

Date:

# Citizens Qualitative Habitat Evaluation Index

CQHEI Total

Vol ID:

Site ID:

River and Watershed:

## I. Substrate (Bottom Type)

Score:

### a) Size

Mostly Large (Fist Size or Bigger)  
14 pt

Mostly Small (Smaller Than Fingernail, but Still Coarse, or Bedrock)  
6 pt

Mostly Medium (Smaller than Fist, but Bigger than Fingernail)  
10 pt

Mostly Very Fine (Not Coarse, Sometimes Greasy or Mucky)  
0 pt

### b) "Smothering"

Are Fist Size and Larger Pieces Smothered By Sands/Silts?  
NO  
5 pt

YES  
0 pt

Symptoms: Hard to Move Large Pieces, Often Black on Bottom with Few Insects

### c) "Siltling"

Are Silts and Clays Distributed Throughout Stream?  
NO  
5 pt

YES  
0 pt

Symptoms: Light Kicking of Bottom Results in Substantial Clouding of Stream for More than a Minute or Two

## II. Fish Cover (Hiding Places) - Add 2 Points For Each One Present

Score:

Underwater Tree Roots (Large)  
2 pt

Boulders  
2 pt

Downed Trees, Logs, Branches  
2 pt

Water Plants  
2 pt

Undercut Banks  
2 pt

Underwater Tree Rootlets (Fine)  
2 pt

Backwaters, Oxbows or Side Channels  
2 pt

Shallow, Slow Areas for Small Fish  
2 pt

Deep Areas (Chest Deep)  
2 pt

Shrubs, Small Trees that Hang Close Over the Bank  
2 pt

## III. Stream Shape and Human Alterations

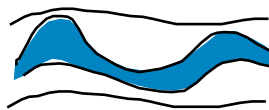
Score:

### a) "Curviness" or "Sinuosity" of Channel

2 or More Good Bends  
8 pt



1 or 2 Good Bends  
6 pt



Mostly Straight Some "Wiggle"  
3 pt



Very Straight  
0 pt



### b) How Natural Is The Site?

Mostly Natural  
12 pt

Many Man-made Changes, but still some natural conditions left (e.g., trees, meanders)  
6 pt

A Few Minor Man-made Changes (e.g., a bridge, some streambank changes)  
9 pt

Heavy, Man-made Changes (e.g., leveed or channelized)  
0 pt

## IV. Stream Forests & Wetlands (Riparian Area) & Erosion

Score:

### a) Width of Riparian Forest & Wetland - Mostly:

Wide (Can't Throw A Rock Through/ Across It)  
8 pt

Narrow (Can Throw A Rock Through/ Across It)  
5 pt

None  
0 pt

### b) Land Use - Mostly:

Forest/Wetland  
5 pt

Shrubs  
4 pt

Overgrown Fields  
3 pt

Fenced Pasture  
2 pt

Park (Grass)  
2 pt

Conservation Tillage  
2 pt

Suburban  
1 pt

Row Crop  
1 pt

Open Pasture  
0 pt

Urban/ Industrial  
0 pt

### c) Bank Erosion - Typically:

Stable Hard or Well-Vegetated Banks  
4 pt

Combination of Stable and Eroding Banks  
2 pt

Raw, Collapsing Banks  
0 pt

### d) How Much of Stream is Shaded?

Mostly  
3 pt

Partly  
2 pt

None  
0 pt

## V. Depth & Velocity

Score:

### a) Deepest Pool is At Least:

Chest Deep  
8 pt

Knee Deep  
4 pt

Waist Deep  
6 pt

Ankle Deep  
0 pt

### b) Check ALL The Flow Types That You See (Add Points):

Very Fast: Hard to Stand in the Current  
2 pt

Fast: Quickly Takes Objects Downstream  
3 pt

Moderate: Slowly Takes Objects Downstream  
1 pt

Slow: Flow Nearly Absent  
1 pt

None  
0 pt

## VI. Riffles/Runs (Areas Where Current is Fast/Turbulent, Surface May Be Broken) Score:

### a) Riffles/Runs Are:

Knee Deep or Deeper & Fast  
8 pt

Ankle/Calf Deep & Fast  
6 pt

Ankle Deep or Less & Slow  
4 pt

Do Not Exist  
0 pt

### b) Riffle/Run Substrates Are:

Fist Size or Larger  
7 pt

Smaller Than Fist Size, but Larger Than Fingernail  
6 pt

Smaller Than Your Fingernails or Do Not Exist  
0 pt

# Hoosier Riverwatch Stream Flow Calculation Worksheet

## 1. River Width (W)

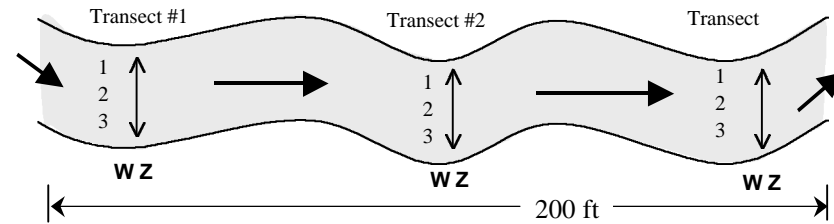
(One measurement at each transect.)

Transect #	Width (ft)
(1)	
(2)	
(3)	
<b>Average Width (W)</b>	

## 2. River Depth (Z)

(Three measurements along each transect.)

	Transect 1 (ft)	Transect 2 (ft)	Transect 3 (ft)	
(1)				
(2)				
(3)				
<b>Average Depth (Z)</b>				



## 3. Surface Velocity (V) = Length/Time

(Allow the object to attain velocity before timing it.)

	Length (ft)	Time (sec)	Velocity <sup>ft/sec</sup>
(1)			
(2)			
(3)			
<b>Average Velocity (V)</b>			

## 4. Stream Flow = Discharge (D)

Avg. Width (W)		feet
Avg. Depth (Z)		feet
Avg. Velocity (V)		feet/sec
* (n) = 0.9 or 0.8		none
<b>Discharge (D)</b>		<b>ft<sup>3</sup>/s = (cfs)</b>

$$\text{Multiply } W \times Z \times V \times n = D$$

\*n is a constant indicating roughness of substrate - use 0.9 for sandy, muddy bottom or bedrock; use 0.8 for gravel or rocky bottom

### Unit Conversions

1 in = 0.0833 ft  
1 m = 3.281 ft

Convert measurements of feet + inches to 10<sup>ths</sup> of feet. **Example: 10 ft + 4 in = 10.33 ft.** (Multiply 4 inches x 0.0833 feet/inch = 0.3332 ft. Add this to 10 feet = 10.33 feet.)

Date

# Chemical Monitoring Work Sheet

Air Temp °C

Time

Stream Name and Site ID

Water Temp °C

Current Weather  Clear/Sunny  Overcast  Showers  Rain (Steady)  Storm (Heavy)

Lat °N

Worst Weather in Past 48 hrs  Clear/Sunny  Overcast  Showers  Rain (Steady)  Storm (Heavy)

Long °W

	Units	Sample 1	Sample 2	Sample 3	Average
<b>Dissolved Oxygen (DO)</b>	% Saturation				
	mg/L				
<b>Avg DO (original)</b>	mg/L				
<b>— DO after 5 days</b>					
<b>BOD 5-day (difference)</b>					
<b>E. Coli Bacteria</b> <i>(purple/blue-violet colonies)</i>	colonies/ 100 mL				
<b>General Coliforms</b> <i>(pink/magenta colonies)</i>	colonies/ 100 mL				
<b>pH</b>	units				
<b>Temp at Your Site</b> <b>— Upstream (1 mi) Temp</b>	°C				
<b>Temperature Change</b>					
<b>Orthophosphate</b>	mg/L				
<b>Total Phosphate</b> <i>(add acid and boil for 30 min)</i>	mg/L				
<b>Nitrate (NO<sub>3</sub>)</b> <i>(after multiply by 4.4)</i>	mg/L				
<b>Nitrite (NO<sub>2</sub>)</b> <i>(after multiply by 3.3)</i>	mg/L				
<b>Transparency (from Tube)</b>	cm				
<b>Turbidity (from chart – use in database entry)</b>	NTU				
<b>Ammonia Nitrogen</b>	mg/L				
<b>Other</b> _____					
<b>Other</b> _____					
<b>Other</b> _____					
<b>Other</b> _____					



