Assessing Urban Watersheds in Iowa

A Technical Resource Guide For Communities and Consultants

URBAN CONSERVATION PROGRAM

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

cleanwater IOWA
CLEANWATERIOWA.ORG

Created 2021

Purpose of This Guide

Conducting a watershed assessment can help communities of any size identify water quality, water conveyance, and flooding issues in order to prioritize potential solutions.

This guide has been created as a checklist of items to complete a watershed assessment, including assessing site and watershed conditions, understanding hydrologic conditions, and evaluating pollutants of concern. Collection of this background information will then pave the way for identifying solutions and, ultimately, developing an action plan.

The online version of this guide includes clickable links throughout the sections. The URLs for each resource are also located in the Watershed Assessment Resources at the end of this guide.

What is a Watershed?

A watershed is the area of land where rain collects at high points and flows downhill to supply bodies of water like lakes, rivers, and streams. Everyone lives within a watershed, and watersheds can cover any size of land. The health of the watershed depends on what is happening on the land uphill from the water body (impervious surfaces, agriculture, natural forest, etc.). Any pollutants accumulating uphill will ultimately end up in the nearest water body when it rains.

How Does a Community Identify its Watershed(s)?

A community can lie in one or more watersheds. A watershed can be as large as the Mississippi River Watershed, which encompasses several states, or as small as a city block. They are often classified by a Hydrologic Unit Code, or HUC, number (the smaller the number=the larger the watershed). Each watershed has its own unique features that determine how water moves through it and how the surrounding land responds. You can identify which watershed(s) your community is part of by visiting the United States Geological Survey (USGS) Watershed Locator site.

This Guide is Brought to You By:

URBAN CONSERVATION PROGRAM

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

cleanwater IOWA
CLEANWATERIOWA.ORG

Cover Photo: The Bee Branch Creek Restoration in Dubuque involved replacing almost one mile of storm sewer with a creek and floodplain that resembles the one that traversed the area approximately 100 years ago. This "daylighting" of the buried Bee Branch Creek allows stormwater from flash floods to safely move through the area without flooding adjacent properties.

Table of Contents

What are the Issues Facing Your Local Waterbodies?

Clean water is important for human and ecosystem health. However, many human activities impact our watersheds at a faster rate than the watersheds can naturally recover. This is why water quality improvement projects are so important to maintaining the health of our water. Common water quality issues in Iowa are:

Soil Loss: Erosion from wind and rain can carry soil particles downstream— stripping away topsoil, polluting waterways that negatively impact wildlife, and sedimentation leading to flooding issues.

Bacteria: Such as *E. coli,* which can be harmful to animals and humans if ingested.

Excess nutrients: Nitrogen and phosphorus are both naturally occurring nutrients essential for plant growth, but in excess can cause harmful algae blooms and negatively affect aquatic life.

Pesticides and Metals: When present at high levels, these can harm plants/wildlife and negatively affect the chemical properties of a water body.

Urban Runoff: Impervious surfaces collect pollutants such as motor oil, paint, lawn fertilizer, gas, and other chemicals and carry them directly to the nearest body of water during a rain event.

Flooding: Impervious surfaces don't allow stormwater to infiltrate into the ground, which can increase flooding potential and cause property damage and erosion problems.

Water Temperature: Sharp increases in temperature is caused by water warming on impervious surfaces and lack of tree canopy cover can affect plant and animal life and cause undesirable chemical reactions within the water body.

The following Iowa DNR databases can help you discover existing issues within your watershed:

Iowa DNR Designated Uses Assessed as Fully Supported

Iowa DNR 303(d) List of Impaired Waters

EPA How's My Waterway online tool

How Should This Assessment be Used to Determine Priority Treatment Areas?

The information that you gather will be extensive and needs to be carefully analyzed to determine the best steps to take to improve the health of your watershed. You will need to consider where the most feasible locations for potential practices can be done, the amount of funding that you have or plan to receive, a timeline for design and construction of projects, and what your community's biggest needs are. Additionally, you will need to consider how the public is going to accept any major changes to land use that may be part of a project. You will need to have a plan in place for maintaining any future projects to ensure that they will continue to effectively treat stormwater. Your community may also have other unique situations that will determine if projects are possible, and you should explore all alternatives.

Who are Potential Watershed Partners?

It is important that individuals, private industry, communities, and local government agencies come together to prioritize watershed health. When planning a watershed improvement project, sharing resources, staff, equipment, and experience among stakeholders can greatly increase the chance of your project being successful. There is also the possibility of funding assistance for your projects. You can contact the groups below to find representatives for government agencies and local organizations in your region.

Government Agencies:

- Iowa Department of Agriculture and Land Stewardship Urban Conservationists and Regional Basin Coordinators
- Natural Resources Conservation Service (NRCS)
- Soil and Water Conservation Districts (SWCDs)
- Watershed Management Authorities (WMAs)
- Iowa Department of Natural Resources Basin Coordinators
- Resource Conservation and Development (RC&Ds):

Iowa Heartland	Northeast Iowa	Southern Iowa
Golden Hills	Prairie Rivers	Limestone Bluffs
Iowa Valley	Pathfinders	

- County Conservation Boards
- Iowa Economic Development Authority

Key Local Interest Groups, Businesses, and Individuals:

- Iowa Soybean Association
- Agriculture's Clean Water Alliance
- Trees Forever
- Iowa Flood Center
- Iowa Farm Bureau
- Iowa Corn
- Iowa State University Extension and Outreach
- Iowa Community Foundations
- Iowa Association of Councils of Governments

Don't forget to include citizens living in the watershed in the process, including urban and rural residents, city officials, and county Boards of Supervisors. They can identify lesser-known water issues in the community and possibly volunteer to install stormwater Best Management Practices (BMPs) on their properties. You can even form one or more advisory groups made up of stormwater management professionals, elected representatives, and other community members to ensure that all voices are heard.

