

Nickel Creek: 91st S

NE NW NW
Section 22-18N-12E
Tulsa County
Latitude N 36° 01' 54.3"
Longitude W 96° 01' 39"
WBID#: OK 120420-02-0040G

Blue Thumb Volunteer Monitoring Data Review – 31 October 2007
Written by: Steve Schaal and Olive Makwati

Description of Watershed and Monitoring Site:

Nickel Creek is located within the Cross Timbers ecoregion of Oklahoma in the NE corner of Creek County and SW corner of Tulsa County. The watershed begins around Oakhurst, north of the turnpike entrance, and flows southeast into Polecat Creek just east of US-75 and between West 96th Street and the Creek Turnpike. The upper region of the watershed is older residential and mixed commercial and industrial. The lower region of the watershed is new upper income residential. The estimated size the watershed is ten square miles.

The monitoring site is located at the corner of West 91st Street and South 33rd West Avenue. The immediate surrounding area has been lightly developed over the last several years. An excellent natural vegetation area surrounds the site with trees, shrubs, and grasses. A number of pools upstream from the site may be good enough for swimming. There is evidence of debris thrown into the creek from the 91st Street bridge.

Stream Condition & Habitat Overview

The habitat assessment adheres to a modified version of the EPA Rapid Bioasssessment Protocols (RBP) and is designed to assess habitat quality in relation to its ability to support biological communities in the stream. The data used in this report reviewed the index for each category rather than the raw data. The overall trend of the number of parameters with a high metric score is increasing. Canopy cover has been good for the past ten years. Pool variability, bank stability, and streamside cover have improved. The presence of rocky runs or riffles has been decreasing. The pool bottom substrate, channel sinuosity, and the flow remained poor.

The stream appears to have a good habitat overall and, if nothing else, appears to be improving over the last ten years. Apparently, the development of the watershed has not had an adverse affect on the habitat of the stream. In September 1997 the metric score recorded for the stream was 78.6; in July of 1999, 86.3; and in June of 2006, 97.2. The average score for high quality sites in the ecoregion is 84.0. The habitat at this site on Nickel Creek is very good.

Biological Conditions

Fish

Fish populations are used to assess stream health. Data from each collection are compared to identify trends in fish populations. Nickel Creek data is also compared to an average of high quality reference streams in the Cross Timbers ecoregion to assess relative stream health.

The fish collections were conducted in October 1996, July 1999, and June 2006. The data collected has consistently ranked the condition of the stream as a strong B (91% of reference conditions). The number of species present in the stream has dropped by one from fifteen to fourteen different species in the last collection (compared to Cross Timbers reference of 19 different species). The number of intolerant species (2) is the same as the reference. The collections at Nickel Creek have only two sensitive benthic species while the average high quality stream has four sensitive benthic species. This difference causes the difference in scores between Nickel Creek and reference conditions.

Benthic Macroinvertebrates (bugs)

Benthic macroinvertebrates have been collected twice a year, winter and summer, since the summer of 1996.

Over the years, the number of taxa collected in the summer appear to have been increasing. (The average number of taxa collected in the five years from 1996 – 2000 is 14. The average number of taxa collected in the five years from 2002 – 2006 is 18.) The average abundance of the sensitive mayflies, stoneflies and caddisflies has also increased from 9% to 15%. However, Nickel Creek still has about half of the sensitive species found in the average high quality stream. Summer bug collections score a B which indicates the stream health is somewhat less than expected.

The winter bug collections from Nickel Creek also appear to indicate improvement over the years. While the number of taxa collected has remained constant, the number of sensitive mayflies, stoneflies and caddisflies has increased from an average of 2 taxa (8% of the sample) over the first five years to 5 taxa (14% of the sample) over the last five years. Winter bug collections score an A which tells us that Nickel Creek is comparable to the best situation expected within the ecoregion.

Chemical Testing

Chemical data were collected from Nickel Creek since 1996. There is a break in the data from February 2006 until November 2007 when there was not a team monitoring regularly.

DO	Dissolved oxygen saturation shows when there are problems with the amount of oxygen available in the water for aquatic life. Too little or too much are indicators of problems. The median value for dissolved oxygen
----	---

saturation in Nickel Creek is 76.5%. This is a little low. Ideally the percent oxygen saturation would not drop below 80%.

pH	The median pH in Nickel Creek is 7.5, well within normal values.
Nitrogen	An estimate of soluble nitrogen is made by adding the amounts of ammonia-nitrogen and nitrate/nitrite-nitrogen found in the water. The median value of soluble nitrogen is below the detection levels of our tests.
Phosphorus	The orthophosphate phosphorus median is 0.03 mg/L P, also well within normal values.
Chloride	The median chloride value is 85 mg/L Cl.

The water chemistry at Nickel Creek is unremarkable with the exception of slightly low oxygen levels in the water.

Synopsis

Even though the watershed of Nickel Creek is developing, the habitat at the site is very good and appears to be improving over the last decade. Fish collections have been almost comparable to the healthiest streams in the Cross Timbers ecoregion, but have been missing sensitive benthic species. Summer benthic macroinvertebrate collections are a little less than expected, but winter collections are excellent. Water chemistry is fine with the exception of low oxygen levels. Nickel Creek is not quite pristine, but is still quite healthy, especially with the development in the watershed. It will be a challenge to teach watershed residents basic best management practices so we can continue to claim Nickel Creek is healthy!