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Rivers Council of Minnesota

1269 Second Street North, Suite 200, Sauk Rapids, MN 56379
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Dean Schrandt
Dodge County Environmental Quality
22 6th St. E. – Dept. 391
Mantorville MN 55955

April 14, 2005

Dear Dean,

We have received your final report and attachments for the RCM/MLA Citizen Volunteer Monitoring Plan program, as funded through LCMR*.

Your document satisfies the reporting requirements and completes the monitoring plan training, implementation, and contract components for the program.

It has been a pleasure to work with you. Please keep in touch with monitoring activities and updates on your program. Also let us know of future monitoring/training needs that may be of interest to you or your citizen volunteer monitoring group.

Sincerely,

Angie

Angie Becker Kudelka
River Watch Director
Rivers Council of Minnesota

* Funding for this project was recommended by the Legislative Commission on Minnesota Resources (LCMR) from the Minnesota Environment and Natural Resources Trust Fund.

Dodge County Environmental Quality

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EVALUATION REPORT: RIVERS COUNCIL GRANT TO DODGE COUNTY

This short report will summarize the implementation of the $3000 grant awarded to the Dodge County Citizen Volunteer Monitoring Plan Project on April 5, 2004.

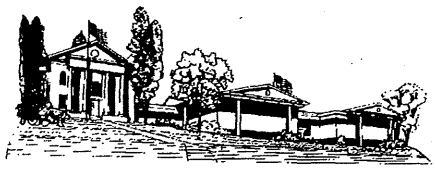
DATE	EXPENDITURE	DESCRIPTION
4-15-04	$ 1881.01	Two handheld dissolved oxygen meters to be circulated among the citizen volunteers as part of our Monitoring Plan.
3-24-05	$ 1118.99	These funds used as part of purchase of sensors and other equipment for use in setting up our continuous remote stream monitoring station.
Total Grant	$ 3000.00	

The effectiveness of these purchases is largely yet to be determined. It was mid-summer 2004 before the DO meters were outfitted and able to be distributed. Since it was mid-season and no protocols had been established for their use, volunteers were asked to experiment with the meters and take random readings while familiarizing themselves with its functions. It is anticipated that more organized instructions and protocols will be developed for the 2005 monitoring season.

As for the stream monitoring station, unavoidable delays caused a postponement of purchasing for several months. The station will be erected and functioning this summer.

FINDINGS:

The dissolved oxygen meters were used by 5 volunteer monitors during late summer and fall of 2004. Readings were taken at a variety of times and stream conditions. For the most part, the volunteers were able to successfully use the meters. A few were surprised that they only saw high levels of DO, even after a storm event. This led to interesting discussions with them regarding the factors affecting DO level, and the quick-changing nature of DO readings. As a group, we look forward to seeing the DO levels measured by the continuous monitoring station, and how they relate to the handheld units.



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NEXT STEP:

In regards to the DO meters, as mentioned earlier we will develop more organized instructions and schedules for their use. The rapid growth of our county has clashed somewhat with our historic rural practices and seems to have spawned a renewed interest in awareness and monitoring, especially of rural practices which may be detrimental to surface water. This may expand the use of the handheld units as spot checks of questionable stream sites, in addition to their scheduled use by monitors at their regular sites.

The continuous stream monitoring station has many next steps now that sensors and materials have been ordered. Several of our volunteer monitors have already played an important part in helping to select parameters to monitor, selecting a site, and designing the physical set-up of the site. The site will be established this summer and should be providing reliable data that we can compare to our volunteer-gathered data for many years to come.

Upper Zumbro Watershed Citizen Volunteer Stream Monitoring Plan

- Monitoring Plan Pilot Training – For Citizen Volunteer Water Quality Programs -

Date Plan Completed:	Draft – 4-5-04
Organization Name:	Dodge County Environmental Quality Department
Name of Program:	Upper Zumbro River Watershed Stream Sampling Program
Monitoring Plan Author(s):	Dean Schrandt, Jim Hruska
Primary Contact:	Dean Schrandt
Address:	Dodge County Environmental Quality 22 6th St. E. – Dept. 391 Mantorville MN 55955
Contact Phone:	(507) 635-6273
Contact email:	dean.schrandt@co.dodge.mn.us
Website (if any):	_____

Funding for this project was recommended by the Legislative Commission on Minnesota Resources (LCMR) from the Minnesota Environment and Natural Resources Trust Fund.

The goal of this grant is to enhance and expand the ability of citizen volunteers to collect water quality data that will be useful for lake and stream assessments and management. Minnesota Lakes Association and Rivers Council of Minnesota, with assistance from River Network, will work collaboratively to provide training, technical support, education and communications for individuals and organizations statewide interested in citizen volunteer lake and stream monitoring.

Contents of Your Plan

Introduction and Overview

Title Pages
Introduction Narrative
Flow Chart
1.1, 1.5 Watershed Maps

Watershed Background Information

1.2 General Information on your Watershed and Areas of Interest
1.3 Inventory on you Uses of the Watershed and Surface Water
1.4 Current Status of your waters of Interest
1.6 Values
2.1 Issues, Efforts to Address those Issues, and Evaluation

Monitoring Goals

4.5 Monitoring Goal
3.1 Question/Hypothesis, Data User and Decision Made from Data

What, How, Where, When Will You Monitor

5.2 Sources of Stress, Parameters, and Scale
5.3 Data Quality Objectives for Sampling
5.4 Collection Methods for Sample
5.5 Data Quality Objectives for Analysis
5.6 Analysis Methods
6.1 Sampling Site List
6.2 Sampling Site Map
6.3 Site Specific Sampling
6.4 Sampling Schedule, Frequency, Times, and Weather

Quality Assurance and Quality Control

7.1 Quality Control Measures and How To Evaluate Them
7.2 Instrument and Equipment Requirements
7.3 Instructions, Documentation, Records and Manuals
7.4 Training

Data Storage & Management

8.1 What You are Recording
8.2 Handling of Field and Lab Sheets
8.3 Meta-data
8.4 Entering and Validating Data
8.5 Miscellaneous and Problem Data

Analysis, Interpretation, Reporting

9.1 Summarizing and Comparing Your Benchmarks
9.2 Data Interpretation and Analysis
10.1 Reporting, Presenting, & Planning for Change

Feedback, Evaluation

12.1 Feedback and Evaluation

Volunteer Names, Tasks, Timeline

11.1 Task Identification and Timeline
11.2 Volunteer Monitors
11.3 Technical Committee and Data Users

Budget

11.4 Overall Budget
11.5 Budget by Site

Introduction Narrative

This document contains a stream monitoring plan for the Upper Zumbro River watershed in Dodge County. Developed primarily by the Dodge County Environmental Quality Office and the Dodge County Soil & Water Conservation District, this plan hopes to provide the rationale, guidance, and detailed description of volunteer citizen monitoring efforts designed to assess the stream quality in the watershed. This plan is primarily carried out by citizen volunteers, though, some sampling, such as for fecal coliform bacteria, will be conducted by professionals.

Of course, no one wishes for polluted streams. But mounting pressures from both the farm and urban sectors have relegated the streams to a defensive role. Quite simply, our vision is of an environment where streams are seen as important, and can co-exist with farm and urban pressures.

