

# Conewago Creek Watershed Stream Corridor Assessment

Winter 2014

Prepared By  
Carroll County Bureau of Resource Management



# Conewago Creek Watershed Stream Corridor Assessment

## Table of Contents

I.	Introduction .....	1
II.	Landowner Participation .....	1
III.	Methods.....	4
IV.	Results.....	4
A.	Inadequate Buffer .....	6
B.	Fish Barrier.....	6
C.	Erosion .....	6
D.	Pipe Outfalls.....	6
E.	Channel Alteration .....	6
F.	Trash Dumps.....	6
G.	In or Near Stream Construction .....	6
H.	Exposed Pipes .....	6
I.	Unusual Conditions/Comments .....	6
V.	Summary .....	7

### List of Figures

Figure 1-1	Conewago Creek Watershed Location Map .....	2
Figure 1-2	Landowner Participation .....	3
Figure 1-3	Most Commonly Identified Impact.....	5

### List of Tables

Table 1-1	Conewago Creek Subwatersheds .....	1
Table 1-2	Data Points by Severity .....	4

### List of Appendices

Appendix A	SCA Permission Letter.....	8
Appendix B	Impairment Severity Criteria.....	10

# Conewago Creek Watershed Stream Corridor Assessment

## I. Introduction

A stream corridor assessment of the Conewago Creek Watershed was conducted during the winter of 2014 by Carroll County Bureau of Resource Management staff. The goal of this assessment was to identify current impairments within the watershed, as well as identify locations to implement restoration practices.

The Conewago Creek Watershed encompasses areas within Carroll County, MD as well as Adams and York Counties, PA. The majority of the Conewago Creek Watershed is located in PA, while a small portion resides in Carroll County, MD. Conewago Creek is a tributary of the Susquehanna River in PA, with its watershed draining into a small portion of northern Carroll County, MD.

The Conewago Creek Watershed is managed on the 12-Digit scale and includes two subwatersheds. Table 1-1 lists the subwatersheds within Conewago Creek Watershed as well as their associated drainage and stream lengths. Figure 1-1 shows the location of the assessment area within Carroll County.

**Table 1-1 Conewago Creek Subwatersheds**

DNR 12-Digit	Subwatershed	Area (Acres)	Stream Miles
020503010289	Conewago Creek	3337.61	17.07
020503010290	West Branch Condorus Creek	130.27	0.18
<b>Totals:</b>		<b>3467.88</b>	<b>17.25</b>

## II. Landowner Participation

This assessment reached out to 70 landowners within the Conewago Creek Watershed whose property is intersected by a stream corridor. Landowner permission was obtained through a mailing detailing the assessment (a copy of this letter can be found in Appendix A), a response card was also included for the landowner to send back with their permission response. Only properties where owners granted permission were assessed. Access was granted for approximately 11 of the 18 stream miles, or 61%, within the Conewago Creek Watershed. Figure 1-2 shows where landowner permission was granted to perform the assessment.

