

Data Quality Objectives (DQOs)

Please note: If your work plan components do not include data collection activities, this section may not be necessary in the work plan. This information can be used to provide information on Data Collection Activities and the Quality Assurance Project Plans (QAPP)s. Language can be incorporated (with appropriate modifications) from the current QAPP to meet this requirement.

The following information lists the parts of the DQO process. Additional information on the format and content of DQOs, is available at this Web address:

<http://www.epa.gov/quality/dqos.html>. In particular, refer to the G-4 document. A set of DQOs should be provided for each environmental data collection project. For example, if you plan to do a source water assessment and a wetlands inventory/classification project, your QAPP should have two sets of DQOs. For additional information on guidance, or examples on how to develop DQOs for your environmental data collection projects, please contact your Project Officer.

Example Problem Statement - The basic question to be addressed through the planned surface water monitoring activities is, "How is the Water Quality in John-Craft Lake and its tributaries changing over time?" Point and non-point sources in the watershed continue to release pollutants into the tributaries and the lake, and the Tribal leaders and members are keenly interested in assessing the impacts of these pollutants and the chemical and biological quality of the waters, on a continuing basis.

Decision Statement - The Tribe plans to monitor key water quality parameters at specified locations and compare the monitoring results to data collected at equivalent locations in the time period 2006-2007. If the data shows statistically significant deterioration in water quality, the Tribe will accelerate efforts to work with governmental entities and non-governmental organizations (NGOs) in the watershed to identify the most significant sources of pollution and to plan initiatives to reduce pollutant loadings.

Over the longer term, the Tribe plans to continue monitoring for the selected parameters at specified locations to note trends in water quality and identify any emerging concerns.

Inputs to the Decision - The parameters that have been selected to be included in the monitoring program are as follows:

John-Craft Lake Tributaries:

E-Coli

Total Phosphorus

Soluble Reactive Phosphorus

Total Kjeldahl Nitrogen

Total Suspended Solids

Temperature

Ammonia Nitrogen

Nitrite plus Nitrate – N

Total Nitrogen

Total Volatile Solids

Conductivity

In-Lake Water Quality Monitoring:

Total Phosphorus	Conductivity
Soluble Reactive Phosphorus	Temperature
Total Kjeldahl Nitrogen	Total Nitrogen
Nitrite plus Nitrate – N	Chloride
Ammonia Nitrogen	Total Alkalinity
Total Suspended Solids	Total Volatile Solids
Chlorophyll a	E-Coli or enterococci
Dissolved Oxygen	Macroinvertebrates
pH	Basic Habitat information
Water Temperature	Color
Turbidity	

The nutrient parameters are important to include in the project because of the relationship between loadings these substances into the Lake and the accelerated aging of the Lake. These are the key pollutants of concern in terms of degradation of the Lake. The other parameters have been selected because they are indicators of chemical water quality. The parameters to be monitored as part of this project are comparable to the parameters monitored for during the time period 2006–2007.

Study Boundaries - The geographic scope of this project encompasses John-Craft Lake and its tributaries. Sampling locations will be shown in the QAPP to be developed for the planned water monitoring work. It is anticipated that approximately 15 sampling locations will be included as part of this project.

The temporal boundaries for the study are the time period April (depending on spring thaw) - October. The spring season needs to be included because non-point source loadings are expected to occur in the spring, soon after the snow and ice melt and when rains often occur. Late summer and fall seasons should be included because stresses on the Lake are expected to be the most severe after a hot summer, with less rain, and after significant recreational use of the Lake during the summer months.

Decision Rule - Water quality data collected as part of this project will be compared with monitoring data from equivalent locations collected during the time period 2006–2007. If the data shows statistically significant deterioration in water quality, the Tribe will accelerate efforts to work with governmental entities and NGOs in the watershed to identify the most significant sources of pollution and to plan initiatives to reduce pollutant loadings.

In addition, the new data collected will be compared to relevant EPA water quality criteria to assess and/or characterize the conditions of water quality. If that data shows that water quality is not meeting numeric criteria for nutrient or chemical parameters, the Tribe will accelerate efforts to work with governmental entities and NGOs in the watershed to identify the most significant sources of pollution and to plan initiatives to reduce pollutant loadings.

Decision Errors - Decision errors include false positives and false negatives. A false positive is deciding to take an action that's really not needed. This can result in "false alarms" and unnecessary expenditures. A false negative is deciding not to take an action that really should be taken. False negatives could result in an environmental problem or public health issue, if not addressed.

The quality control systems built into the sampling and analysis program will be described in the QAPP, and should address the most significant potential errors that could be encountered. It is expected that there will be quality controls on approximately 10 percent of the samples to be collected and analyzed.

Design for Obtaining Data - A detailed sampling and analysis plan will be described in the QAPP to be developed for the planned water monitoring work.