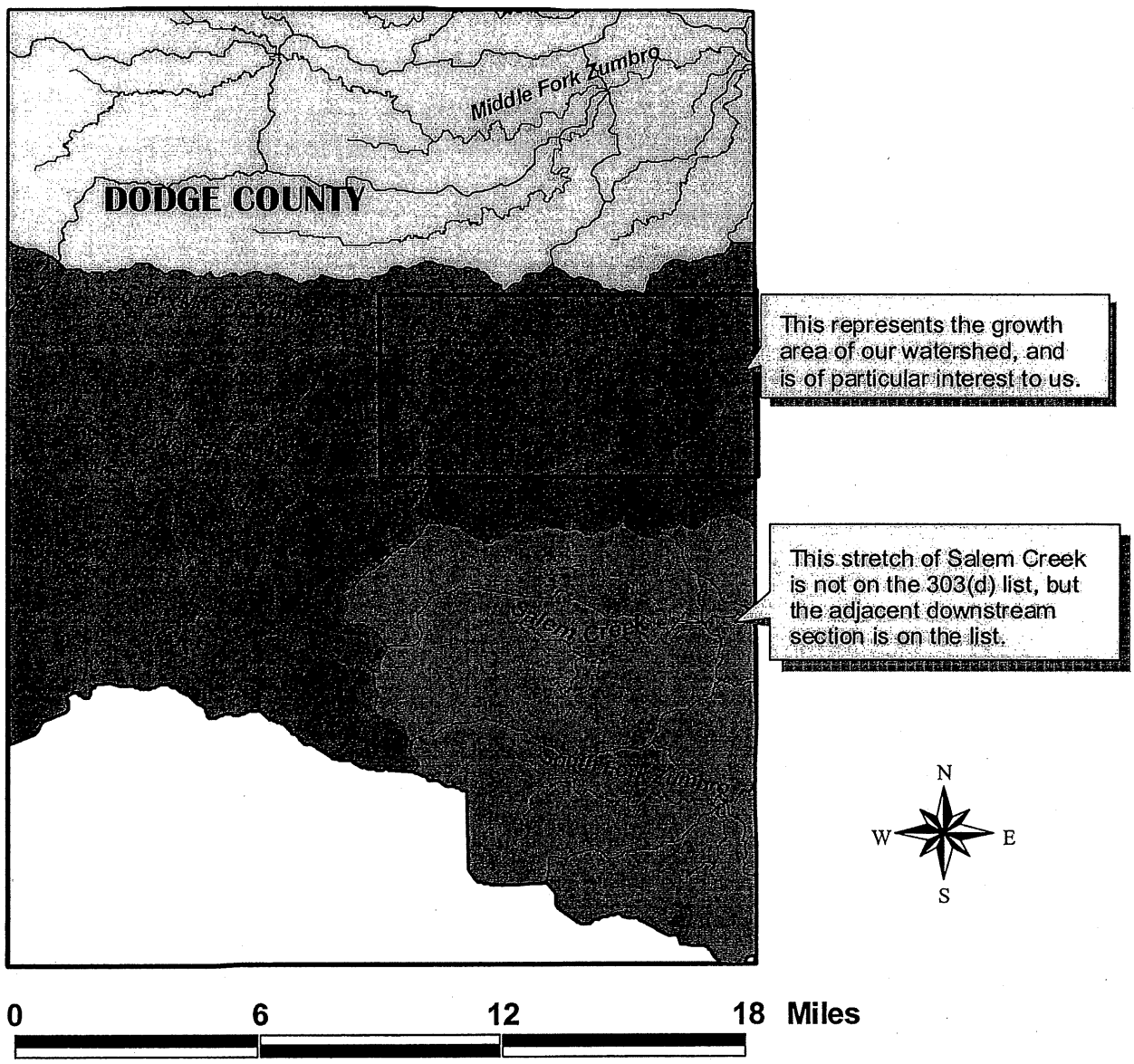
The role of citizen monitors is clear, for government wanting something to happen is rarely enough. For the streams to really defend themselves requires the grassroot efforts of concerned citizens, and monitoring their streams is a great way for the average citizen to understand the pressure streams are under, and to be an effective part of the solution.

1.1 Watershed Maps: Please attach a map of your watershed and highlight the waters of interest.

Priorities – Portions of Zumbro which pass through growth areas (near cities).

1. South Branch Middle Fork
2. Salem Creek
3. Lower Branch Middle Fork
4. Middle Fork
5. South Fork

Upper Zumbro Watershed in Dodge County



1.2 **General Information on your watershed and surface water:** Choose what you determine to be the most important topics on the right hand side of the table and fill in with answers below. You may decide to use this form multiple times, one for each specific area of interest.

Specific Area of Interest: South Branch Middle Fork Zumbro River

INFORMATION TOPIC	ANSWER
Major Basin	Lower Miss. Basin
Ecoregion	Western Corn Belt Plains
Watershed	Zumbro River
Location	Upper Zumbro River Watershed in Dodge County
DNR Watershed HUC	41 7040004
Watershed Size Known Soils	232,263 Acres Floyd and Clyde (Fy) (Maxfield)
Land Use	Ag.-93% Water-1% Forest-3% Urban-2% Wetland-1%
Length Gradient	150 miles of protected water. (See map).

General Information Topics

- Major Basin name
- Watershed name
- Ecoregion(s) name
- Location of water (counties)
- Classification Numbers (HUCs, Zoning Classification number, Division of Waters Number)
- Watershed size (acres)
- Known/Dominant Soils
- Land Use Types and %s.
- Lake
  - depths(s) – maximum and mean in feet
  - surface area, littoral area
  - lake to watershed area
- River
  - length (miles) and gradient (feet per mile) of segment
  - stream order and largest waterbody it flows into (larger river or lake)
  - habitat types (riffles, runs, pools)
- Other

copy this page as often as needed to obtain all relevant information

1.3 **Inventory on your Uses of Watershed and Surface Water:** Choose what you determine to be the most important topics on the right hand side of the table and fill in with answers below. You may decide to use this form multiple times, one for each specific area of interest.

Specific Area of Interest: _South Branch Middle Fork Zumbro River

USES	ANSWER
Primary Water Uses	Recreation – Swimming Fishing Canoeing
Wastewater Systems	ISTS Municipal Systems
Fishing	DNR Fish Survey Year-?
Public Perception	Unknown
Organizations that have Collected Data	Dodge County, DNR, MPCA, DOA

Inventory of Uses

- Primary water uses (recreation, drinking)
- Public access spots (numbers and locations)
- Predominant wastewater systems?
- Point Source Discharges? (locations)
- Important native species?
- Significant exotic species?
- Have fish been tested?
- Any history of noteworthy events (environmental or cultural)?
- General public perceptions of the water
- Organizations that have or collect data about basin/watershed/ waterbody

1.4 Current Status of Your Waters of Interest: For this exercise, please refer to the Chapter 7050 of the State Water Quality Standards, the 305(b) Assessed Waters Report, and the 303(d) Impaired Waters List.

1) **Water of Interest** (name, location, and/ or segment/ lake number)	2) **Use Classifications** WQS-7050	3) Lakes: **What is the Carlson Trophic Status?** 305(b)	4) **Assessed?**	5) **Are there Uses that are Fully Supported ?** 305(b) (List)	6) **Are there Uses that are NOT Fully Supported?** 305(b) (List)	7) Streams: **Does Ecoregion Data Indicate any Threats?** 305(b) (List)	8) **If Impaired, what is the Affected Use?** 303(d)	9) **If Impaired, what is the Pollutant or Stressor?** 303(d)	10) **Suspected Sources** 305(b)
Zumbro River (Only Salem Creek has been assessed)	2B, 3B, 4A, 4B, 5, 6		Salem Creek Only	Yes- Ox. Depl. Turbidity. Ammonia Chloride	Yes- Bacteria	Yes- Nitrates	Swimming	Fecal Coliform	Nonpoint

1.6 What are the things you value in your watershed? What are they? Where are they? Historical, Recreation, Scientific (swimming holes, scenic areas, good fishing spots, protected areas). You may want to use a map to mark these areas.

Aesthetic value, especially in the eastern half of the county.
Fishing & some swimming, again in the eastern half of the county.

1) **Water of Interest** (from column 1 in worksheet 1.4)	2) **Use Classifications** (from column 2 in worksheet 1.4)	**Actual Uses and Values** (from own experience)
South Branch Middle Fork Zumbro River	Not yet assessed by MPCA	Cattle Use Fishing Wading/Swimming
Salem Creek (Joins the South Branch Middle Fork Zumbro River in neighboring Olmsted County)	2B, 3B, 4A, 4B, 5, 6	Cattle Use Fishing Wading/Swimming Aesthetics
Lower Branch Middle Fork Zumbro River	Not yet assessed by MPCA	Cattle Use Fishing Wading/Swimming
Middle Fork Zumbro River	Not yet assessed by MPCA	Cattle Use Fishing Wading/Swimming
South Fork Zumbro River	Not yet assessed by MPCA	Cattle Use Fishing Wading/Swimming

2.1 Issues, efforts to address those issues, and evaluation

You may want to copy the information from worksheet 1.8 into this section and then continue by filling in the third column.

Issue (from worksheet 1.8)	Known Effort to Address the Issue (from worksheet 1.8)	Evaluating Known Efforts, Identifying Niches
Turbidity	**SWCD – Setting up filter strips, riparian buffers, & set-aside acres under CRP & RIM programs.** **MPCA – 3 years of TSS monitoring at selected control sites in the watershed.** **DODGE COUNTY ENV. QU. – 4 years of Citizen Stream Monitoring Efforts (CSMP)**	MPCA has gathered minimal historic data in this area. SWCD programs are very busy – many buffers and waterways installed. MPCA efforts are incomplete, missing high flow data. DCOEQ CSMP program is lagging – need more interpretive feedback, organization, and options for sampling.
Fecal Coliform (Cows in Creek)	**Salem Creek 319 Bacteria Reduction Project – Directed toward watershed education & financial and technical assistance to producers for corrective measures to reduce flow of bacteria into Salem. (MPCA effort)**	MPCA has gathered historic data in this area. This project has been only partially successful, with few producers thus far adopting corrective measures. This is a professional, not volunteer, sampling effort at this time.
Fishing (Low numbers, lack of large fish) & Dissolved Oxygen (DO)	**DNR Fish Survey in the 1980's**	DNR fish survey showed below average bass population in Zumbro. Volunteers can help with DO sampling to pinpoint at-risk streams and stream reaches.