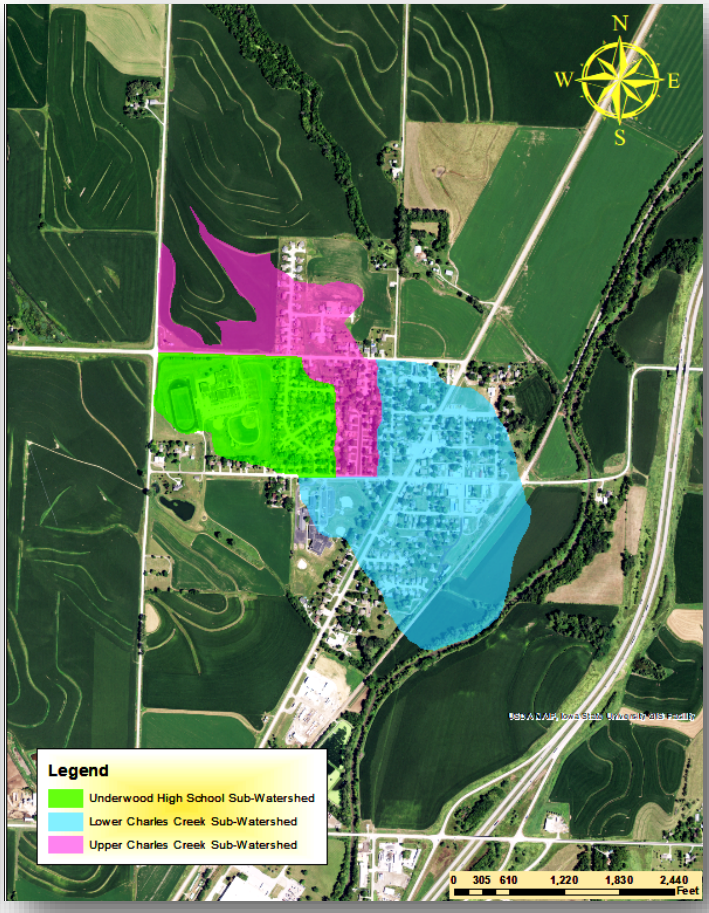
Watershed Inventory, Analysis, and Setting Goals

The following pages will assist communities in collecting and analyzing the data needed for a complete watershed assessment. Including a thorough summary of your region's watershed health will help you create a tangible plan of action for moving forward with potential projects.

Physical Characteristics of the Watershed/Waterbody and its Location

Where is your watershed, and how many acres does it cover? Which communities, major roads, landmarks, etc. lie within the watershed? What major water bodies does the watershed drain into? How many people live within the watershed?

A community can lie in one large watershed or multiple watersheds. There may also be smaller sub-watersheds within a larger watershed. Determining where the stormwater flows naturally from higher points of land to a water body is the first step in identifying where possible sources of pollution lie, as well as determining the best area for a BMP to capture and treat flows. **It is recommended to evaluate each sub-watershed individually, rather than evaluating the entire area as a whole.** It will be easier for you and planners to evaluate each sub-watershed individually to designate the areas of most concern. You can visit the USGS Watershed Locator to discover your watershed and sub-watershed boundaries.



Left: Map of delineated Charles Creek Watershed. Right: Delineated sub-watersheds (Underwood School, Lower Charles Creek and Upper Charles Creek)

Watershed Inventory, Analysis, and Setting Goals, cont.

Hydrology

Hydrology is the study of the earth's water in relation to its movement on land. When doing a watershed assessment, you will be focusing on areas of hydrology that identify stormwater runoff potential and flooding concerns within your watershed. Some things to consider are:

- Rainfall duration (hours), depth (inches), intensity (inches per hour), and frequency (% chance of storm happening in a given year)
- Drainage area size (acres)
- How water absorbs into the soil and through to the water table (groundwater recharge)
- Slopes of terrain and stream channel(s) within a drainage area
- Water storage potential (floodplains, ponds, wetlands, reservoirs, channels, etc.)

Gathering this information can give you a comprehensive look at where and how water moves within your watershed and identify primary areas of concern. More detailed information is provided in upcoming pages of this guide.

What are Your Community's Specific Goals for Addressing Watershed Concerns?

What are your main issues of concern for your watershed? For example, is your community experiencing frequent significant flooding events that damage property or the integrity of the water body? Have you observed fish kills in your local lake? Are you expecting significant growth/development in your area, leading to increased watershed degradation and erosion issues? Is the project complementing other best management practices (BMPs) already installed as part of a larger stormwater improvement goal? Identifying which issues you would most like to tackle will help determine where you should focus water quality improvement efforts, along with which water quality improvement projects will be the most beneficial to your watershed.

Below are examples of common watershed issues. Your community may have other unique points of concern that can be addressed through this assessment.

- Reducing pollution
- Reducing erosion and sedimentation problems
- Improving infiltration
- Controlling flooding
- Addressing a designated water quality impairment
- Protecting infrastructure and/or property
- Enhancing aesthetics
- Creating a model for future public support of watershed improvement projects
- Controlling flow

Watershed Inventory, Analysis, and Setting Goals, cont.

Land Use

What percentage of your watershed is commercial, residential, industrial, green space, or agricultural? How much of the area of the watershed is impervious (meaning, how much land is covered by surfaces like roads, buildings, and compacted soil that prevent stormwater from infiltrating into the soil)?