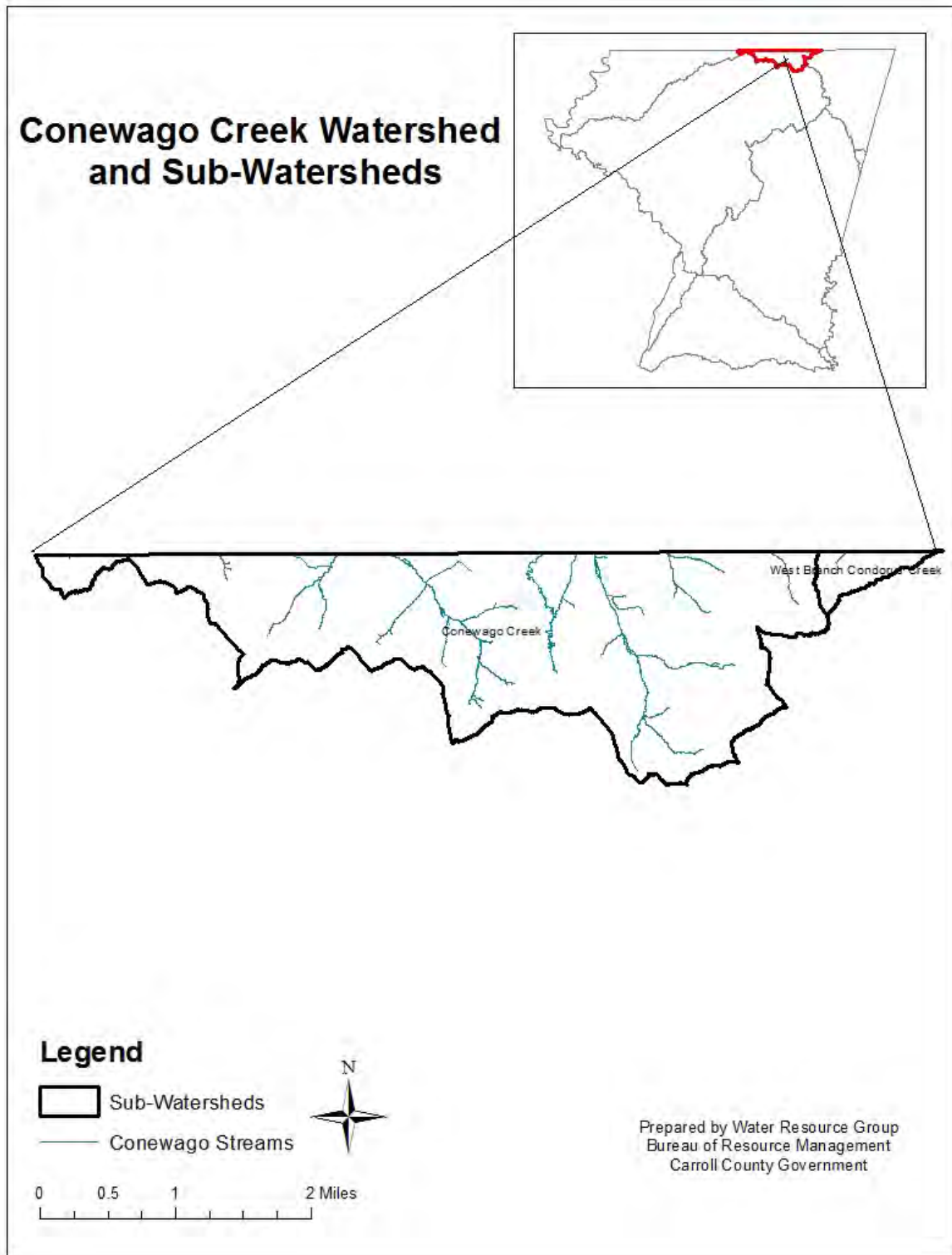