4.5 Monitoring Goal

The monitoring goal of this project is to help define and characterize the overall water quality in the Upper Zumbro River watershed in Dodge County. Our immediate action toward this goal will be to sample for these parameters:

1. **Tranparency (Closely correlated to turbidity) - Volunteers will monitor a specific stream site using transparency tubes to judge the water's clarity. At the same time, they will monitor temperature, stage, rainfall, appearance, and recreational suitability at the same site, possibly in hopes of establishing links with transparency. We will conduct a non-305b condition and trend assessment, for which our primary user will be the Dodge County SWCD. They will use the information to help spot problem areas which may warrant fixative measures, such as filter strips or waterways. Our desired outcome is to correct problem stretches and achieve overall clearer water**
2. **Fecal Coliform Bacteria - This monitoring will be performed by county staff, using primarily a 305b condition and trend assessment. Our primary users will be the Dodge County SWCD and Environmental Quality offices. They will use bacteria counts to help them direct monies to aid producers in corrective measures, and to make the public aware of potentially unsafe waters. Our desired outcome is to reduce the flow of bacteria into the stream, and provide waters safe for public recreation.**
3. **Benthic Macroinvertebrates – Volunteers will gather a representative invertebrate sample from a pre-designated riffle site to be then sorted and used to provide a measure of the overall stream's health. We will conduct a non-305b condition and trend assessment, for which our primary users will be Dodge County Environmental Quality and the DNR. Both entities will use the results as a screening tool to identify streams that have problems, and as a long-term gauge of overall stream and watershed health. Our desired outcome is to demonstrate, with macroinvertebrate data, a trend toward an increase in the quality of Upper Zumbro Watershed streams.**
4. **Dissolved Oxygen – This parameter will be utilized on a limited basis in the 2004 sampling season. This will involve volunteers at selected sites using a DO meter to sample a stream site immediately after a storm event, using a 305b condition and trend assessment. The primary users will be the DNR and Environmental Quality Office. The DNR will use the data to screen stream reaches for possible future interventions to improve the fishing habitat in that stream. Our desired outcome is to correct fishing habitat problem areas, and improve the recreational fishing quality in the watershed.**
5. **Continuous Monitoring Station – In spring of 2005 a continuous monitoring station will be established on the South Branch Middle Fork Zumbro approximately one mile upstream from the Dodge/Olmsted county line – a good spot to assess stream parameters before it leaves our county. This station will continuously monitor for these parameters: stage, temperature, dissolved oxygen and turbidity – many of the same parameters to be monitored by citizen volunteers. This information will useful in correlation and comparison with citizen volunteer data, as well as continuous data collected from other points lower in the watershed. Citizen volunteers will be very involved in the set-up and maintenance of this station.**

3.1 Data Users and Uses

Turbidity/Transparency

Question or Hypothesis (from step 2.3)	User/Decision Maker	Uses/Decisions
As more remedial changes are put into place, we predict the median t-tube reading obtained from all monitors, will increase over a 5 year period	MPCA (Secondary)	Formulate policy Funding Decisions Enforcement
	County Zoning (Secondary)	Change zoning laws and regulations
	NRCS SWCD (Primary)	Funding Decisions Program Emphasis
	Landowner (Primary)	Change land-use practices (or not).
	County Environmental Staff (Primary)	Enforcement of local ordinances Need for further investigation

Fecal Coliform Bacteria

Question or Hypothesis (from step 2.3)	User/Decision Maker	Uses/Decisions
Do the fecal coliform countsin Salem Creek meet the water quality standard?	MPCA (Secondary)	Formulate policy Funding Decisions Enforcement
Levels of fecal coliform at the Mantorville bridge will maintain, after remedial measures are in place upstream.	NRCS SWCD (Primary)	Funding Decisions Program Emphasis
	County Environmental Staff (Primary)	Need for further investigation Alert public on safety concerns

Benthic Macroinvertebrates

Question or Hypothesis (from step 2.3)	User/Decision Maker	Uses/Decisions
Can collection of benthic macroinvertebrates establish an IBI for Upper Zumbro watershed streams in Dodge County ?	DNR (Primary)	Establish watershed Index of Biotic Integrity (IBI), to be used for policy and funding decisions
How will the IBI for Upper Zumbro watershed streams in Dodge County change over a 5-year period ?	County Environmental Staff (Primary)	Establish stream trend assessment. Tool for public education.

Dissolved Oxygen

Question or Hypothesis (from step 2.3)	User/Decision Maker	Uses/Decisions
We believe that DO levels will decrease, then increase, in the 24 hour time period following a rain event.	DNR (Primary)	Identify stream segments characterized by low DO Funding Decisions Enforcement
	County Environmental Staff (Primary)	Screening Tool

5.1 Sources of Stressors

Assessment Parameter: TURBIDITY

___ Sew = sewage
_X_ Ero = erosion
___ Ani = animal manure
___ Veg = streamside vegetation removal
___ Other _____

___ Tox = toxics
___ Nut = nutrients
_X_ Urb = urban runoff
___ AMD = abandoned mine drainage

Primary users: SWCD, Dodge County Env. Quality, Landowner – Informal Assessment (5)
Secondary user: MPCA – Formal Assessment (2) ?

Assessment Type: FECAL COLIFORM BACTERIA

_X_ Sew = sewage
___ Ero = erosion
_X_ Ani = animal manure
___ Veg = streamside vegetation removal
___ Other _____

___ Tox = toxics
___ Nut = nutrients
___ Urb = urban runoff
___ AMD = abandoned mine drainage

Primary User: MPCA – Assessment (2)
Secondary User: Dodge County Environmental Quality, SWCD – Assessment (5)

Assessment Type: BENTHIC MACROINVERTEBRATES

___ Sew = sewage
_X_ Ero = erosion
___ Ani = animal manure
_X_ Veg = streamside vegetation removal
___ Other _____

_X_ Tox = toxics
___ Nut = nutrients
_X_ Urb = urban runoff
___ AMD = abandoned mine drainage

Primary User: MDNR – Assessment (2)
Secondary User: Dodge County Env. Quality, SWCD – Assessment (5)

5.1 Sources of Stressors

Assessment Type: DISSOLVED OXYGEN

_X_ Sew = sewage
___ Ero = erosion
_X_ Ani = animal manure
___ Veg = streamside vegetation removal
___ Other _____

___ Tox = toxics
_X_ Nut = nutrients
_X_ Urb = urban runoff
___ AMD = abandoned mine drainage

Primary User: MDNR Fisheries – Assessment (5)
Secondary User: Dodge County Env. Quality, SWCD – Assessment (5)

Assessment Parameter: TEMPERATURE

___ Sew = sewage
_X_ Ero = erosion
___ Ani = animal manure
___ Veg = streamside vegetation removal
___ Other _____

___ Tox = toxics
___ Nut = nutrients
_X_ Urb = urban runoff
___ AMD = abandoned mine drainage

Primary users: SWCD, Dodge County Env. Quality, Landowner – Informal Assessment (5)
Secondary user: MPCA – Formal Assessment (2) ?

Assessment Parameter: STAGE

___ Sew = sewage
_X_ Ero = erosion
___ Ani = animal manure
___ Veg = streamside vegetation removal
___ Other _____

___ Tox = toxics
___ Nut = nutrients
_X_ Urb = urban runoff
___ AMD = abandoned mine drainage

Primary users: SWCD, Dodge County Env. Quality, Landowner – Informal Assessment (5)
Secondary user: MPCA – Formal Assessment (2) ?