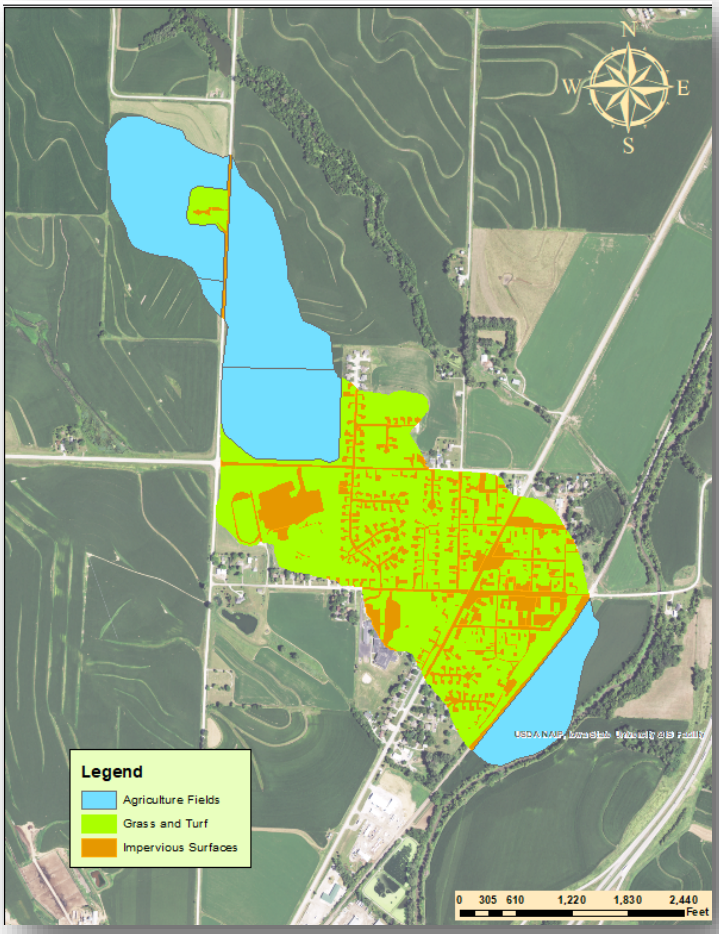


Image: Types of surfaces in the Charles Creek Watershed. The accompanying table gives the exact acreage amounts.

Table 1 - Charles Creek Watershed Breakdown			
Turf & Grass Acres	**Impervious Acres**	**Agricultural Acres**	**Total Acres**
99	71	133	303

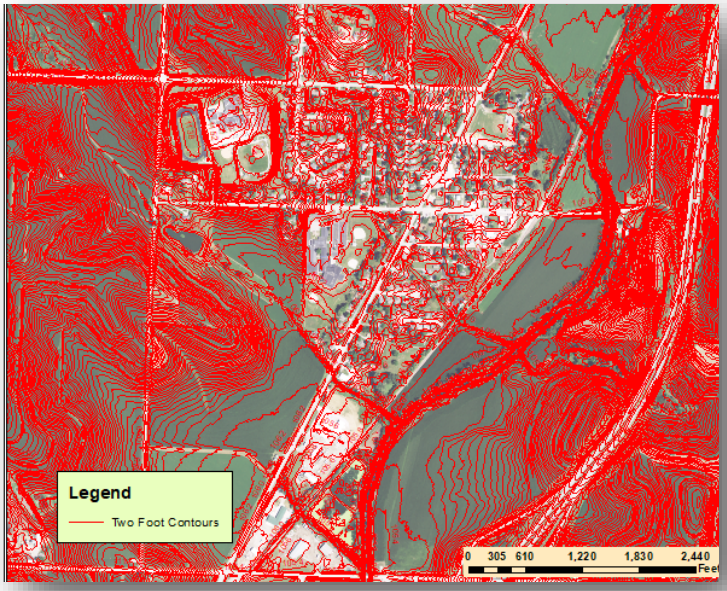
Unique Features

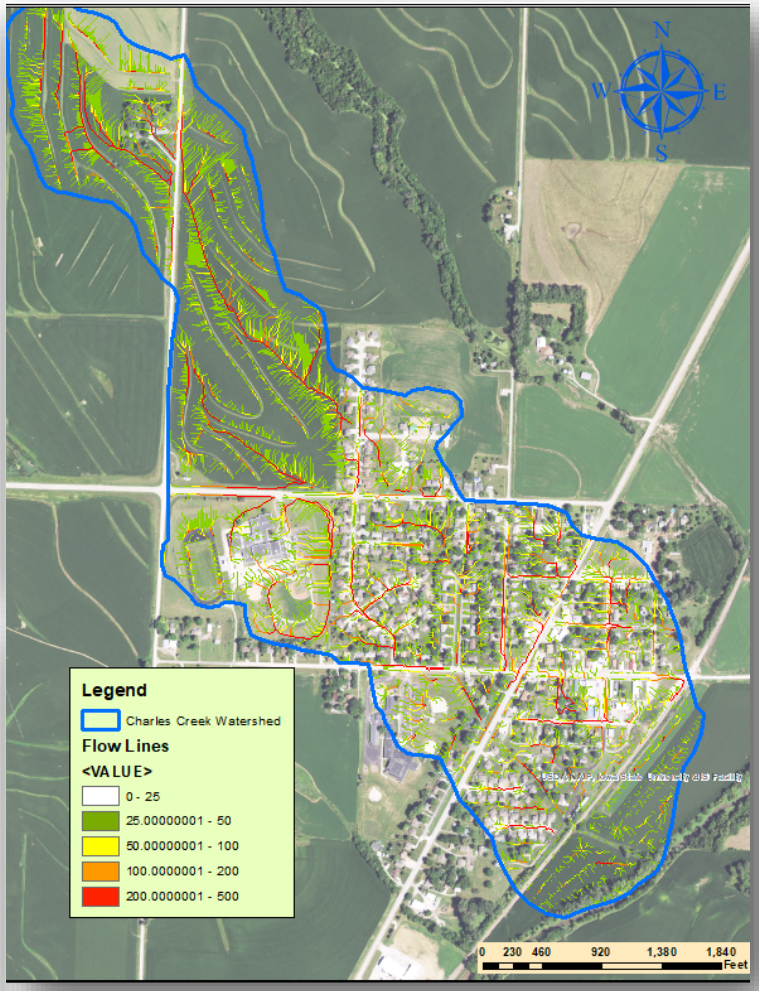
Are there any unique demographic, topographic, hydrologic, or other characteristics in your planning area that need to be considered when assessing a watershed and choosing a BMP? For example, does your soil consist of karst *(a topography characterized by underground drainage systems with sinkholes and caves*) or loess *(a loosely compacted yellowish-gray deposit of windblown sediment of which extensive deposits occur)* that may have issues draining or holding water? Are there areas of significant natural or cultural significance that need to be protected (for example, Native American burial grounds, historic buildings, remnant prairies, etc.)?