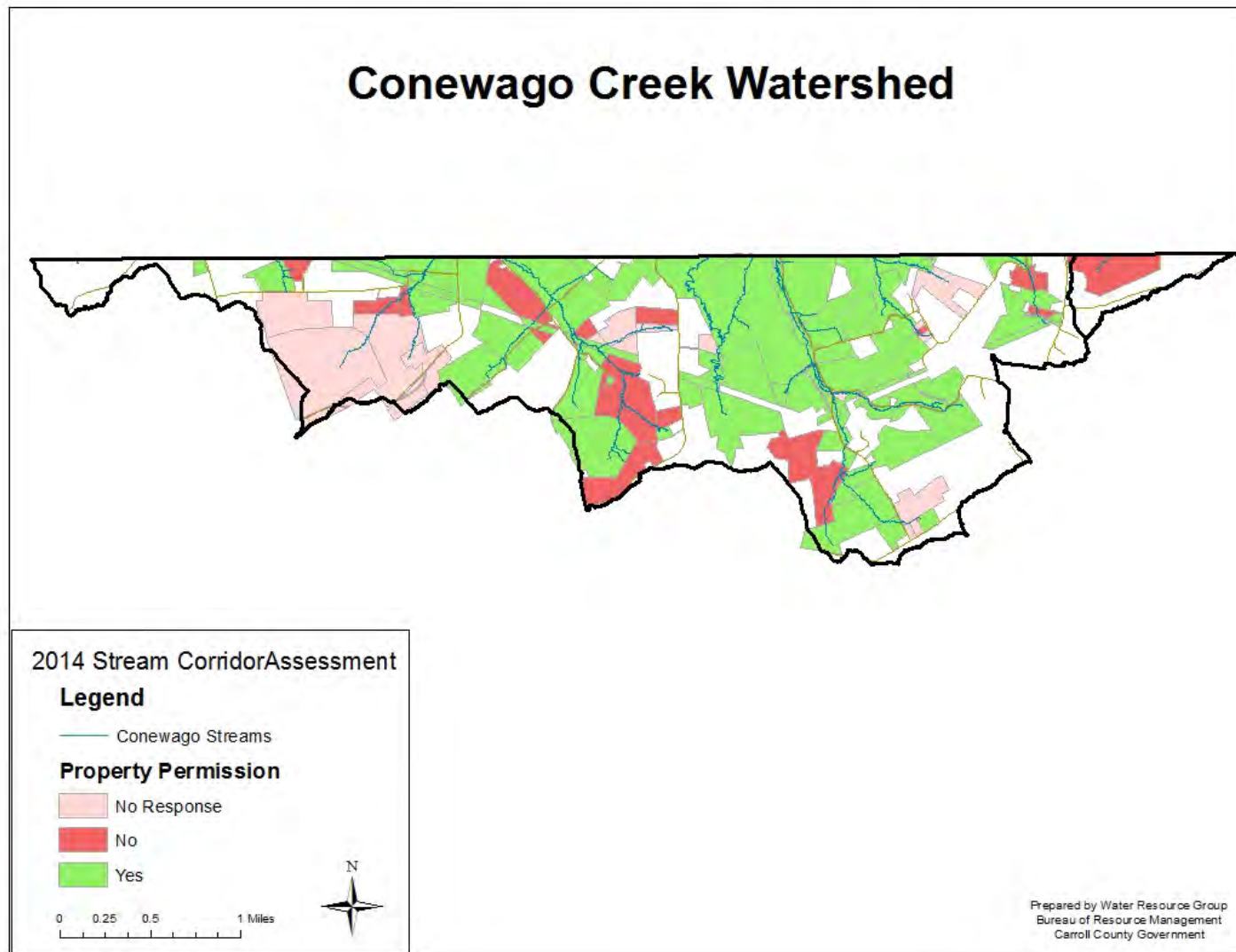