5.2 Sources of Stressors, Parameters and Scale

Sources of Stressors	Parameters	Scale
Erosion, Urban Runoff	Turbidity (Transparency) *Volunteer*	Small Scale, Stream
Sewage, Animal Manure	Fecal Coliform Bacteria *Non-Volunteer*	Small Scale, Stream
Ero, Veg, Tox, Urb	Benthic Macroinvertebrate *Volunteer*	Small Scale, Stream
Sew, Ani, Nut, Urb	Dissolved Oxygen *Volunteer*	Small Scale, Stream
Erosion, Urban Runoff	Temperature *Volunteer*	Small Scale, Stream
Erosion, Urban Runoff	Stage *Volunteer*	Small Scale, Stream
Erosion, Urban Runoff	Recreational Suitability (Related to turbidity) *Volunteer*	Small Scale, Stream
Erosion, Urban Runoff	Appearance (Related to turbidity) *Volunteer*	Small Scale, Stream

5.3 Data Quality Objectives for Sampling

Sampling Method / Parameter	Completeness	Representativeness	Comparability
Turbidity (Transparency tube)	4 samples/month AND 4 storm events/season (75%)	Measurements collected at same stream site during ice-off period (Approx. April-Oct)	Use standardized sampling procedures. 4x/year volunteers collect duplicate samples.
Fecal Coliform	35 samples (5 per month per sampling season) (100%)	Measurements collected at same bridge site 5x/month from April through October	Use standardized sampling procedures set forth by MPCA.
Benthic Macroinvertebrates	One sample per site per year	Measurements collected at pre-determined riffle sites	Use standardized sampling procedures set forth by DNR.
Dissolved Oxygen	4 samples/12 hour period following storm event	Measurements collected at same bridge site, after at least 2 storm events during ice-off period	Use standardized sampling procedures set forth by DNR.
Temperature	4 samples/month AND 4 storm events/season (75%)	Measurements collected at same stream site during ice-off period (Approx. April-Oct)	Use standardized sampling procedures. 4x/year volunteers collect duplicate samples.
Stage	4 samples/month AND 4 storm events/season (75%)	Measurements collected at same stream site during ice-off period (Approx. April-Oct)	Use standardized sampling procedures. 4x/year volunteers collect duplicate samples.
Recreational Suitability (Related to turbidity)	4 samples/month AND 4 storm events/season (75%)	Measurements collected at same stream site during ice-off period (Approx. April-Oct)	Use standardized sampling procedures. 4x/year volunteers collect duplicate samples.
Appearance (Related to turbidity)	4 samples/month AND 4 storm events/season (75%)	Measurements collected at same stream site during ice-off period (Approx. April-Oct)	Use standardized sampling procedures. 4x/year volunteers collect duplicate samples.

5.4 Sample Collection Methods:

Parameter	What will be sampled	What will be used to collect sample	Sample Containers/ Preservation	Quantity of sample to be collected	Number of samples to be collected per site	Sampling Methods Reference and Source
Turbidity/ Transparency	Stream halfway between midpoint and shore	Pail, then into 60 cm transparen-cy tube	None	60 cm column of water	One	Training Manual for MPCA CSMP program
Fecal Coliform	Stream midpoint	Pail rinsed with sterile water	100 ml plastic bottles	100 ml	One	MPCA Standards for Sampling
Benthic Macroinverte-brates	Stream bottom	Kick net	Gathered in 5 gal. pails, preserved in 20 ml bottle w/ 90% ethyl alcohol	2 composite replicates for each of 3 sites.	Two	MDNR Benthic Sampling Procedures (River Network)
Dissolved Oxygen	Stream midpoint	NA	NA	NA	One	MDNR DO meter instructions
Temperature	Stream halfway between midpoint and shore	Thermome-ter	None	Full pail of water	One	Training Manual for MPCA CSMP program
Stage	Stream halfway between midpoint and shore	Drop-down tape measure from bridge or stream gauge	NA	NA	One	Training Manual for MPCA CSMP program
Recreational Suitability (Related to turbidity)	Described in MPCA CSMP manual	NA	NA	NA	One	Training Manual for MPCA CSMP program
Appearance (Related to turbidity)	Described in MPCA CSMP manual	NA	NA	NA	One	Training Manual for MPCA CSMP program

5.5 Data Quality Objectives for Analysis

Parameter	Accuracy	Precision	Detection Limit/Measurement Range
Turbidity/Transparency	None	+/- 5 cm for duplicate readings by the same monitor, or by different monitors	DL = 1 cm Range = 0-60 cm
Fecal Coliform	Determined by MVTL Labs, New Ulm, MN Sterile bottles used to collect.	Determined by MVTL Labs, New Ulm, MN Sterile bottles used to collect.	DL = 10 CFU/100 ml Range = 0-60,000 CFU
Benthic Macroinvertebrate	Determined by Winona State Univ. – Dr. Neil Mundahl	Determined by Winona State Univ. – Dr. Neil Mundahl	Unknown
Dissolved Oxygen	Meter manual	+/- 1 % saturation for duplicate readings at same site and time	Unknown at this time – will complete when meters are obtained.

5.6. Sample Analysis Methods:

Parameter	Where samples will be analyzed	How Sample Transported to Lab	Maximum holding time before Analysis	Analytical Method Reference and Source	Brief Description of Method	Reporting Units
Turbidity (Transparency Tube	Field	NA	NA	CSMP Handbook	Use pail to gather representative water sample. Fill transparency tube to the 60 cm mark. Open valve at tube bottom, allow water to slowly leak out while watching down top of tube. Note cm measurement when disk first appears and when disk appears clearly. Average these two and record.	Cm
Fecal Coliform	MVTL Lab, New Ulm	MVTL same day courier pick-up	6 hours	9222 D	From bridge, gather sample in rinsed pail from pre-determined point. Fill sterile 100 ml bottle from a mid-pail pour.	Colonies/ 100 ml of stream water
Benthic Macroinvertebrate	Winona State Univ. Lab	We transport to DNR_Roch., they transfer to Winona State	Indefinite	Living Waters, Rivers Network, method 2.A.1 3.A.1	We gather a random sample, using DNR/River Network protocols, of at least 100 organisms per site, placed in 30 ml bottles filled with 90% alcohol. We do no formal analysis of organisms before they are sent to Winona State Univ., but informally discuss as sample is picked. Simple key is provided in sampling kit for basic taxonomy efforts.	Unsure- Will deal with # and variety of species
Dissolved Oxygen	At stream	NA	Per meter manual	Per meter manual	Lower DO probe from bridge into stream – record % of Dissolved Oxygen and record. Repeat.	% saturation

6.1 Sampling Site List

Site #	Brief Description of Location (ALL UTM)	How and Where the Site Will Be Sampled	Type of Site	Parameters
01-SBMFZ	561.01477 188.17288	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	A.1 or A.2	Turbidity (via Transparency)
02-SBMFZ	560.69616 185.10515	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	A.1 or A.2	Turbidity (via Transparency)
04-SBMFZ	556.46642 185.53897	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	A.1 or A.2	Turbidity (via Transparency)
06-SBMFZ	551.15212 182.93605	Continuous monitoring device anchored in stream flow. With kick net at pre-determined riffle sites. Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	A.1 A.4.a Riffle Site Condition & Trend	Stage, temperature, turbidity, DO Benthic Macroinvertebrates Turbidity (via Transparency)
08-SBMFZ	550.93521 179.79086	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
10-SBMFZ	548.54920 181.30923	With kick net at pre-determined riffle sites.	A.4.a Riffle Site	Benthic Macroinvertebrates
12-SBMFZ	542.04190 183.47833	From bridge, gather sample in rinsed pail from pre-determined point. Fill sterile 100 ml bottle from a mid-pail pour.	5	Fecal Coliform Bacteria

Site #	Brief Description of Location (ALL UTM)	How and Where the Site Will Be Sampled	Type of Site	Parameters
14-SBMFZ	534.01623 184.88824	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
15-SBMFZ	532.80092 183.97708	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
16-LBMFZ	519.04944 186.08125	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
18-SBMFZ	517.31416 189.66026	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
20-MaC	544.42791 170.24682	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
22-SBMFZ	497.90071 188.90108	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
24-LBMFZ	481.74091 171.76519	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
26-LBMFZ	473.60679 153.21938	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
28-MFZ	536.40224 218.83466	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)

Site #	Brief Description of Location (ALL UTM)	How and Where the Site Will Be Sampled	Type of Site	Parameters
30-MiC	527.40047 205.82006	With kick net at pre-determined riffle sites. Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	A.4.a Riffle Site Condition & Trend	Benthic Macroinvertebrates Turbidity (via Transparency)
32-SC	557.76788 151.48410	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube. From bridge, gather sample in rinsed pail from pre-determined point. Fill sterile 100 ml bottle from a mid-pail pour.	Condition & Trend 5	Turbidity (via Transparency) Fecal Coliform Bacteria
34-SC	552.01976 149.09809	With kick net at pre-determined riffle sites. Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	A.4.a Riffle Site Condition & Trend	Benthic Macroinvertebrates Turbidity (via Transparency)
36-SC	550.60985 152.89401	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)
38-SFZ	552.77895 127.19018	With kick net at pre-determined riffle sites. Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	A.4.a Riffle Site Condition & Trend	Benthic Macroinvertebrates Turbidity (via Transparency)
40-MFZ	491.88478 221.15629	Fill pail at pre-determined bridge or stream-side site, then transfer to transparency tube.	Condition & Trend	Turbidity (via Transparency)

