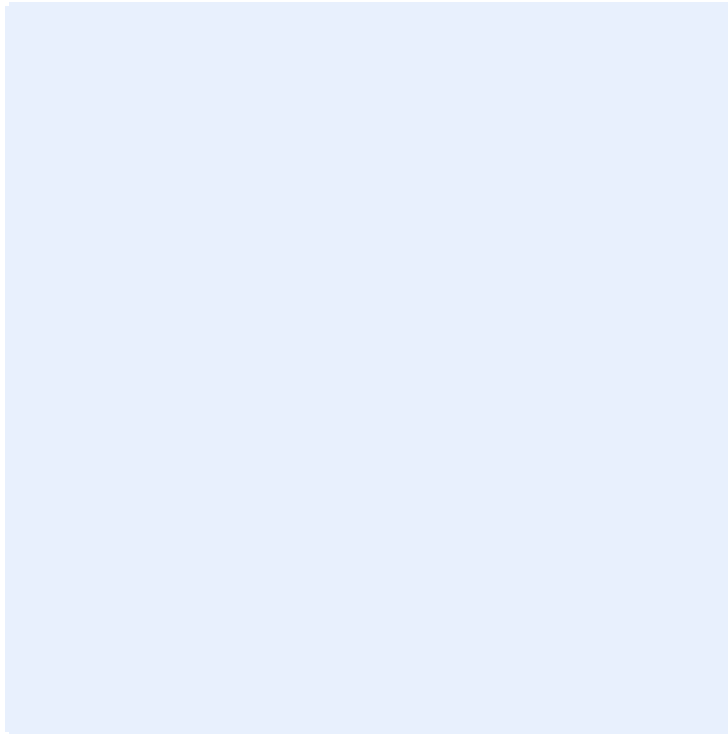


Watershed Assessment Template



HUC Code(s) and Names:

-
-
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Date:

Note to the user: This template is designed to streamline preparation of a watershed assessment by providing a model format to follow. Each section has a text box with a short description of the contents that is needed for the respective part of the assessment. The size of the text boxes are expandable and are not indicative of how much content is needed for each section. **Follow the sharepoint link in the bulletin for the Word Doc version of this template.** Use of this template is not required.

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Executive Summary

What is the purpose of this plan, what are the goals, what other plans or previous research is referenced, who are the partners?

1. Background and Purpose

Discuss the purpose of the watershed assessment. Clearly identify the specific water quality resource concerns of the watershed, what the water quality objectives will be and to what extent the problem can be addressed through NRCS technical and financial assistance.

Include general information about the watershed size and location, history, towns and or population, Native American influences, agricultural landscape, resources offered in the watershed. Include any water quality impairments and constituents of concern.

1.1 Objectives and Strategies

List objectives and strategies that will be implemented in accordance with this plan. Examples of objectives: Reduce Sediment(s) from entering the waterways by implementing grassed waterways, pasture management and proper manure applications. Also include strategies and objectives from partners.

1.2 Partners Capabilities

An assessment of partner's abilities to help NRCS reach the watershed goals

2. Watershed Characterization

An overview of the watershed and identification of resource concerns. This overview should be information that is useful for the water quality assessment and not just a laundry list of collected information.

Location of watershed within the drainage network.

Landscape characteristics of the MLRA or ecoregion in which the watershed resides. Provide an overview of landscape conditions within which the watershed resides.

Climate. Provide overview that gives context for land cover/uses and a basis for the hydrologic conditions described in section III.

Topography.

Geology, geomorphology, and soils and soil interpretations.

Drainage network (USGS National Hydrographic Dataset link, GIS-derived flow network, National Wetland Inventory, tour and any visual assessments of the watershed).

Land cover and land use.

Socioeconomic conditions. Provide information about household income, employment, ect.

Other relevant information to characterize the watershed.

2.1 Location of watershed within the drainage network.

Include the Hydrologic Unit Code(s) (HUC) in the assessment area and information about the subwatersheds. Include information about the basin stream network and drainage. Include agricultural conditions across the watersheds. Figures such as a GIS-derived map for the watershed are also highly recommended.

