 square miles above the monitoring site which is at Morgan Road on the north side of the city of Mustang. Land use in the watershed is rapidly changing from agricultural use to residential communities. Housing is encroaching on the creek upstream and an established golf course occupies the southwest side. Immediately downstream of the monitoring site, on the east side of Morgan Road, a large residential area has been built to within one hundred feet of the creek.

Habitat

The habitat in Mustang Creek compares very well with reference conditions within the Central Great Plains ecoregion. The canopy cover from the trees and streamside vegetation on the creek bank is good and helps shade the water. Rocky runs and riffles are present but not common. The creek habitat is mainly pools of varying depths with very low flow to no flowing water. There is a lack of in-stream cover like root wads, rocks, woody debris and vegetation in the creek water for use by the fish and macroinvertebrate communities. The banks of Mustang Creek are poorly covered with vegetation yet the banks are moderately stable. There is an erosion problem in the watershed and this sediment, some of it from the construction sites, has collected on the bottom of the creek. A loose shifting pool bottom will not provide substrate for burrowing organisms and will not allow bottom-spawning fish to successfully spawn. It will not provide habitat to the smaller vertebrates and invertebrates that are necessary to support many of the pool dwelling fish.

Biological Community – Fish

Fish were collected from Mustang Creek on June 20, 2005. Thirteen species of fish inhabit the creek; 93% of the individuals collected are tolerant of pollution levels. The suckermouth minnow is the only intolerant species and the sand shiner is the only intermediate species of fish collected. When compared with reference conditions, Mustang Creek is missing sensitive benthic species and has few insect eating minnows reflecting nutrient and sediment problems. Noted were five species of sunfish which generally is a significant indicator of good stream health. The fish collection at Mustang Creek is 75% as good as the average high quality reference conditions for the Central Great Plains ecoregion.

Biological Community – Benthic Macroinvertebrates

Mustang Creek has had excellent bug collections from rocky riffles every winter since 2002, consistently scoring equal to reference conditions. In the summer of 2003 the collection was made from vegetation in low flow conditions and scored higher than reference conditions. But riffle kicks in the summers of 2004 and 2005 produced no members of the most sensitive Ephemeroptera, Plecoptera and Trichoptera (EPT) taxa, dropping the metric score to 69% of reference conditions. Considered together, the macroinvertebrate collections in Mustang Creek are comparable to the best situation expected within the ecoregion and represent balanced trophic and community structure for the stream size.

Water Chemistry

Water chemistry was tested monthly on Mustang Creek between September 15, 2001 and December 18, 2004. After a break, it was monitored again at the beginning and end of August 2005.

DO	The average amount of dissolved oxygen falls on the low side of normal. The percent oxygen saturation dropped below 50% in October 2003, November 2003, May 2004 (when the oxygen dropped to 3 mg/L – a critical level for fish), and Sept. 2004.
pH	Ph was consistently between 7.5 – 8 except for February 2002 when it was 9.0.
Nitrogen	Soluble nitrogen was always present, though at very low levels.
Phosphorus	Orthophosphate phosphorus was always present in moderate quantities. Values greater than 0.1 mg/L P, a critical level, occur on July 30, 2002, September 28, 2002 and then most months since October 2003. The highest value is 0.46 mg/L P on July 24, 2004.
Chloride	Chloride has remained steady with values usually between 30 and 40 mg/L.

Summary

Mustang Creek is in a rapidly developing watershed. The canopy cover shade and streamside vegetation are very good. Sediment from erosion and construction projects is on the pool bottoms. A loose shifting pool bottom will not provide substrate for burrowing organisms and will not allow bottom-spawning fish to successfully spawn. The fish collection confirms this with an absence of sensitive benthic species of fish. The proportion of insectivorous cyprinids was also low. These are the dominant minnows in North American streams but the proportion decreases as the quality and quantity of the invertebrate food base decreases. While the benthic macroinvertebrate collections over the last five years are comparable to the best situation expected within the ecoregion, the

last three collections from summer 2004, winter 2005 and summer 2005 have dropped in quality with the loss of some of the EPT taxa. Low levels of dissolved oxygen could be caused by low flow during the drought conditions or b algal growth spurred by the increasing nutrients in the water. Though it is showing the effects of urban development, Mustang Creek is still fairly healthy. Community education to homeowners and construction companies about the quality of Mustang Creek could help stop its degradation.