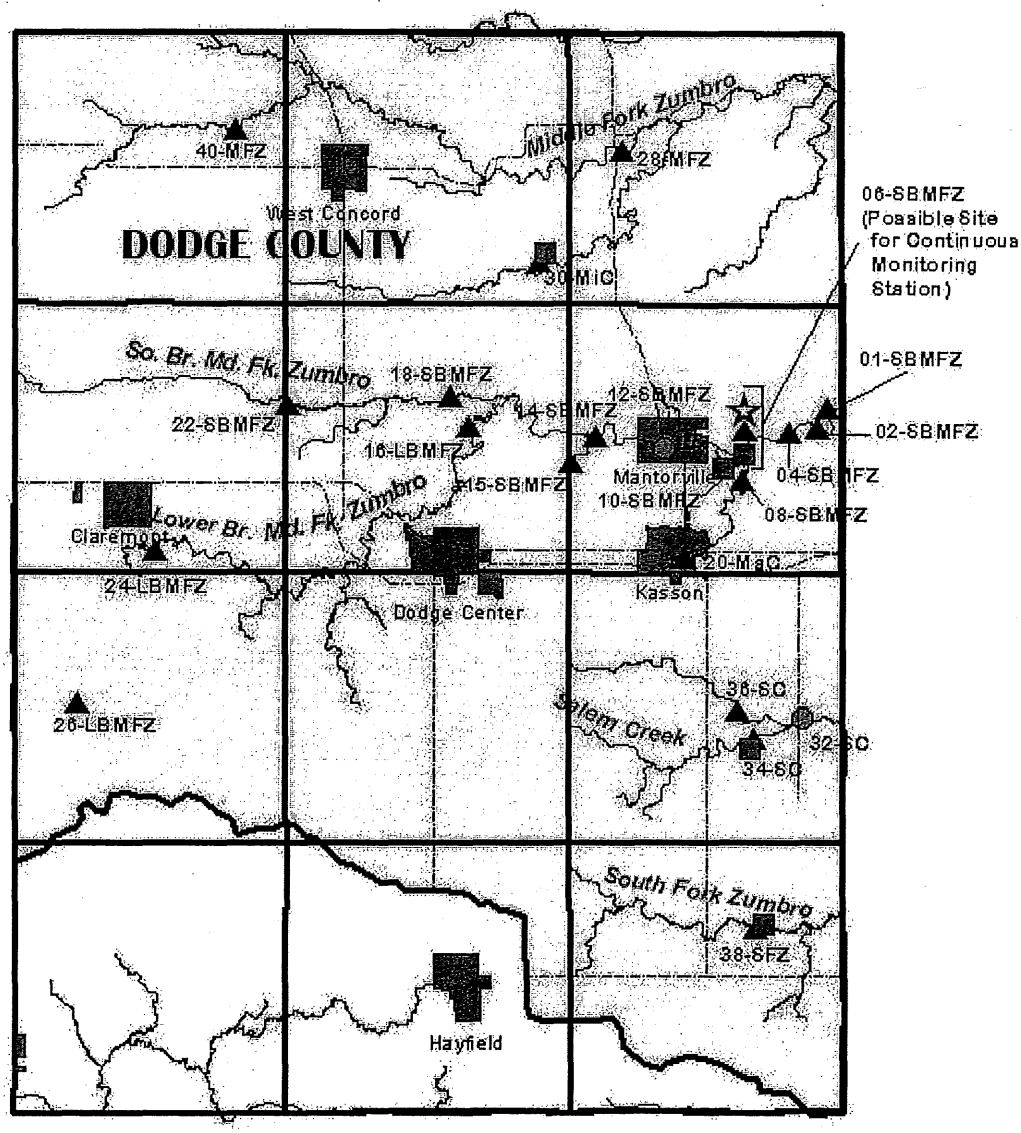
6.2 Sampling Site Map

Mark your sampling sites on topographic and/or bathymetric maps and keep them with your records. Include a copy of your sampling site location map in you plan.

PROPOSED SAMPLING POINTS

- ▲ Basic Parameters
- ■ Benthic Macroinvertebrate
- ● Fecal Coliform Bacteria

MFZ - Middle Fork Zumbro
MiC - Milliken Creek
SBMFZ - South Branch Middle Fork Zumbro
MaC - Masten Creek
LBMFZ - Lower Branch Middle Fork Zumbro
SC - Salem Creek
SFZ - South Fork Zumbro



"Basic Parameters" refers to volunteer sites where transparency, stage, temperature, rainfall, appearance, and recreational suitability are measured.

6.3 Site Specific Sampling:

Parameters Monitored	Site #	Where In the Water Column?	Where Across Transect?
Turbidity (Transparency)	All sites except #s 10, ,12	Just below the surface.	Midway between midpoint and stream bank.
Fecal Coliform	12,32	Just below the surface	Deepest depth
Benthic Macroinvertebrates	6,10,30,34,38	Stream Bottom	Varies depending on riffle location
Dissolved Oxygen	Yet to be determined	Mid-Column	Midstream
Temperature	All sites except #s 10, ,12	Just below the surface.	Midway between midpoint and stream bank.
Stage	All sites except #s 10, ,12	NA	Midway between midpoint and stream bank.
Recreational Suitability (Related to turbidity)	All sites except #s 10, 12	NA	NA
Appearance (Related to turbidity)	All sites except #s 10, 12	NA	NA

6.4 Sampling Schedule

Parameter(s)	Frequency	Time of Day	Time of Year	# of Years	Special Weather Conditions
Turbidity (Transparency)	Weekly on average, plus, after at least 4 storm events. Monthly during low flow.	During brightest daylight	April- October (Ice-out)	Ongoing	Daily after storm events, if possible
Fecal Coliform	5x/month	Between 7 am and 10 am.	April - October	Ongoing	Avoid storm events
Benthic Macroinverte-brates	Once/year	During brightest daylight	September - Mid-October	Minimum of 5 years	Avoid high flow and storm events
Dissolved Oxygen	4 samples/12 hour period following storm event. Minimum of 2 storm events per year	Varies	April - October	Ongoing	Immediately sfter storm events
Temperature	Weekly on average, plus after at least 4 storm events. Monthly during low flow.	During brightest daylight	April- October (Ice-out)	Ongoing	Daily after storm events, if possible
Stage	Weekly on average, plus after at least 4 storm events. Monthly during low flow.	During brightest daylight	April- October (Ice-out)	Ongoing	Daily after storm events, if possible
Recreational Suitability (Related to turbidity)	Weekly on average, plus after at least 4 storm events. Monthly during low flow.	During brightest daylight	April- October (Ice-out)	Ongoing	Daily after storm events, if possible
Appearance (Related to turbidity)	Weekly on average, plus after at least 4 storm events. Monthly during low flow.	During brightest daylight	April- October (Ice-out)	Ongoing	Daily after storm events, if possible

7.1 Quality Control Measures

Quality Control Measures	Evaluation: Statistical Methods	Parameters and % Quality Control Samples				
		Turbidity (Transparency Tube)	Benthic Macro-Invertabrates	Fecal Coliform	DO	Temperature, Stage, Appearance, Recreational Suitability, Rainfall
Internal						
Field Blanks				10% of all samples		
Field Duplicates	RPD	Each Sample	10% of all samples	10% of all samples	10% of all samples	Temperature – Each Sample
Lab Duplicates				As needed		
External						
Taxonomic Verification			10% of all samples			
External Field Duplicates				Once per sampling season		

Response Action:

7.2 Instrument and Equipment Requirements

Equipment Type	Inspection Frequency	Maintenance	Calibration Frequency	Standards or Calibration Instrument Used
Transparency Tube	At least once yearly – more often as needed	Rinse out with stream water of current site before each use. Clean with soap & water annually	NA	NA
Kick Net	Prior to each use	Rinse with clean water	NA	NA
DO Meter	Prior to each use	Check battery and membrane before each use.	Before each use	

7.3 Instructions, Documentation, Records and Manuals

Instructions

Identify and list the SOPs you'll need for your monitoring project. Also indicate who is responsible for them and where they will be housed.