2.2 Ecoregions and Landscape Characteristics

Describe landscape characteristics of the MLRA or ecoregion in which the watershed resides. Provide an overview of landscape conditions within which the watershed resides. GIS-derived maps are again highly recommended

2.3 Climate

Provide overview that gives context for land cover/uses and a basis for the hydrologic conditions described in section 3 Figures recommended include precipitation and temperature graphs and maps showing land cover.

2.4 Geology, geomorphology, and soils

Briefly describe the geomorphic history which affects the landscape in and around the watershed area. Include topographical characteristics, underlying geological properties and the interaction with the hydrologic conditions. Figures should include digital elevation models, topographic maps, etc..

2.5 Soil Characteristics

Discuss factors such as erodibility, hydrological group, slope, and hydric rating. It's recommended to include

tables showing soil properties for each major soil type in the watershed (ex: Description, Drainage Class, Saturated hydraulic, conductivity, Surface runoff potential, Usage) figures of soil maps of the watershed are also recommended.

2.5.1 Hydrologic Soil Group

Describe the hydrologic soil groups in the watershed based on soil infiltration and transmission rate or 'permeability'. Hydrologic soil group along with land use, management practices, and hydrologic condition determine a soil's 'runoff curve number'. Runoff curve numbers are used to estimate direct soil runoff from rainfall. Maps and figures are recommended.

2.5.2 Soil Erodibility

Describe the erodibility of soils in the watershed(s). Apply the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons/acre/year. Figures and maps of soil erodibility in the watershed are recommended.

2.6 Land Cover/Land Use

Describe the land uses in the watershed(s) which are typically broken out into six categories: agriculture, grassland, forest, wetland, open water, and urban/developed (industrial, transportation, residential). Added focus should be on agricultural use by utilizing cropland data from USDA National Agriculture Statistics Service (NASS). Tables of land use categories with acreage and percentage of watershed(s) as well as maps of the watershed showing land use and agriculture type (pasture/cropland) are recommended.

2.7 Socioeconomic Conditions

Describe population in the watershed, nearby towns or surrounding area. Include Census information such as average household income, occupations, age, education, construction/growth. Show tables or graphs of trends or data.

3. Hydrology and Water Quality Characterization

Fully describe the hydrology (including irrigation) and the water quality conditions within the watershed. The analysis should demonstrate the transport mechanisms for pollutants of concern, and the spatial and temporal characteristics of transport.

Available data and resources.

1. Discuss available resources of information compiled by others.
2. Gauging stations in or near the watershed.

3. *Surface and groundwater water quality sampling sites.*
4. *Biological monitoring.*
5. *NRCS and partner sampling. During the 1-year assessment period, could ad hoc water quality monitoring be undertaken?*

3.1 Hydrology

Runoff and streamflow hydrology, and irrigation. Using streamflow, irrigation and climate data and other watershed information, synthesize hydrological conditions of the watershed.

1. *Methods used in analysis.*
2. *Runoff and streamflow generation processes. What generates runoff? Irrigation conveyances and systems.*
3. *Precipitation-runoff budget. How much precipitation and irrigation returns as stream runoff? How much goes to deep groundwater? Evapotranspiration?*
4. *Spatial distribution of runoff. Do certain areas of the watershed generate more runoff, due to soils, geology, topography, or land uses?*
5. *Temporal distribution of streamflow—monthly, runoff events, baseflows.*

3.2 Water Quality

Provide information water quality concerns such as nutrient loading, dissolved oxygen.

Water quality conditions in the watershed.

1. *What are the general concentrations and loads of major constituents and how do they vary with season, weather, land use, etc.?*
2. *Sediment (if a watershed resource concern).*
3. *Nutrients—N and P (if a watershed resource concern).*
4. *Pathogens (if watershed resource concerns).*
5. *Other (pesticides, petroleum products, selenium, etc.).*

3.3 Point Sources

Include any information on point sources in the watershed(s). Information can come from the state water quality agency or the US Environmental Protection Agency (EPA).