DQO's for _____ Tribe's

CWA Section 106 Program

Problem Statement

Locate and identify water resources within the tribal jurisdictional boundaries.

Goals

Establish a water resource inventory for the _____ Tribe to include both surface and ground water.

Identify Information Inputs

Information will be gathered from various agencies and public records. Data will include but not be limited to maps, electronic geographical data, state and local agency reports and records, photographs, aerial photographs, LIDAR information, and data from national organizations and agencies.

Define Study Boundaries

The inventory boundaries will include the entire tribal jurisdictional area of the _____ Tribe. This will include _____ counties in (Your State). Three HUC 10 watershed areas cross the area. The target population will be the _____ tribal members and the surrounding community members.

Develop Analytic Approach

The water sources within tribal boundaries will be determined. Public access information will be collected and stored digitally by the tribal personnel. Data not in digital format will be converted to such format, where possible, with storage of the original data with the office of Environmental Health and Engineering.

Specify Performance and Acceptance Criteria

Verification of data will be with legal descriptions, historical data, GPS information, and other acceptable methods of conformation. The information will be mapped and verified using GPS technology when possible or other official records from other agencies. Data will be periodically verified.

Develop Plan for Obtaining Data

Mapping software will be used to view and map the water resources. Data will be gathered from federal, state and local agencies where possible. Other data sources may include private or commercial entities. Public records and legal information from area agencies may also be used.

Problem Statement

Determine surface water conditions.

Goals

Establish baseline data for water quality parameters.

Identify Information Inputs

Public information from national, state and local agencies will be used where possible on sites not being monitored by the tribe at this time. Public domain data from databases will be obtained where applicable. Data gathered by tribal personnel through monitoring and testing.

Define Study Boundaries

The inventory boundaries will include the entire tribal jurisdictional area of the _____ Tribe. This will include _____ counties in (Your State). Three HUC 10 watershed areas cross the area. The target population will be the _____ tribal members and the surrounding community members.

Develop Analytic Approach

Initial parameters will be basic pH, dissolved oxygen, turbidity, specific conductance, temperature, and total dissolved solids. Auxiliary parameters will include alkalinity, hardness, nitrates, ortho-phosphates, and basic environmental characteristics.

Specify Performance and Acceptance Criteria

State and local designated uses will be used to determine criteria to parameter limits. National drinking water maximum contamination levels will be used to determine parameter limits where applicable. All data will be collected according to an approved USEPA QAPP. Data from other sources will be required to submit SOP and QAPP information to insure quality Data.

Develop Plan for Obtaining Data

In order to determine baseline conditions water bodies must be monitored for long periods of time to include changing conditions. Monthly monitoring for three to ten years may allow enough information to be gathered in order to determine baseline information and trends to eventually be used for water quality standard development. Water bodies are so diverse that monthly monitoring allows a snapshot of the conditions at that time and place. It takes many of these snapshots to determine baseline information and determine trend information. Therefore the long monitoring time frames.

Problem Statement

Determine groundwater conditions.

Goals

Establish baseline data for water quality parameters.

Identify Information Inputs

Public information from national, state and local agencies will be used where possible on sites not being monitored by the tribe at this time. Public domain data from databases will be obtained where applicable. Data gathered by tribal personnel through monitoring and testing.

Define Study Boundaries

The inventory boundaries will include the entire tribal jurisdictional area of the _____ Tribe. This will include _____ counties in (Your State). Three HUC 10 watershed areas cross the area. The target population will be _____ tribal members and the surrounding community members.

Develop Analytic Approach

Initial parameters will be the following: pH, chloride, turbidity, specific conductance, sulfate, total dissolved solids, total alkalinity, total hardness, fluoride, and nitrite and nitrate, iron, manganese, arsenic, and coliforms. Auxiliary parameters may include VOCs, total sodium, total barium, total beryllium, total cadmium, total chromium, total thallium, total nickel, total antimony, total selenium, total mercury, well depth, well drawdown and recovery time.

Specify Performance and Acceptance Criteria

State and local drinking water standards will be used to determine water quality. National drinking water maximum contamination levels will be used to determine parameter limits where applicable. All data will be collected according to an approved USEPA QAPP. Data from other sources will be required to submit SOP and QAPP information to insure quality Data.

Develop Plan for Obtaining Data

In order to determine baseline conditions groundwater sources must be monitored for periods of time that include different weather conditions, usage rates and depths. Initial monitoring for ground water sources may allow enough information to be gathered in order to determine quality of the source and parameters of concern. Groundwater sources are generally recommended to have testing performed at least once every three years. The testing could be performed in phases or sections to allow each source to be tested. Initial monitoring provides a preliminary condition at that time and place. Multiple events can be used to determine possible contaminant information and determine trend information. Well records and other monitoring sources may be used where possible to gather additional information.