1) For transparency, temperature, stage, appearance, rainfall, and recreational suitability, refer to CSMP Manual.
2) Fecal Coliform – Based on MVTL Labs, New Ulm, MN
   Visual Assessment
3) Benthic Invert. – DNR and River Network
4) DO – See meter manual in Environmental Quality office.

Documentation and records

Identify and list field and laboratory information and records needed for your monitoring project. Attach a copy of the types of records you will be keeping. Also include information on how long and where records will be maintained

To be added as the monitoring season continues. Records will be kept in the Dodge County Env. Qu. Office.

Manuals used by volunteer monitors

List all manuals used by volunteer monitors including equipment manuals containing calibration or any other pertinent information. If you are using an outside laboratory, list or attach the laboratory's QA/QC plan.

See #1 above.

7.4 Training

Training Aspect	Description
What Training's For	Sampling procedures, record-keeping
Training Schedule	Site visit for new volunteers (in Spring). Review letter for veteran volunteers
Who is Trained	New and Seasoned Volunteers
Additional Training	None planned
Training Materials	Transparency Tubes, Record-keeping sheets
Training Provider	MPCA & Dodge County Environmental Quality
Evaluation	Volunteers compare against a known tube value

Note: Additional Training will be based on this year's monitoring season.

7.4 Training

Training Aspect	Description
What Training's For	Sampling techniques, record-keeping
Training Schedule	Site visit for new volunteers
Who is Trained	New volunteers
Additional Training	None planned
Training Materials	Kick nets, pails, trays, forceps, record-keeping sheet
Training Provider	Minnesota DNR & Dodge County Environmental Quality
Evaluation	Volunteers only gather organisms and pick samples for later identification by outside source (Winona State University). Examining their picked samples can be a way of evaluating their sampling and picking techniques.

Note: Additional Training will be based on this year's monitoring season.

7.4 Training

Training Aspect	Description
What Training's For	Sampling techniques, record-keeping
Training Schedule	Site visit for volunteers
Who is Trained	New volunteers
Additional Training	None planned
Training Materials	DO meter & manual, record-keeping sheet
Training Provider	Dodge County Environmental Quality
Evaluation	Volunteers compare to supplied oxygen-saturated sample

Note: Additional Training will be based on this year's monitoring season.

8.1 Data Management - What are you recording and where?

Type of Sheet: Transparency Field Sheet
Copies Attached (Y/N): Y

Type of Sheet: Database Summary from CSMP Program
Copies Attached (Y/N): N, in CSMP yearly report

Type of Sheet: Macroinvertebrate Field Sheet
Copies Attached (Y/N): Y

Type of Sheet: Fecal Coliform Field Sheet
Copies Attached (Y/N): Y

Type of Sheet: Dissolved Oxygen Field Sheet
Copies Attached (Y/N): N, yet to be determined

8.2 Data Management. Handling of field and laboratory sheets and electronic data transfer

How will field and laboratory sheets be handled? Describe the pathway each field, tracking, and laboratory sheet will follow, and who is responsible for each.

Name of Sheet Or Database	From Field to Lab	From Lab to Data	Data Entry/Validation	Final Resting Place
Field sheet for transparency, temperature, stage, appearance, rainfall & recreational suitability	Sent in by sampler to Env. Qu. Office at end of season.	Copies of original sheets are made and sent to MPCA (Secondary User), and data from originals is entered into computer. Data summaries are sent back to samplers.	Takes place at MPCA office - questions about data are directed back to the Env. Qu. Office.	Originals are kept on file on Env. Qu. Office.
Same field sheet as above	Sent in by sampler to Env. Qu. Office at end of season.	Copies of original sheets are made and data is entered into computer at Env. Qu. Office (Primary User)	Created and validated by Env. Qu. personnel	At Env. Qu. Office. Resulting data used in citizen newsletters.
Macroinvertebrate Field Sheet	Returned with the crate of sampling materials to the Env. Qu. Office.	Copies of field sheets are made and delivered with benthic samples to DNR office in Rochester. Data from originals is entered into computer.	Takes place at Winona State University	Results of the sampling (IBI) will be distributed back to Env. Qu. Office, then to samplers. Originals are kept on file on Env. Qu. Office.
Fecal Coliform Field Sheet	Returns to office with samples, and is checked for completeness.	When results are received from lab, all data is entered into computer. After sampling season, all data sent electron - ically to MPCA.	Takes place at MPCA.	Field sheets are stored in Env. Qu. Office.
Dissolved Oxygen Field Sheet	Returns to office with meter at end of pre-arranged loan period	Copies of original sheets are made and sent to DNR (Primary User), and data from originals is entered into computer.	Data entry takes place at the Env. Qu. Office. Validation takes place at DNR office - Lake City	Field sheets are stored in Env. Qu. Office.

8.3 Data Management. Meta-data.

PROJECT INFORMATION *Check Where Found:*

Meta-data element	In the Plan	On Field Sheet	On Lab Sheet	In Computer Program	Other:
Project ID					
Project name	XX		XX	XX	
Project purpose	XX				
Start date	XX			XX	
Planned duration	XX				
Lead organization name	XX		XX		
Project manager (with contact info	XX				
Other Contact (like MPCA rep, SWCD rep)					
Sampling personnel		XX		XX	
Sample medium					
Sample collection methods	XX	XX			
Equipment Used	XX	XX			
Field measurement methods	XX		XX		
Comments about data transfer, submission		XX		XX	
Project Study Area	XX				
Design & sampling frequency	XX				
Programs associated					
Cooperating Org.'	XX				
QA plan summary/reference	XX				

LABORATORY *Check Where Found:*

Meta-data element	In the Plan	On Field Sheet	On Lab Sheet	In Computer Program	Other:
Lab ID			XX		
Laboratory name (w/ address and contact info	XX		XX		
Citation for lab (Manual or Handbook).	XX				
Parameter	XX	XX	XX	XX	
Sample fraction					
Reporting units	XX	XX	XX	XX	

Comparable standard method					
Field preservation method					
Detection limit	XX		XX	XX	
Lab certified for parameter?			XX		
Length of Analysis					
Temperature basis					

STATION INFORMATION

Check Where Found:

Meta-data element	In the Plan	On Field Sheet	On Lab Sheet	In Com-puter Program	Other:
Project station ID	XX	XX	XX	XX	
Related station					
Station name					
Station type					
Waterbody type (stream, lake, wetland)	XX				
Station description					
Site ID	XX	XX	XX	XX	
Ecoregion name	XX				
Travel directions					
Station latitude-longitude or UTM	XX				
Geo-positioning method	XX				
Datum		XX	XX	XX	
Map scale					
Site lat-long					
State/county	XX				
HUC code	XX				
River Reach	XX				
DNR Lake ID					
Habitat Type					

MONITORING RESULTS

Check Where Found:

Meta-data element	In the Plan	On Field Sheet	On Lab Sheet	In Com-puter Program	Other:
Station and site ID					
Date		XX	XX	XX	
Time		XX	XX	XX	
Station ID					
Site ID	XX	XX	XX	XX	
Activity ID, type and category					
Medium					
Sample depth	XX				

Sampling personnel	XX	XX	XX	XX	
Activity comments		XX		XX	
Sample collection method and equipment	XX				
Sample preservation	XX				
Lab ID			XX		
Lab sample ID			XX		
Lab certified?			XX		
Results		XX	XX	XX	
Field/lab ID			XX		
Lab Sample Temperature			XX		
Remark codes			XX		

OTHER:

Meta-data element	**In the Plan**	**On Field Sheet**	**On Lab Sheet**	**In Com-puter Program**	**Other:**

Note: Items above will be reviewed after the monitoring season.

8.4 Data Management - Entering and validating data –

For each type of parameter, list the reporting units to be entered, what computer application will be used, who will enter the data, and what validation steps will be taken (and by who).