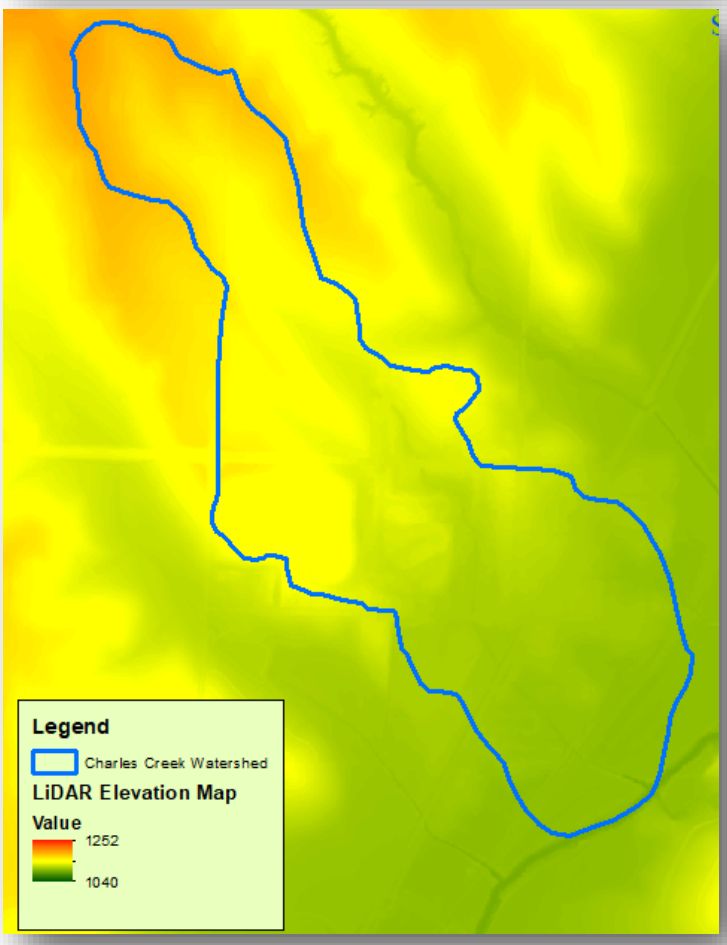
Watershed Inventory, Analysis, and Setting Goals, cont.

Topography and Drainage

Where are the high and low elevation points in your watershed? This will show you where the stormwater naturally flows into the nearest body of water, along with polluted areas the stormwater might pass through on its way to a water body. You can find this information on the Iowa DNR's website or use GIS software to find the contours of your watershed using different mapping methods.







Images: Contour lines (top left), LIDAR imagery (bottom left), and flow lines (right) within the Charles Creek Watershed, indicating elevation levels and the direction that water commonly drains within the watershed (green flows into yellow and red). This information can let you know where water is concentrating, where erosion may be occurring, and potential areas that flood during storm events.

Watershed Inventory, Analysis, and Setting Goals, cont.

Existing Urban Practices Within the Watershed

Does the priority watershed already have existing BMPs installed? If so, where are they located, and what are they designed to treat?

Urban Water Quality BMPs include (but are not limited to):

Bioswales	Permeable Pavers	Stormwater Wetlands
Bioretention Cells	Green Roofs	Soil Quality Restoration
Rain Gardens/Native Plants	Wet Ponds	Tree Boxes and Trenches

What are Contributing Agricultural Impacts to the Watershed?

Agricultural practices upstream from an urban area can impact the quality and quantity of water coming downstream. For example, soil loss from upstream erosion can settle in urban areas and cause gully erosion, or livestock waste can contribute to excess nutrients and algae blooms. Many farmers in Iowa have implemented stormwater improvement projects specifically designed for rural areas. These practices should be taken into consideration when planning any development downstream, as they will affect any final project outcomes.

- Wetlands
- Saturated Buffers
- Bioreactors
- Cover Crops
- Prairie Strips
- Terraces
- Grassed Waterways
- Conservation Tillage
- Grazing
- Riparian Buffers
- Ponds
- Water and Sediment Control Basins

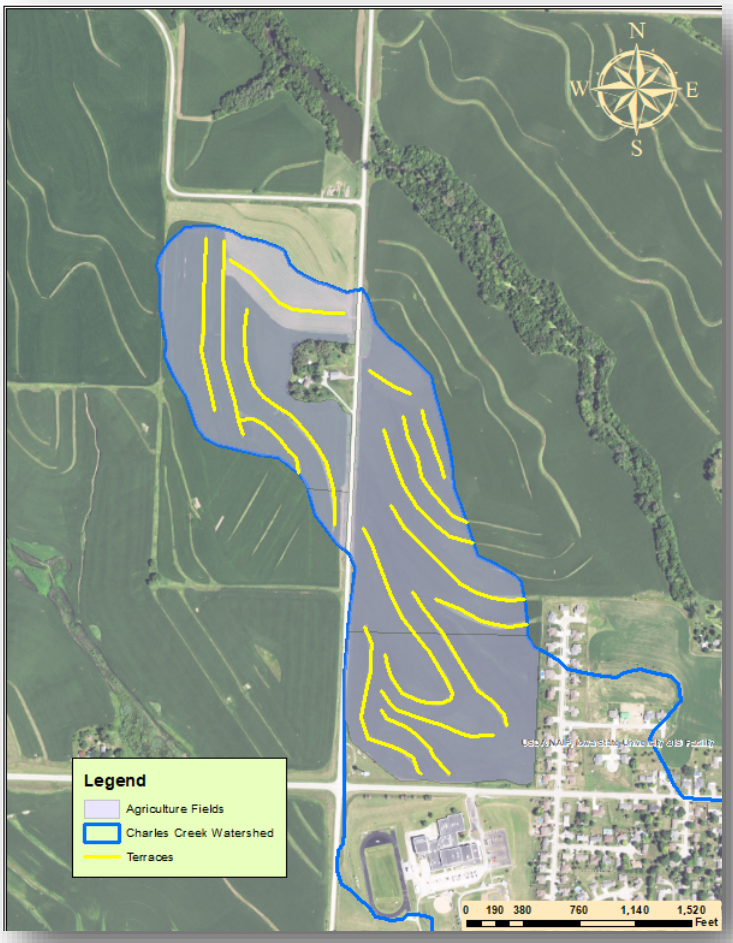


Image: Map of agricultural terraces within the Charles Creek Watershed.