Figure 1-1: Conewago Creek Watershed Location Map



**Figure 1-2: Landowner Participation**

### III. Methods

The field investigation consisted of two person teams physically walking within the stream channel in order to visually assess potential environmental impacts to the stream corridor. Field teams carry GPS enabled toughbooks that allow identified impacts to be recorded on site into an ArcGIS database where it is assigned a unique ID number.

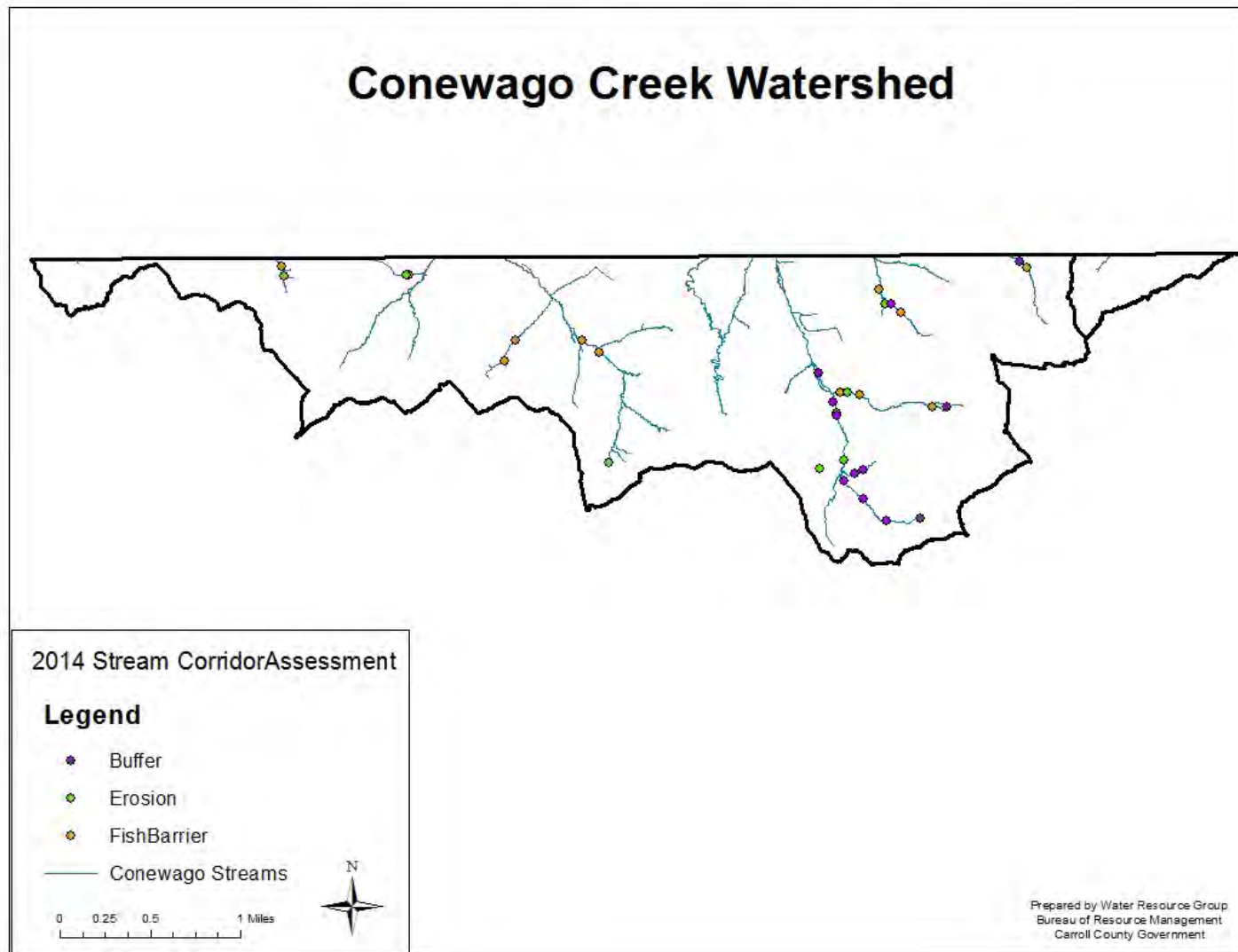
All stream corridors are assessed based on the survey protocols outlined by the Maryland Department of Natural Resources watershed restoration division, using standard stream corridor assessment protocols as outlined in the “Stream Corridor Assessment Survey: SCA Protocols” (MDNR, 2001). Field teams collect information relating to; eroded stream banks, channel alteration, exposed utility pipes, drainage pipe outfalls, fish barriers (debris jams), inadequate streamside buffers, trash dumps, construction activity; either in or near the stream, also any unusual conditions are noted. Each impairment is then ranked on a scale of 1 to 5 in relation to how severe the issue is, how accessible the location is, and how correctable the impairment is; would it be difficult or easy to remediate. These numeric rankings will then be used to prioritize areas for restoration.