Parameter	Reporting Units Entered (e.g. mg/l, taxa, etc.)	Source of Data (for external data)	Computer Application (s) Used for Data Entry	Who Will Enter Data	Validation Steps and Who
Turbidity (Transparency Tube)	Cm (Height of Water Column)		Microsoft Excel	Env. Qu. staff	MPCA staff
Fecal Coliform	Colonies per 100 ml		Microsoft Excel	Env. Qu. staff	MPCA staff
Benthic Macroinverte-brate	Taxons? (Unsure)		Microsoft Excel	Env. Qu. staff	DNR/Winona State Univ. staff
Temperature	degrees - F		Microsoft Excel	Env. Qu. staff	Env. Qu & MPCA staff
Stage	Ft.-In.		Microsoft Excel	Env. Qu. staff	Env. Qu & MPCA staff
Recreational Suitability (Related to turbidity)	1 – 5 scale		Microsoft Excel	Env. Qu. staff	Env. Qu & MPCA staff
Appearance (Related to turbidity)	1 – 5 scale		Microsoft Excel	Env. Qu. staff	Env. Qu & MPCA staff
Dissolved Oxygen	% Saturation		Microsoft Excel	Env. Qu. staff	Env. Qu & DNR staff

8.5 Data Management. Miscellaneous problem data. *.How will problem data, such as missing values, detection limit, nonsensical data, ranges, narrative, etc., be handled (e.g. not entered, special characters, etc.).*

Parameter	Data Entry Protocol for "Problem" Data
Fecal Coliform	For readings of "0", enter 0.9 in data table
Fecal Coliform	For readings of "Too Numerous to Count", enter lab's highest possible number (60,000).
Benthic Macroinvertebrate	Challenging Data: Sometimes can't find minimum of 100 organisms/bottle when picking samples from net. Directive is to pick as many samples as possible in 30 minutes, per DNR instruction.
Temperature	
Stage	Round to nearest inch.
Recreational Suitability (Related to turbidity)	
Appearance (Related to turbidity)	
Dissolved Oxygen	

Note: This table will be updated as problems occur.

9.1 Data Analysis – Summarizing and Comparing Your Data to Benchmarks and Interpretation

Parameter	Data User(s)	Statistical Summaries To Be Used	Types of Graphs	Benchmark Used (Note Use Class if WQS Used)	How Data Will Be Compared with Benchmark	How Comparison Will Be Interpreted
Turbidity (Transparency)	SWCD, EQ Office Landowners, MPCA	Average, Median, Range, Quartiles, Stan. Dev.	Combination Graphs: Trans. vs. rainfall, stage, temp.	Simple Comparisons of sites, times, & transects (Turbidity Standard ??)	May be correlated to turbidity standard	Results compared to other upstream andd downstream sites, and known rainfall events.
Fecal Coliform	MPCA, EQ Office SWCD	Geomean, Maximum, Quartiles	Box & Whisper showing geo-mean, max., min. & quartiles	Geomean<= 200, Class ??	Step 1: % exceedence of 200 org/ 100 ml. If >=10%, then: Step 2: # of months w/ geo-mean >200 org./ 100 ml. OR % exceedence of 200 org./ 100 ml	Use support status based on comparison: Full support if % exceedence < 10% Otherwise, potentially impaired. Use support then determined by applying Step 3.
Benthic Macro.	SWCD, EQ Office DNR	Richness, Composition & Multi – Metric Index	Column & Pie Graphs	Unknown-No IBI currently exists	May be correlated to turbidity standard, or known IBI indices.	Site results compared to each other, and to neighboring sites, over time.
Dissolved Oxygen	EQ Office DNR	Seasonal average & median, single event maximum drop	Combination Graphs Box & Whisper	DNR bench-marks for fish survial	% DO for fish survival and prosperity, esp. for smallmouth bass	Compare to DNR benchmarks for fish survival, also, compare to itself, and other streams, over time

9.2 Data Interpretation and Analysis

1) Decide how you will develop findings

Which questions will you ask of your data? Refer to the questions (general questions, quality control questions, benchmark questions) posed in the Background Information of Step 9 pages 27-29 or develop your own and list the ones most relevant to your assessment type.

Turbidity – Dates & sites of highest, lowest readings. Comparison with rainfall, temp., stage. Comparison between tributaries & upstream/downstream.
Fecal Coliform – Did bacteria levels exceed water quality standards? What % of samples at each site?
Do bacteria levels correlate to stage, temp., t-tube, rainfall readings?
Benthic Macro. – What trends develop over 5 year time period? Does # and variety of taxa correlate to turbidity (transparency tube)?
Dissolved Oxygen – Does DO drop after storm events, esp. downstream of feedlot runoff influx sites? How soon does the DO level recover?
Continuous Monitoring Site – Do continuous parameter readings show a positive correlation with readings obtained by nearby volunteer monitors?

2) Decide how you will develop conclusions

How will you interpret your data to answer your monitoring question? Based on your findings, list the form your conclusions will take. Refer to Step 9 pages 30-39. For example, will they be a list of the use-support status for each site, or will you try to determine causes? For lakes, will you characterize the trophic status?

Turbidity – Turbidity (correlated to transparency) appears to decrease lower in the stream reach, possibly due to .....
An increase in turbidity after a storm event is greater in tributary A than in tributary B, possibly due to .....(e.g., increased use of filter strips).
Fecal Coliform – Due to levels of fecal coliform consistently over the standard, Salem Creek is not supported for swimming and body contact, possibly due to a resistance among producers to adopt corrective measures in their farm practices.
Benthic Macro. - Recent activity in several gravel pits in the proximity of Turner's Creek may be responsible for a decrease in the abundance and variety of benthic macroinvertebrates at this time as compared to last year.
Dissolved Oxygen –An influx of feedlot runoff into streams following storm events appear to cause an average ___% maximum drop in dissolved oxygen levels in the first 12 hours after the storm event. This may be due to .....
Continuous Monitoring Site – Readings from the continuous monitoring station show a lower than expected correlation with nearby volunteer monitors, especially in the area turbidity and transparency. This result is like ly due to .....

10.1 Reporting, Presenting, and Planning for Change

1) Who will be preparing the reports and presentations?

Staff members of the Dodge County Environmental Quality and SWCD offices.

2) Who are the target audiences for reporting and presenting your information?

Gov't Agencies (SWCD, NRCS, DNR, MPCA, Dodge County), general public, and rural and urban landowners

3) What formats will be used to present the story?

Available media(press releases, primarily), oral/visual presentations at meetings, volunteer picnics & newsletters, written reports.

4) What tools will be used to tell your story?

Graphs/charts, maps, tables, Powerpoint presentations, pictures

5) What kind of report information do your data users need?

Data User/ Target Audience	*Report Information Needed*
Landowner	*Intro. Info., interpreted data, recommendations*
County SWCD, NRCS, DNR	*Raw data, summarized data, pollution sources*
MPCA (Fecal Coliform)	Raw data, summarized data.

6) When/Where will the message be delivered?

Annual report to SWCD & other gov't agencies. Newsletters during the monitoring season and a picnic at season's end for the monitors. Press releases at least once per year.

7) What would you expect to happen as a result of your report or presentation?

If transparency conditions are impaired, I expect data users to seek further information, make land-use changes, investigate possible causes and solutions.
If fecal coliform readings are high, I expect landowners to use the information to make good decisions about using the stream, and investigate causes and solutions that they can implement.

1) Follow-up:

Group/Audience	*How Follow-up will happen:*	*When follow-up will occur (and times/year)*
Citizen Volunteer Monitors	Training Session (if necessary), 2 letters, postcard, picnic, send monitoring report	5 times/yr. Training in spring, report in winter.
Data Users	Monitoring report, phone calls	3 times/year. Report in winter, phone calls in late winter and spring.

2) Evaluation

Evaluations Done Annually *(Program and/or Outcome Based Components)*	*Tools used for evaluation*
Volunteer management	Surveys, conversations
Monitoring goal & question	Internal inspections (w/ group)
Data Analysis	Monitoring data, group input
Monitoring sites	Internal inspections (w/group)
Equipment inspection	

Evaluations Done Every 3 to 5 Years *(Program and/or Outcome Based Components*	*Tools used for evaluation*
Watershed vision	Surveys, group input, conversations
Data Users	Surveys, conversations
QA/QC	

3) Where can the results of my evaluation be accessed? In monitoring report for County.