Future Growth Areas/Future Infrastructure Projects

Are there any plans to add or change major infrastructure within the watershed in the future? (such as new developments, road projects, or stormwater infrastructure plans)? If so, where are the proposed locations of the changes? Are there existing or future land use policies/ordinances or zoning changes?

Watershed Inventory, Analysis, and Setting Goals, cont.

Soils

What kinds of soils do you have in your watershed? The USDA Natural Resource Conservation Service (NRCS) classifies soils as Groups A, B, C, or D soils, based on permeability (ability to absorb and infiltrate stormwater):

Group A: Soils having low runoff potential and a high infiltration rate, even when thoroughly wetted, consisting chiefly of deep, well- to excessively well-drained sands or gravels.

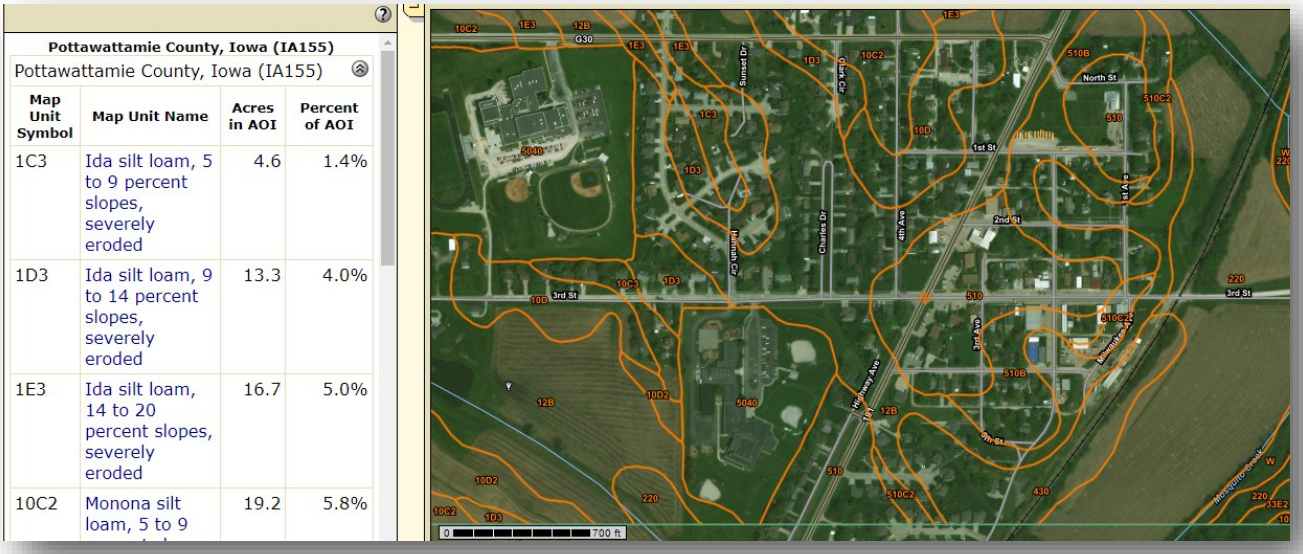
Group B: Soils having a moderate infiltration rate when thoroughly wetted, consisting chiefly of moderately deep to deep, moderately-well to well-drained soils, with moderately- fine to moderately-coarse texture.

Group C: Soils having a slow infiltration rate when thoroughly wetted, consisting chiefly of soils with a layer that impedes downward movement of water or soils with moderately-fine to fine texture.

Group D: Soils having high runoff potential and a very slow infiltration rate when thoroughly wetted, consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. *-Taken from the Iowa Stormwater Management Manual*

Using specialized mapping, the NRCS Web Soil Survey will help you can determine the soil type within your watershed, which will aid in the design of BMPs.

Image: Soil data from the Charles Creek Watershed, taken from the NRCS Soil Survey website.



Pottawattamie County, Iowa (IA155)

Pottawattamie County, Iowa (IA155)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1C3	Ida silt loam, 5 to 9 percent slopes, severely eroded	4.6	1.4%
1D3	Ida silt loam, 9 to 14 percent slopes, severely eroded	13.3	4.0%
1E3	Ida silt loam, 14 to 20 percent slopes, severely eroded	16.7	5.0%
10C2	Monona silt loam, 5 to 9	19.2	5.8%

How can you determine if your soil is healthy? A healthy soil is rich with organic material and provides plenty of pore space between soil particles to allow for stormwater infiltration. It is likely that your watershed contains areas of healthy and unhealthy soils. Modern construction practices (roughly since the 1980s) compact soil and redistribute topsoil, creating poor soil structure and increasing runoff, so knowing when and what kind of development has taken place on the soil can help you better understand what can be done to restore its former infiltration capacity. Chapter 2 of the Iowa Rain Garden Design and Installation Guide gives instructions for tests you can perform to evaluate soil conditions on a site.

Watershed Inventory, Analysis, and Setting Goals, cont.

Sources of Pollutants

What is the expected pollutant delivery to the water body from the priority watershed? Consider point and nonpoint sources immediately near the water body, as well as upstream within the watershed. In Iowa, pollutants can come from both urban and rural sources, often within the same watershed.

Urban Impacts

Parking lots, roads, and rooftops keep runoff from entering the ground.

Fertilizers and clippings from lawns may end up in streams through runoff.

Pet waste and yard waste can accumulate and runoff into waterways.

Road salt can contribute to high chloride levels in the winter and spring.

Oils, grease, heavy metals, rubber, coolant, and other materials from cars can get carried to waterways during heavy rains.

Rural/Agricultural Impacts

Fertilizers and pesticides from fields may end up in streams through runoff.

Tilled, compacted soil does not easily absorb stormwater, causing runoff and flooding.

Livestock waste can contaminate water, and grazing near waterways can contribute to erosion.

Heavy tile use in fields can reduce the volume of water absorbing into the soil, redirecting the water straight to a stream and potentially increasing erosion and flooding downstream.