### IV. Results

A total of 36 data points were collected across the watershed. Inadequate buffers and fish barriers were the most frequently identified problems. Stream bank erosion was also regularly present throughout the watershed. Table 1-2 lists the data points by severity across the entire watershed. The most commonly identified impacts are shown in Figure 1-3. Criteria for ranking each impairments severity can be found in Appendix B.

**Table 1-2: Data Points by Severity**

Identified Impacts	Total	Very Severe	Severe	Moderate	Low	Minor
Erosion	9		1	2	2	4
Inadequate Buffer	12		1	5	2	4
Pipe Outfall	3				3	
Fish Barrier	12	1	3	3	3	2
<b>Total</b>	<b>36</b>	<b>1</b>	<b>5</b>	<b>10</b>	<b>10</b>	<b>10</b>



**Figure 1-3: Most Commonly Identified Impact**

**A. Inadequate Buffer**

The most common problem identified through the stream corridor assessment was inadequate stream side buffers. Buffer areas were identified as inadequate for 1.2 miles, or less than 10% of the streams assessed, with 7% of the entire watershed classified as having inadequate buffers. 7 of the sites identified the stream as unshaded, and livestock was noted to be present at 5 different sites. Of the 12 sites identified, none had been recently planted.

**B. Fish Barrier**

Another common problem identified through the stream corridor assessment was presence of fish barriers. A total of 12 locations were noted as having a fish barrier. 75% of the fish barriers were noted as total blockages with too high of a drop, averaging approximately 26 inches. The most common causes of fish barriers were road crossings, followed by natural falls.

**C. Erosion**

Approximately a quarter mile of streams were noted to have an erosion problem, primarily caused by bends at steep slope. Most were noted as low to minor impacted downcuts.

**D. Pipe Outfalls**

Pipe outfalls were noted in 3 locations within the watershed. One of the outfalls was related to stormwater discharge and noted with a low impact rating. The other 2 outfalls were also low impact rated and are probably related to sump discharge.

**E. Channel Alteration**

No channel alterations were identified during the assessment.

**F. Trash Dumps**

No impacts from trash dumps were identified during the assessment.

**G. In or Near Stream Construction**

No in or near stream construction sites were identified during the assessment.

**H. Exposed Pipes**

No exposed pipes were identified during the assessment.

**I. Unusual Conditions/Comments**

No unusual conditions were identified during the assessment.



**V. Summary**

The Bureau is currently developing two plans for the Conewago Creek Watershed. The first is a Characterization Plan that references the natural and human characteristics of the watershed and will discuss any water quality data that may have been collected within the watershed. The second is a Restoration Plan that will define the Bureau's goals for addressing environmental concerns within the watershed; the focus will be to address erosion problems through stormwater management and reforestation.

# **Appendix A: SCA Permission Letter**

Conewago Creek Watershed Stream Corridor Assessment

**Gale J. Engles, Bureau Chief**  
Bureau of Resource Management  
410-386-2321, Fax: 410-386-2924  
Environmental Inspection Services  
410-386-2210



**Department of Land Use, Planning  
and Development**  
Carroll County Government  
225 North Center Street  
Westminster, MD 21157  
1-888-302-8978; TT 410-848-9747

October 22, 2013

Dear Watershed Resident:

The Carroll County Bureau of Resource Management will be conducting a stream corridor assessment of the streams located in the Conewago Creek watershed. The goal of this assessment is to identify locations that would benefit from potential water quality improvement efforts. The County is contacting all landowners within the watershed who own land adjacent to a stream corridor, and requesting permission from the landowner to survey the stream on their property during the winter of 2013/2014.

County staff will be performing the fieldwork for this survey. Teams of two to three field crew members will be walking the stream corridors in the watershed, making field observations of various characteristics such as erosion, undermined pipes, un-shaded stream corridors, trash dumps and other related environmental concerns that may impact water quality. Each team will pass through your property for a short time and will not be altering the landscape in any way. Each member of the team will be appropriately identified and observe proper protocols.

The information collected from this survey will be used to help direct future stream restoration and protection efforts. Please use the enclosed card to indicate your choice for permission and return the card to our office by December 22, 2013. For more information about this study, please contact me at (410) 386-2167. Thank you in advance for your participation.

