

COOPERATION • FLOOD MANAGEMENT • CLEAN WATER

Water Quality Lunch, Learn & Input Session August 13, 2014

Purpose

- Understand factors influencing water quality of the Indian Creek Watershed
- Overview of water sampling work
- Presentation of draft water quality goals
- Gather input about goals & action steps

ICWMA Members

- Linn County
 City of Marion
 City of Cedar Rapids
 City of Hiawatha
- City of Robins
- Linn SWCD

Draft Goal & Objectives

- Technical Team input
- Draw from other plans
- Goals are not final
- Exercise in small groups designed to further develop goals and set objectives

Framework for goals & objectives Communicate/educate about water quality Develop or update policies to protect water quality Implement practices to improve water quality in urban and rural areas Develop a process to monitor and measure progress toward goals & objectives

Goal 1: Reduce N & P

 Adopt goal consistent with Nutrient Reduction Strategy of an overall 45% reduction in N & P
 Non-Point sources: 41% N and 29% P
 Point Sources: 4% N and 16% P

Implement Nutrient Reduction Strategy practices

Training opportunities for conservation practices & importance of soil health

Goal 2: Reduce Sediment Loading

Implement practices to reduce erosion

Agriculture: long-term no-till, cover crops, riparian buffers, sediment control structures, and wetlands Urban: measures to reduce construction site runoff

 Training for public & private sectors on erosion control methods & maintenance

Goal 3: Remove Indian & Dry Creeks from the Impaired Waters List

- Reduce E. coli levels to comply with state standard for swimming / wading
- Practices for pet waste; septic system maintenance; fencing livestock out of stream
- Conduct bacteria source tracking program to determine sources of bacteria
- Habitat improvements in the stream corridor, riparian buffers, streambank stabilization

Next Steps

Goal setting process (July – Sept.) September 10th – social assessment Sept. 24th or Oct. 1st – landcover & urban assessment Develop Implementation sections (Aug. – Oct.) Public comment on the draft plan (Nov.) • Final plan to policy makers for adoption (Dec. 2014)

Questions or comments?

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ICWMA Website www.indiancreekwatershed.weebly.com





Introduction to Water Quality



August 13, 2014 Marty St. Clair



What is "water quality"?

Or...how "good" does the water need to be? Usually defined by how the water is used

- o Drinking
- o Recreation
 - Swimming
 - Boating
 - Wading
 - Fishing
- o To carry waste away
- o Non-human uses
 - Fish
 - Other aquatic life



Iowa water quality

Ch. 61 of the Iowa Code

- o Every body of water is classified
- Primary contact recreational use (Class "A1").
- Secondary contact recreational use (Class "A2")
- o Children's recreational use (Class "A3").
- Aquatic life (Class "B") different types depending on cold/warm water and types of life supported
- Drinking water supply (Class "C")
- Indian, Dry, and Squaw Creeks are designated class A1 and class B WW2



Iowa water quality

Specific criteria

- o Class A focuses on bacteria (*E. coli* indicator organism)
 - A1 and A3 235 cfu/100 mL (or geometric mean of 126 cfu/100 mL)
- Class B more specific numerical criteria; pH, dissolved oxygen, ammonia, sulfate, and a multi-page list of metals and pesticides
 - Also relies on biological assessments of aquatic life and of habitat
- Class C "All substances toxic or detrimental to humans or detrimental to treatment process shall be limited to nontoxic or non-detrimental concentrations in the surface water."
 - EPA standard for drinking water 10 mg of NO_3^{-} N/liter
- If a body of water doesn't meet its intended use, it is considered "impaired"

Impaired rivers and streams in Iowa



Impaired rivers and streams

Тор	Top 10 Causes of Impairment in Rivers/Streams								
Rank	Cause Name	Number of Stream/ River Segments *	Indian						
1	Bacteria	186	Dry and						
2	Biological	118	Squaw						
3	Fish kill	81	Creeks						
4	Low dissolved oxygen	15							
5	Metals	14							
6	Mercury (in fish)	12							
7	Sewage	4							
8	Coal tar	3	Passoon						
9	Ammonia	2	and						
10	Nitrate	2	Cedar						

Hypoxia in the Gulf of Mexico



Hypoxia in the Gulf of Mexico

W THE DEAD ZONE FORMS



Dan Swenson, NOLA.com | The Times-Picayune

ecommendation of MR GoM Watershed Nutrient Task Force – 45%



What form(s) of nitrogen do we use in Iowa?



Nitrogen allocation in Cedar River watershed



Standards?

Drinking water standard: 10 mg NO_3^{-} - N/liter

Standard for aquatic life?

- What levels result in negative impacts on aquatic community?
 - Usually looking at excessive algal growth
- EPA (2000): For ecoregion 47 (Western Corn Belt Plains), TN is given at 2.615 mg/L, with NO₂ + NO₃ at 1.965 mg/L
- Minnesota (draft 2014 nitrate): < 4.9 mg/L "good"; >4.9 mg/L "poor"



Phosphorus cycle



VS.

Standards?

No drinking water standard for phosphorus

Standard for aquatic life?

- What levels result in negative impacts on aquatic community?
 - Usually looking at excessive algal growth
- EPA (2000): ecoregion 47 (Western Corn Belt Plains), TP is given at 118.3 μg/L (0.118 mg P/L) – 363.2 mg/L as PO₄³⁻(0.363 mg PO4/L)
- o Minnesota (proposed): 0.150 mg/L TP
- o Wisconsin (final): 0.075 mg/L TP



What do we do about nutrients?