Water Quality Data

The Iowa DNR website houses water quality data on the state's water bodies. There, you can discover if your watershed is on the state's list of impaired waters based on designated uses, as well as view data on specific pollutant levels collected by volunteer water quality monitoring projects. It is helpful to know what types of pollution are going into your watershed in order to find solutions that target those specific pollutants.

Designated Uses Assessed as Fully Supported 303(d) List of Impaired Waters Volunteer Water Monitoring

The table below demonstrates an overview of the percentage of impervious area of the Upper Charles Creek watershed, in relation to various pollutant loads entering the watershed in a given year.

• **Table 2.Typical pollutant loading from stormwater runoff within the sub-watershed**

Location	Percent Imp.	Total WQv	Total CPv	TSS	TP	TKN	Total BOD	Total COD	Pb	Zn	Cu
Upper Charles Creek	31%	79,120	151,911	6,270	16.5	82.5	429	2,376	6.6	6.6	4.62

*WQv & CPv values are in cubic feet and pollution values are shown in lbs/acre-yr

Watershed Inventory, Analysis, and Setting Goals, cont.

Additional Considerations

Storm sewer infrastructure— Where are the storm sewers located in your watershed, including inlets, outfalls, and piping? Are there areas in which there is no storm sewer system, and if so, how does the stormwater travel in those areas?

Septic systems— Where are septic systems located in your watershed?

Erosion assessment– What types of erosion are happening in your watershed? Can you tell where the sediment is traveling to and/or settling in the watershed? What subsequent damage are you observing in the waterbody and in areas upstream (such as sheet, rill, or gully erosion)? Where in the watershed does the land appear to be stable?

Stream assessment– The Iowa River Restoration Toolbox is a series of best management practices developed to assist designers in stream assessment, stabilization and restoration projects in Iowa using proven techniques and an emphasis on incorporating natural materials, such as logs, stone, and live plantings.

Source Water Areas— Drinking water in its original environment, either as surface water (rivers, streams, reservoirs, lakes) or as groundwater (aquifers), before being withdrawn, treated, and distributed by a water system.

Floodplain/Floodway– How much of your watershed is in a floodplain? What does the floodplain landscape look like (residential, industrial, commercial, agricultural, undeveloped)?

Existing and Potential Ordinances/Land Use policies— Do any communities within your watershed have stormwater ordinances or land use policies in place that will affect the design of your proposed project? Are the areas for the proposed project publicly owned or privately owned? If there are any plans to build on private property, will you purchase an easement or work out an agreement with the property owner?

Social Assessment— What are economic, political, cultural, historical, and social factors that influence how citizens in your priority watershed(s) interact with the natural environment? There are many social or motivating factors that influence how citizens view natural resource problems and possible solutions. These factors may include knowledge, experiences, cultural background, peer pressure, production goals, taxes, location, and outreach methods. The concerns of the community and local citizens need to be addressed in the watershed management plan.

Watershed Inventory, Analysis, and Setting Goals, cont.

How Should our Community Collect and Analyze Data?

Collecting a variety of data allows you to see the big picture of your watershed issues and help identify where BMPs would benefit water quality. Below are suggestions for gathering data for a comprehensive assessment.

- GIS and Mapping– Today, there are endless ways to create maps using GIS data to display the specific information that you want to analyze. You may be able to access previously collected data online (such as historical aerial photos, Google Maps, Iowa State University's GIS map server, Iowa Geospatial Data, the Iowa Flood Information System, or the Iowa DNR's Web Mapping Applications).

- Drive by /walk through your watershed and make observations:
  - — Where do you see the water naturally flowing during rainy days and dry days?
  - — Where do you see areas of major erosion, or areas where there is the potential for major erosion in the future?
  - — What types of human or animal activity do you see near the water?
  - — Do you see any immediate sources of pollution leading to your waterways?
  - — If you dig a hole in the soil, what does it look and feel like, and do you see any signs of life?
  - — Do you notice any areas prone to flooding or standing water?

- Take multiple photos during the course of your assessment, documenting any issues that you see:
  - — Erosion photos
  - — Stream/lake/river photos
  - — Photos of algae blooms or sediment in water
  - — Photos during rainfall events

- Work with Partners– They might have access to previously collected data and other resources that will save you time and money!

Image: Bioretention cell at Arnolds Park

Evaluation of Potential Practices

Image: Interpretive signage at a bioretention cell in Red Oak

How to Select Priority Sub-watersheds

Identify how priority areas were selected based on physical and demographic characteristics of the watershed. How did you determine the best sub-watershed(s) in which to implement your project? Here are some important things to consider:

- Do any sub-watersheds lie in Iowa's priority watersheds for water quality improvement?
- What kind of private and public support do you have for improvements in your sub-watershed(s)? Is there enough land available in your sub-watersheds for the practice(s) that you plan to implement (access and maintenance)?
- What kind of visibility will any improvement projects have? How much involvement do you want from community members? Can your project be used as a model for future projects around the state?
- Did you consult any outside agencies for assistance in determining your sub-watershed(s)?
- Do the sub-watersheds have the potential to install practices that align with your community's watershed improvement goals?
- Do you plan to invest in one large improvement project or several smaller projects throughout the sub-watersheds?

It is important to consider locations where there is the highest potential for watershed improvement. In addition to why these sub-watersheds were chosen, explain why other watersheds will be eliminated from this project.

Evaluation of Potential Practices

How to Select Priority Practices

Water quality improvement best management practices (BMPs), including, but not limited to rain gardens, bioswales, bioretention cells, permeable pavers, constructed wetlands, saturated buffers, grassed waterways, water and sediment control basins (WASCOBs) and cover crops reduce the amount of pollutants ending up in our water bodies.

Identify how practices selected coincide with your watershed goals. For example:

- Increase infiltration of stormwater
- Improve water quality
- Protect infrastructure and property
- Improve habitat
- Increase community education
- Reduce erosion
- Reduce Flooding
- Slow flow of water

From there, you can start evaluating your priority watersheds for possible locations for improvement projects. Discuss which alternatives make the most sense, based on feasibility, cost of practice installation and maintenance, land availability, and physical and social characteristics of your watershed.

