



Informational Sheet

# Biotic and Geomorphic Monitoring

## What is Biotic and Geomorphic Monitoring?

Biotic is another word for biological. In this sense it means the study of fish and other species like clams and bugs found in various locations. Monitoring these different species helps determine if the Project has any impacts on the health of different ecological systems.

Geomorphic simply means the physical environment. Scientists will be looking at rivers and streams to document their width, depth, velocity and how much water is discharging from the stream or river. Monuments (location pins) will be placed on each side of the river or tributary so that the Corps can ensure we are monitoring the same area on all surveys.

## Why are the studies necessary?

The U.S. Army Corps of Engineers is leading the biotic and geomorphic data gathering process. They completed at least one round of these studies in 2012, 2017 and 2018 on a majority of the affected parcels.

This is very important information that helps ensure the Project does not impact the health of various organisms and environments.

## What is happening now?

The Corps and Diversion Authority are working to secure property easements so studies can resume in 2020. The easements will be needed so the sites can be accessed as needed for respective studies. This makes the study data complete and provides enough consistent, historical data to inform decisions.

## How many properties does this affect?

There are close to 425 parcels where easements are needed to perform the required monitoring.



Preparing to conduct surveys in 2017



Placing a monument



Traveling to various sample sites on the Maple River in 2017



Preparing to gather biotic, or biological, samples including fish



## Fast Facts

# Biotic and Geomorphic Monitoring

## TIMELINE

2012  
2017

- **Easements Secured**
- **Samples Gathered**
- **Data Collected**

Work began in 2017 with easements at 425 sites along various rivers including the Red, Maple, Rush, Lower Rush and Sheyenne.

2019

- **Easements Requested**

To continue the monitoring work, easements will be again required to access various monitoring sites.

- **Monitoring Teams Assembled**

Typically teams consist of private contractors, geologists and biologists from the U.S. Army Corps of Engineers

- **Samples Gathered**

Some samples, like live fish and geomorphologic observations, can be observed and recorded on site. Other samples, like invertebrates, must be sent to a laboratory for evaluation before their data can be collected.

- **Data Evaluated**

Some samples, like live fish and geomorphologic observations, can be observed and recorded on site. Other samples, like invertebrates, must be sent to a laboratory for evaluation before their data can be collected.

2020  
and  
beyond

- **Data Used in Decision Making**
- **Sampling, Evaluation & Monitoring Continues**

## FACTS



**Fish collected for samples are released back into the river.**

Electrofishing techniques will be used to stun fish, collect them, observe them and return them to the river.



**Invertebrates like bugs and clams are collected from the bottom of the river.**

These species must be sent to a laboratory for analysis.



**Biological samples can be taken as early as May. Geomorphic surveys are in the fall, after harvest.**

This depends on the weather and access capabilities at various sites.



**Crews have two or more people.**

Work will be done by a crew of two to three people in the water with some watching from shore.



**Geomorphic surveys may need regular sampling.**

The expected timing for regular geomorphic sampling is every other year, or three times within a five year cycle. This happens before and after the project is built to help see if there are impacts from the project.

Surveys may occur if there is a high water event to find out if there have been any other geomorphic changes, but the Final Feasibility Study and Environmental Impact Statement outline why no significant adverse impacts from the project are expected.