Sincerely,

*Byron Madigan*

Byron R. Madigan  
Water Resources Supervisor  
Department of Land Use, Planning and Development  
Carroll County Government  
[bmadigan@ccg.carr.org](mailto:bmadigan@ccg.carr.org)

# **Appendix B: Impairment Severity Criteria**

**1) BF-Inadequate Buffer**

- a) Severe
  - i) Length of stream (>1000') w/ no trees on either side
- b) Moderate
  - i) Moderate length of stream with trees on only one side
- c) Minor
  - i) Stream section with trees on both sides, but with buffer <50'

**2) ER-Erosion Site**

- a) Severe Rating of 1
  - i) Long section >1000' w/ unstable banks on both sides
  - ii) Incised several feet and eroding very fast
  - iii) Stream bank is eroded below the root zone
- b) Moderate Rating of 3
  - i) Long section >1000' w/ moderate erosion problems
  - ii) **OR** shorter reach 300-400' w/ high banks >4'
- c) Minor Rating of 5
  - i) Short section of stream <300' w/ erosion at one or two meander bends

**3) EX-Exposed Pipe (Sewer Line, etc..)**

- a) Severe Rating of 1
  - i) Any pipe that is leaking or being undermined
  - ii) Or suspended above the stream bed
- b) Moderate Rating of 3
  - i) Long section of pipe that is partially exposed but no immediate threat the pipe will be undermined
- c) Minor Rating of 5
  - i) Small section of top of pipe exposed
  - ii) Stream bank appears stable

**4) FB- Fish Barrier**

- a) Severe Rating of 1
  - i) Dam or road culvert on large stream (3<sup>rd</sup> order or >) totally blocking upstream movement
- b) Moderate Rating of 3
  - i) Total fish blockage on a tributary significantly isolating a reach of stream
- c) Minor Rating of 5
  - i) Temporary barrier such as beaver dam

**5) OF- Pipe Outfall (storm discharge, field drain, etc...)**

- a) Severe Rating of 1
  - i) Outfall with strong discharge and distinct color/smell
  - ii) Discharge causing significant impact downstream
- b) Moderate Rating of 3
  - i) Outfall with small discharge
- c) Minor Rating of 5
  - i) Storm water pipes that have no dry weather discharge

**6) CH- Channel Alteration**

- a) Severe Rating of 1
  - i) Concrete channel w/ shallow water
  - ii) Significant section channelized >1000'
- b) Moderate Rating of 3
  - i) Channel >500' previously channelized
  - ii) Beginning to stabilize with vegetation
- c) Minor Rating of 5
  - i) Earthen channel <100'
  - ii) Size and shape of un-channelized reaches

**7) TR- Trash Dump (within 50 feet of stream)**

- a) Severe Rating of 1
  - i) Large amount scattered over large area, difficult access
  - ii) Chemical drums or haz mat regardless of amount
- b) Moderate Rating of 3
  - i) Large amount in small area with easy access
  - ii) Able to be cleaned up in a few days
- c) Minor Rating of 5
  - i) Small amount less than two pickups with easy access

**8) UN- Unusual Condition**

- a) Severe Rating of 1
  - i) Has direct and wide reaching impact on aquatic life
- b) Moderate Rating of 3
  - i) Has some adverse impacts at site
  - ii) Significant problem, but not the worst seen
- c) Minor Rating of 5
  - i) Problem does not appear to be affecting stream

**9) CO- Stream Construction**

- a) Severe Rating of 1
  - i) Large construction site w/ large amount of disturbance
  - ii) Absence of sediment control measures
- b) Moderate Rating of 3
  - i) Site near stream w/ little disturbance to banks
  - ii) Within riparian w/ some sediment entering stream
- c) Minor Rating of 5
  - i) Site away from stream and outside riparian
  - ii) Sediment control adequate no evidence sediment in stream