Image: Proposed location of Bioswales in the Underwood High School Sub-Watershed

What are the expected pollutant reduction goals for each BMP installed?

Stormwater BMPs are not "one size fits all." They are designed for a specific location, soil type, and stormwater management goal in mind. Because of this, many things need to be considered before any BMP design and construction can begin. Some examples are:

- Drainage Area
- Topography
- Water Quality Volume
- Pollutant Inputs and Load Reductions Estimates
- Source Water / Ground Water Protection

- **Table 3 Expected pollutant reduction from practices within the sub-watershed**

Practice	Total Acres Treated	Total WQv	Total CPv	TSS	TN	TP
Bioswale	25.6	58,080	111,513	4,377.6	5.2	25.6
Bioretention Cell	8.1	18,376	35,283	1,385.1	8.1	1.6
Total	**33.7**	**76,456**	**146,796**	**5,762.7**	**13.3**	**27.2**

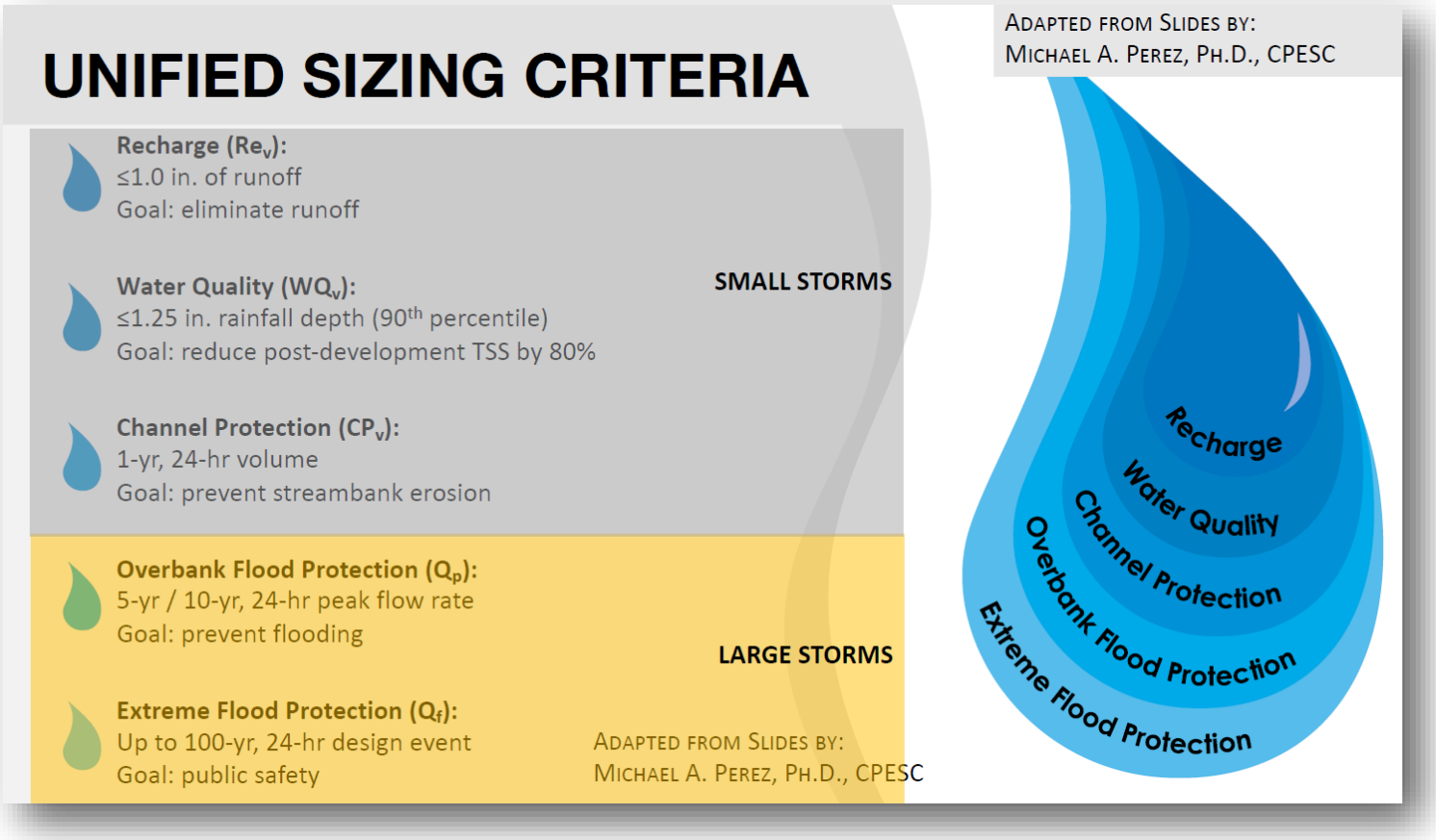
*WQv & CPv values are in cubic feet and pollution values are shown in lbs/acre-yr

Image: Example of calculations of water quality, channel protection, and nutrient reduction for a potential bioswale and bioretention cell

Evaluation of Potential Practices, cont.

Unified Sizing Criteria

The Unified Sizing Criteria is a comprehensive approach to design stormwater management systems. It uses measurement standards to meet flooding, health, safety, and water quality goals. These criteria are used to design best management practices that meet desired treatment objectives.



Criteria that address water quality are primarily focused around the management of the most frequently occurring, smaller storms. Water quantity is primarily managed by volume reduction and limitation of runoff rates during all storm events.

Which criteria does your community plan on meeting? If looking to treat the quality of your water, you should design any stormwater BMPs to meet the Water Quality Volume for 90% of storms (1.25" or less rain per event). If you are looking at controlling flooding, you need to design for Channel Protection, Overbank Flood Protection, or Extreme Flood Protection, depending on the results you wish to achieve. Further explanation of using the Unified Sizing Criteria and examples of how to calculate each value can be found in Chapter 3.01 of the Iowa Stormwater Management Manual.