11.1 Task Identification and Timeline

Monitoring Goal or Assessment:

Dates covered by timeline:

Target Start Date	**Target End Date**	**Main Category** (Planning, Mgt,, Monitoring, Post-Monitoring)	**Task / Activity Description**	**Person(s) Responsible to Organize/ Evaluate**	**Other Resources** (human or financial) **to Carry-Out Task**	**Fill in Date** when done
3/1/04	3/30/04	Planning	Prepare newspaper article for volunteer recruitment,	Dean, Mark		
3/10/04	3/12/04	Planning	Check quantity of existing equipment (T-tubes), and check on additional equipment availability w/ MPCA	Dean		
3/5/04	3/5/04	Planning	Check w/ lab on costs, and arrange pick-up schedule for fecal samples.	Dean		
3/15/04	3/16/04	Planning	Prepare field & lab sheets	Dean		
4/1/04	4/5/04	Planning	Scout out potential monitoring sites	Dean, Jim		
4/2/04	4/3/04	Planning	Research hand-held DO meters	Dean		
4/15/04	10/15/04	Planning	Research continuous stream monitoring station	Dean, Mark		
4/25/04	4/25/04	Management	Meeting/training session w/ volunteers	Dean, Jim & Mark		
5/30/04 & 7/15/04		Management	Two mid-season newsletters/postcards to volunteers	Dean, Jim		
?	?	Management	Make site visits, where necessary to aid new volunteeers	Dean		

Target Start Date	**Target End Date**	**Main Category** (Planning, Mgt,, Monitoring, Post-Monitoring)	**Task / Activity Description**	**Person(s) Responsible to Organize/ Evaluate**	**Other Resources** (human or financial) **to Carry-Out Task**	**Fill in Date** when done
7/10/04	7/10/04	Management	Meet with planning team during the season (or teleconference), to assess progress.	Dean, Jim & group		
7/12/04	7/19/04	Planning	Field visits to potential continuous monitoring station sites	Dean, Mark, Jim		
April	October	Monitoring	Collect 4 fecal coliform samples from Salem Creek, 5x/month from April-October, transport them back to the office, and prepare paperwork for them to be picked up by MVTL Lab courier.	Dean		
April	October	Monitoring	Collect T-tube samples at 6 sites along the South Branch Middle Fork Zumbro on the same day, twice/month	Dean		
September	September	Monitoring	Aid in benthic macroinvertebrate collection at Tollefson and Ness sites. Transport samples back to office and prepare paperwork for their delivery to DNR personnel.	Dean, Mark		
9/15/04	9/15/04	Post-Monitoring	Send reminder for volunteers to turn in data.	Jim		
10/16/04	12/16/04	Planning	Purchase continuous monitoring site – Make other arrangements with landowners, utilities, etc.			
October	October	Post-Monitoring	Check validity of data and enter into computer. Perform data analysis and interpretation.	Dean, Jim		
November	November	Post-Monitoring	Write report & send data summary to data users.	Dean, Jim		
Winter 2004-2005		Post-Monitoring	Present findings at appropriate data user meetings.	Dean, Jim, Mark		
9/2/04	9/2/04	Post-Monitoring	Plan and carry out volunteer appreciation picnic.	Dean, Mark		
Winter 2004-2005		Post-Monitoring	Meet with planning group to assess the program and make appropriate changes.	Dean, Jim, & group		

S

st ne	Address	City	State	Postal Code	Home Phone	Work Phone	FireID	Comments
veld	26579 608 ST	Mantorville	MN	55955	635-5982		MA1483	So Br Mid Fk Zumbro River MA14
	61492 252 Av	Mantorville	MN	55955				So Br Mid Fk Zumbro River MA22
n	25349 615 ST	Mantorville	MN	55955	635-2861	634-2540	MA2238	Masten Creek above Co Rd 15 MA22
	61302 233 Av	Mantorville	MN	55955	635-5894		MA2059	Tributary So Br Mid Fk Zumbro River @ 233rd Av
on	60698 227 Av	Mantorville	MN	55955	635-5998	281-7764	MA1843	So Br Mid Fk Zumbro River MA18
	66060 140 Av	Claremont	MN	55924	528-2319		RI1409	Dodge Center Creek @ Co Rd 3 (130th Av)
	62107 260 Av	Mantorville	MN	55955	635-5819		MA2701	Masten Creek 1 mile upstream Co Rd 15 MA27
t	P.O.Box 213.	Mantorville	MN	55924	635-3640	635-6273		
	11931 685 St	Blooming Prairie	MN	55917	528-2497		RI2951	Ripley Ditch @ Co Rd J (685th St)
	60464 272 AV	Mantorville	MN	55955	635-5965		MA1356	So Br Mid Fk Zumbro 1/2mile below A
	500 Olive St.	West Concord	MN	55985				Mid Fk Zumbro River 2 mi. E of Hwy 56
	67837 260 Ave	Kasson	MN	55944	365-8459			
	21674 570th St	Dodge Center	MN	55927	5272996			Masten Creek

11.3 Committees and Data Users

Committee

Name/Organization	Area of Expertise	Address	Phone	Email
Jim Hruska - SWCD	Turbidity/Land Use	Dodge Center	507-374-6430	
Bill Thompson -PCA		Rochester	507-281-7764	
Mark Gamm, Dean Schrandt– Dodge Cty Env. Quality		Mantorville	507-635-6273	
Paul Wotzka – Dept. of Ag.	Continuous Monitoring Station	Whitewater Park	507-932-5424	
Al Schmidt – DNR Fisheries	DO Monitoring	Lake City	(651) 345-3365	

Data Users

Name/Organization	Expected Data Use	Address	Phone	Email
Jim Hruska - SWCD		Dodge Center	507-374-6430	
Mark Gamm, Dean Schrandt – Dodge Cty Env. Quality		Mantorville	507-635-6273	
Al Schmidt – DNR Fisheries		Lake City	(651) 345-3365	

Laurie Sovell – PCA Citizen Stream Monitoring Coordinator		St. Paul	1-800-657-3864	
Mark Kanable - NRCS		Dodge Center	507-374-6430	

11.4 Over-all Budget

Revenues:

Item	*Description*	*Budget*
MLA/RCM Grant	One time only	$3000.00
TOTAL REVENUE		**$3000.00**

Expenses:

Type of Expense	*(unit price)*	*(number of units)*	*Budget*
T-Tubes	$20.00	4	**$80.00**
Thermometer	$7.50	4	**$30.00**
T-Tube Supplies (Pails, rope, tape measure, nuts & bolts)	$15.00	4	**$60.00**
Benthic Supplies (Bottles, isopropyl alcohol, forceps, magnifying glasses.	$18.00	2	**$36.00**
YSI Model 550A Dissolved Oxygen Meters (2) & accessories	$900.00	2	**$1800.00**
Partial cost for continuous monitoring station apparatus	$1000.00	1	**$1000.00**
TOTAL EXPENSES 2004			**$3006.00**

BALANCE (revenue minus expense): ***$-6.00***

In-Kind Contributions:

Item	*Description*	*Value*
CitizenVolunteer Hours ($16/hr)	14 volunteers @ 20 hrs.	$3840.00
Volunteer Mileage ($0.34)	4 volunteers – 150 total miles	$51.00
Gov't Agency Advisors (DNR, MPCA, MDOA, SWCD, Dodge Cty Env. Qu.) ($20/hr)	6 volunteers @ 40 hrs.	$4800. 00
TOTAL IN-KIND VALUE		**$8691.00**

BALANCE (revenue minus expense): $

Flow Chart of Annual Citizen Monitoring Cycle

Contents of Your Plan

Introduction and Overview

Title Pages
Introduction Narrative
Flow Chart
1.1, 1.5 Watershed Maps

Watershed Background Information

1.2 General Information on your Watershed and Areas of Interest
1.3 Inventory on you Uses of the Watershed and Surface Water
1.4 Current Status of your waters of Interest
1.6 Values
2.1 Issues, Efforts to Address those Issues, and Evaluation

Monitoring Goals

4.5 Monitoring Goal
3.1 Question/Hypothesis, Data User and Decision Made from Data

What, How, Where, When Will You Monitor

5.2 Sources of Stress, Parameters, and Scale
5.3 Data Quality Objectives for Sampling
5.4 Collection Methods for Sample
5.5 Data Quality Objectives for Analysis
5.6 Analysis Methods
6.1 Sampling Site List
6.2 Sampling Site Map
6.3 Site Specific Sampling
6.4 Sampling Schedule, Frequency, Times, and Weather

Quality Assurance and Quality Control

7.1 Quality Control Measures and How To Evaluate Them
7.2 Instrument and Equipment Requirements
7.3 Instructions, Documentation, Records and Manuals
7.4 Training

Data Storage & Management

8.1 What You are Recording
8.2 Handling of Field and Lab Sheets
8.3 Meta-data
8.4 Entering and Validating Data
8.5 Miscellaneous and Problem Data

Analysis, Interpretation, Reporting

9.1 Summarizing and Comparing Your Benchmarks
9.2 Data Interpretation and Analysis
10.1 Reporting, Presenting, & Planning for Change

Feedback, Evaluation

12.1 Feedback and Evaluation

Volunteer Names, Tasks, Timeline

11.1 Task Identification and Timeline
11.2 Volunteer Monitors
11.3 Technical Committee and Data Users

Budget

11.4 Overall Budget
11.5 Budget by Site