3.4 Nonpoint Sources

Include information about nonpoint sources in the watershed(s). A nonpoint source cannot be traced back to a point of discharge. Nonpoint sources in the watershed include:

- *Animal waste*
- *Erosion/Runoff from agricultural lands*

- *Fertilizer Application*
- *Erosion from stream banks and construction sites*
- *Failing Septic Systems*
- *Tile drainage*
- *Runoff from lawns and impervious surfaces*

3.5 Precipitation and Runoff

Include information from gauging stations and PLET or STEPL models.

3.6 Water Quality Monitoring

Include any water quality monitoring results in the watershed. For example, water sampling and monitoring results (N, P levels, TSS, temperature, median, average), fish and macroinvertebrate studies. Include tables of water quality and figures showing a map of the watershed and monitoring locations.

3.7 Impaired Waters (NWQI)

Summarize the state of impairment in the watershed. TMDL studies from the state environmental department or the EPA can and should be referenced. Include impairment map of watershed if available. For Source Water projects the watershed does not have to be on the 303(d) list.

4. Resource Analysis / Source Assessment

In this section, provide documentation and comparisons between existing and potential conditions. Include a preliminary analysis of what could be accomplished. The types of conservation practices and extent needed to assist in meeting the water quality objectives. The potential tools that can be used to analyze the resource problems identified, and results.

4.1 Causes of Resource Concerns

What are the causes of the resource concerns specific to water quality? Be sure to include agricultural activities. This section can either summarize or reference to section 3 if water quality resource concerns have been discussed.

4.2 Tools and Analysis on Resource Concerns

What are potential tools that will be used to model or analyze the type of resource problems?

- Preliminary analysis to address the problem with available tools. Hydrologic modeling, GIS analyses, or both used to identify acres with greatest need for treatment (critical acres) based on pollutants of concern and the numbers of acres of conservation to achieve goals. Depending upon the complexity of the watershed, several methods could be used:*

1. *Simple spreadsheet mass balance models for nutrients.*
 1. *Nutrient inputs based upon areas (acres) for given land cover and use.*
 2. *Nutrient outputs.*
 3. *Possible conservation measures. Use the mass balance spreadsheet to put acres of new conservation in and see results in water quality load reductions.*
2. *Simple spreadsheet sediment delivery budget.*
 4. *Identifies the sediment sources in the watershed.*
 5. *Estimate quantity, sediment delivery ratio, to estimate total sediment.*
3. *Load reduction spreadsheets for best management practices.*
4. *Watershed-based modeling of potential sources and treatment effects.*
5. *Grid-based GIS modeling.*
6. *GIS vulnerability analysis – simple GIS analyses using GIS coverages of land use, management, physical attributes, etc., to assist in the identification of critical areas within the watershed.*

Other analyses, including watershed and stream surveys, to identify areas needing treatment.

4.3 Analysis of Treatment and Opportunities

Analysis of treatment and opportunities

1. *Current level of treatment in the watershed, practices already in place and any other forms of voluntary conservation.*
2. *An analysis of producers available in the watershed to participate in the initiative and their likely willingness to participate.*
3. *An assessment of how critical area treatment is balanced with participation to achieve the most effective prioritization of implementation.*
4. *A set of preferred practices, locations, responsible parties, costs, and timelines should be described based on the above analyses.*

5. Implementation Goals

5.1 Watershed Goals and Management Objectives

Use modeling, current and baseline practices and pollutant loads, as a guide for developing realistic reduction goals for the watershed. Use tables and figures to show load reduction estimates. Describe how estimated load reductions will achieve the watershed goals.

5.1.1 Practice List and Descriptions

List and describe practices that will be used in the watershed.

5.2 Estimated Load Reduction

Show the estimated load reductions for each practice implemented.

5.2.1 Proposed Total Load with Proposed Practices

Show the total load reductions in the watershed per practice.

5.3 NEPA Concerns and Compliance

The National Environmental Policy Act (NEPA) was signed into law in 1970. The law requires federal agencies to assess the environmental impacts of their proposed actions prior to making decisions. This law also applies to watershed planning activities. As part of the planning process the NRCS is required to evaluate the individual and cumulative effects of proposed actions. Any project that has significant environmental impacts must be evaluated with an Environmental Assessment (EA) or Environmental Impact Statement (EIS) unless the activities are eligible under a categorical exclusion or already covered by an existing EA or EIS.