Implementing Watershed Activities

After gathering and evaluating all of your watershed data, the following questions should be answered in order to present an action plan for implementing BMPs in your watershed.

What is the project timeline? When will the project begin? List milestones in planning and construction, as well as any points in time that there will be pauses in the project.

How will information about the proposed project be communicated to and from key audiences (community residents, neighbors, city council/other decision makers, other stakeholder groups)? For example, will you send mailings/surveys to stakeholders, post updates on social media, create educational signage, and/or hold community meetings?

How will the project be evaluated to determine water quality improvement, overall success, and if changes are needed? Who will ensure that the projects are properly maintained throughout the life of the practice? How will you monitor the water quality entering and leaving the practices? Will you partner with other organizations (schools, community groups, etc.) to ensure the success of the project?

How will the project be funded? Many grant applications require a cash or in-kind match for dollars requested. Please be sure to share any other funding sources contributing to your project, along with in-kind dollar values.

Is this project supplementing or enhancing an already existing project? If this plan is part of a larger scale project, describe the larger project and how this application fits in or complements other aspects of the final project.

What is your community's maintenance plan for installed BMPs? Does your community have the appropriate funds, staff, and equipment for maintaining the proposed BMPs, or do you have dedicated community members committed to maintaining them?

Image: Stormwater wetland in Spencer

Image: Bioretention cell and permeable pavers in West Des Moines

Watershed Assessment Resources

Data Sources

EPA How's My Waterway Tool https://mywaterway.epa.gov/

Iowa DNR Water/Wastewater Information System and Records Database https://programs.iowadnr.gov/wwisard/WastewaterPublicSearch.aspx

Iowa Stormwater Manual https://www.iowadnr.gov/Environmental-Protection/Water-Quality/NPDES-Storm-Water/Storm-Water-Manual

Iowa DNR Watershed Improvement https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Watershed-Improvement

USGS Watershed Locator https://www.arcgis.com/apps/View/index.html?appid=8909697be04f40eaab0ee753547f4807&extent=-100.3658,37.7981,-86.3034,45.2142

Iowa DNR Designated Uses Assessed as Fully Supported https://programs.iowadnr.gov/adbnet/Assessments/Summary/All

Iowa DNR Impaired Waters List https://programs.iowadnr.gov/adbnet/

Iowa DNR Watershed Mapping Applications https://www.iowadnr.gov/Conservation/Mapping-GIS

Iowa DNR Volunteer Water Quality Monitoring https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Monitoring/Volunteer-Water-Monitoring

NRCS Web Soil Survey https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Iowa DNR Source Water Protection https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Source-Water-Protection

Iowa Geospatial Data https://geodata.iowa.gov/

Iowa Watershed Projects https://iowaagriculture.gov/water-resources-bureau/iowa-watershed-projects

Iowa State University GIS map server https://ortho.gis.iastate.edu/

Iowa Flood Information System https://ifis.iowafloodcenter.org/ifis/

Agency Partners

Clean Water Iowa https://www.cleanwateriowa.org/

IDALS: Urban Conservationists https://iowaagriculture.gov/field-services-bureau/urban-conservation

Agency Partners cont.

IDALS Regional Coordinators https://iowaagriculture.gov/contacts/all?field_first_name_value=&field_last_name_value=&field_bureau_multiple_target_id=19

Iowa Watershed Projects https://iowaagriculture.gov/water-resources-bureau/iowa-watershed-projects

USDA Natural Resources Conservation Service https://offices.sc.egov.usda.gov/locator/app?state=ia

Soil and Water Conservation Districts https://cdiowa.org/

Iowa Economic Development Authority https://www.iowaeconomicdevelopment.com/green

Other State NGO/Partners

Iowa Stormwater Education Partnership https://iowastormwater.org/

Watershed Management Authorities or other local watershed groups https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Watershed-Management-Authorities

Agriculture's Clean Water Alliance https://www.acwa-rrws.org/

Trees Forever http://www.treesforever.org/fund

Iowa Corn https://www.iowacorn.org/

Iowa Farm Bureau https://www.iowafarmbureau.com/conservation-counts

Iowa Flood Center https://iowafloodcenter.org/

Iowa Soybean Association https://www.iasoybeans.com/research

County Conservation Boards https://www.mycountyparks.com/Default.aspx

Resource Conservation & Development Councils https://www.nrcs.usda.gov/wps/portal/nrcs/ia/people/partners/

Iowa State University Extension and Outreach https://www.extension.iastate.edu/

Iowa Community Foundations https://iowacommunityfoundations.org/

Iowa Associations of Councils of Governments https://www.iowacog.com/find-your-cog

Watershed Assessment Checklist, pg. 1

☐ Identification of water quality issues

_____

_____

_____

☐ Identification of water quality goals/objectives

_____

_____

_____

☐ Identify potential partners for implementing projects

_____

_____

_____

☐ Identification of watershed _____

☐ Watershed Hydrology

_____

_____

_____

☐ Land use within the watershed _____

☐ Unique Features _____

☐ Watershed topography/drainage area

_____

_____

☐ Existing water quality practices

-Urban _____

-Rural _____

☐ Future growth areas

_____

_____

☐ Types of soils present in watershed

_____

Watershed Assessment Checklist, pg. 2

☐ Sources of pollutants

-Urban _____

-Rural _____

☐ Water Quality Data

_____

_____

_____

☐ Identification of priority sub-watersheds

-Percentage of public vs. privately owned land _____

-Existing and potential ordinances/land use policies _____

_____

-Public support? _____

-Visibility? _____

☐ Existing storm sewer infrastructure _____

☐ Existing septic systems _____

☐ Source water areas _____

☐ Floodplain assessment

_____

_____

_____

☐ Social Assessment

_____

_____

_____

☐ Potential Practices _____

-How they meet water quality goals/objectives identified _____

_____

-Expected pollutant reduction _____

_____

Watershed Assessment Checklist, pg. 3

- [ ] Project timeline

- [ ] Communication plan

- [ ] Evaluation of success

- [ ] Funding

- [ ] How does this project complement other projects (if applicable)

- [ ] Maintenance plan for installed BMPs

- [ ] Other Notes