There are many NRCS conservation practices and activities that fall under a categorical exclusion. A categorical exclusion is a category of actions that do not normally create a significant individual or cumulative effects on the human environment.

Document any NEPA concerns and refer to the CPA-52 example on the NWQI SharePoint for areawide planning if any planned practices do not fall under a categorical exclusion.

6. Budget

Provide an estimated budget based on estimated practices, quantity of the practice cost per unit and the total for each practice.

7. Measuring Plan Progress, Success and Follow Up

This section should cover what improvement is expected for the watershed, how long the project would expect to last, how progress towards goals will be measured and reached. Also provide a plan for outreach.

7.1 Water Quality Monitoring

Describe instream water quality monitoring that will occur in the watershed to measure success. Mention any partners that will be responsible for monitoring. Your State Water Quality Agency will be a great partner to be in collaboration with as a rule of thumb, but they may also have monitoring resources and plans established to incorporate in this plan.

7.2 Tracking Plan Progress and Success

Describe how progress in the watershed will be evaluated (annually for example). Break down goals to be measured accordingly.

7.3 Progress Evaluation

Provide a table of monitoring and modeling results as well as indicators of improvement. A table should show the unit of measure, the current levels, and the overall metrics to attain by the last year.

Example Table of Watershed Goals

Example Goals	Metric	Current	20XX
Total Phosphorus levels at monitoring location	mg/L		
Nitrogen (TOTAL) levels at monitoring location	mg/L		
Total Suspended Solids at monitoring location	mg/L		
Ortho Phosphate levels at monitoring location	mg/L		
STEPL Modeling Decrease in Phosphorus Load	lb/yr.		
STEPL Modeling Decrease in Sediment Eff	t/yr.		
STEPL Modeling Decrease in Nitrogen Load	lb/yr.		
Acres in cover crops	acres		
Prescribed Grazing acres	acres		
Nutrient Management Plans (CNMPs)	each		
Alternate Water Supply installations or Cattle Ramps	each		5
Manure handling or storage system installation	each		
Streambank Protection System installation	each		

Fish kills	occurrence		0
Critical Source Area land owners are educated			
River or stream off of the Impaired Waters list			

7.4 Outreach Strategy Plan

An outreach plan should show a multi-year strategy to reach all stakeholders, influencers, and decision makers. Education and demonstrations should be focused on preferred farming practices in the watershed, with special emphasis on critical acres.

Example Outreach Strategy

Year 1

- *Devise contact lists of landowners, residents, influencers and leadership.*
- *Conduct open meetings and provide information on land practices*
- *Focus on the importance of cover crops*
- *Identify critical areas of focus*
- *Conduct evaluations on the success of education and outreach programs*
- *Present to township board(s)*

Years 2-3

- *Meet with farm leaders on an ongoing basis*
- *Increase awareness of cost-share and technical assistance opportunities*
- *Educate and provide grant and funding opportunities*
- *Conduct educational programs on conservation practices*
- *Meet with Ag service and product representatives*
- *Provide public information about the watershed initiative*

Years 3-10

- *Use early adapter project locations for education*
- *Update modeling programs to account for new land changes*
- *Ensure awareness of all critical areas*
- *Conduct group meetings with local producers and landowners*
- *Form a local watershed group to ensure continual communication*
- *Celebrate project successes*
- *Hold annual meetings*

8. Literature Cited

Reference any previous studies and reports in the watershed. Utilize partnering agencies for reference material.

9. Glossary and Acronyms

Acronym	Definition
ACEP	Agricultural Conservation Easement Program
BMP	Best Management Practices
CAFO	Concentrated Animal Feeding Operation
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
CTA	Conservation Technical Assistance
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
NASS	National Agriculture Statistics Service
NEPA	National Environmental Policy Act
NRCS	Natural Resource Conservation Service
NWQI	National Water Quality Initiative
RUSLE	Revised Universal Soil Loss Equation
STEPL	Spreadsheet Tool for Estimating Pollutant Loads
TMDL	Total Maximum Daily Load
USDA	US Department of Agriculture
USEPA	United States Environmental Protection Agency