Iowa Nutrient Reduction Strategy

- o Extensive review of research
- Applied to lowa with specifics
- o List of possible strategies
 - Precision farming
 - o Location
 - o Timing
 - Buffers
 - Biofilters
 - Cover crops
 - Many more...
- o Voluntary implementation
- Some support for cost sharing
- Also includes point source reductions



Sediment

Total suspended sediment is a measurement of undissolved solids carried in the water

 Related to turbidity – cloudiness in the water

Problems

- Fills in spaces between rocks, which
 - Reduces habitat
 - Reduces availability of oxygen
- o Carries phosphorus



Sediment sources



owa Daily Erosion Project



Stream restoration





E. coli

Escherichia coli - indicator organism

- o Found in intestinal tract of mammals
- May not be pathogenic, but indicates the possible presence of organisms which are disease-causing

Possible sources

- o Wildlife
 - Geese
- o Pet waste
 - Dogs
- o Livestock waste
- o Human waste
 - Septic systems



"Microbial Source Tracking in a Coastal California Watershed Reveals Canines as Controllable Sources of Fecal Contamination"

Environ. Sci. Technol., Article ASAP; Publication Date (Web): July 23, 2014



How do these things get to the water?

Nitrate

 <u>Very</u> soluble in water – dissolves in water flowing through the soil, and thus is often found in tile drainage

Phosphate, bacteria, sediment

 All tend to move in runoff across the surface. Phosphate is often attached to soil particles (though some dissolves in water as well).





'hat about everything else?

Biological assessment

- Assess how many and what types of organisms are in a given reach of stream
 - Fish
 - Insects
- Are the organisms typical of a stream with good water quality or a stream with poor water quality?
- Algorithm to generate a quantitative score



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FIBI Score Explained

Sites had score between 51 - 70 are considered good - Fish (excluding betrant species) are fairly abundant to way abundant. If high appression, thermediately token and species are usually dominant. A moderately high number of this species belonging to serveral antifier are present. The three most abundant has species specially comprise two hinds or less of the total number of this. Several long-lived speci total serveral serveral sectors and an antification of the sector serveral sectors and the sector sectors and the sector special sectors are set of the total number of the lives of special sectors and the sector sectors and the sector sectors are set of the sectors and the sector sectors are set of the total number of the lives are set of the sectors and the sector sectors are set of the se

Other issues

Microcystins

o DNR monitors beaches in the summer

Neonicotinoids

 Recently found at low levels in many lowa rivers

PCPPs

 Pharmaceutical and personal care products





Indian Creek Watershed Assessment – Water Quality

Marty St. Clair Coe College August 13, 2014







2013

Support provided by:

- Indian Creek Watershed Management Authority
- City of Cedar Rapids Utilities
- Iowa Department of Natural Resources Ambient Stream Monitoring Program
- Coe College student housing and Mehaffy endowment

Indian Creek water quality

- March to November 2013
- Weekly/twice weekly sampling
- 12 sites
 - o Total of ~7000 data points
- Measurement of dissolved oxygen, pH, conductivity, temperature, and turbidity on site
- Chloride, sulfate, <u>nitrate</u>, <u>dissolved reactive</u> <u>phosphorus</u>, <u>total</u> <u>suspended solids</u>, and <u>E</u>. <u>coli</u> in the laboratory





Austin W and E

IC County Home Hwy. 13 Artesian

ICLM

IC Thomas (USGS)

Squaw ICS

Dry County Home

Dry Boyson Dry Donnelly

Historical precipitation

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Annual
2004	0.76	1.72	3.75	1.21	10.09	3.87	1.52	4.97	0.58	3.05	2.42	1.13	35.07
2005	1.96	1.33	0.98	2.29	4.23	3.25	2.13	2.81	3.73	0.67	2.68	1.48	27.54
2006	2.20	0.40	3.04	4.26	2.48	3.98	3.62	5.55	2.52	2.54	2.11	2.23	34.93
2007	0.94	1.61	3.36	4.08	3.66	5.11	4.69	6.04	2.96	4.81	0.17	3.43	40.86
2008	1.09	2.81	2.01	7.22	6.42	9.50	7.45	3.00	4.93	1.39	1.78	2.43	50.03
2009	0.96	0.85	3.19	3.19	2.71	4.08	6.34	13.03	1.18	7.30	1.52	3.08	47.43
2010	1.69	0.74	1.40	4.37	3.34	9.18	7.38	5.45	5.29	1.15	1.27	1.88	43.14
2011	0.61	1.68	2.22	3.78	3.40	5.98	4.66	3.45	2.11	1.57	3.10	2.80	35.36
2012	1.26	1.10	2.63	3.61	1.36	2.85	1.34	2.97	2.10	3.45	1.76	1.15	25.58
2013	0.72	1.39	2.89	8.19	5.02	7.25	1.39	1.08	2.04	1.83	1.94	1.45	35.19
2014	1.03	2.13	1.04	6.15	3.76	11.01	1.56						26.68

Data in inches; 2004-2012 High Plains Regional Climate Center; 2013-14, Iowa Environmental Mesonet



Daily precipitation at the intersection of Indian and Squaw Creeks

Nitrate – main stem of Indian Creek



Nitrate – main stem June 2013



Nitrate – Dry Creek and Squaw Creek



•

N loading

- Need flow (i.e. liters/second) x concentration (mg/liter)
- Better measure of impact of a watershed than concentration
 - o Low flow x high concentration may equal relatively little N
- USGS gauge at Thomas Park is best source of flow in Indian Creek watershed
 - o Flow every 15 minutes
- Use flow measurements combined with grab samples to get loading from March to November
- Calculated N loading (March-November) was 23.6 pounds per acre (1,400,000 lbs. total)
 - o 2004 nutrient budget reported a range of 3 to 34 lbs./acre
 - o Using total area of watershed

Indian Creek nitrate over time

	2004	2005	2006	2007	2008	2009
ICLM	8.58	4.57	12.01	10.50	12.00	7.44
IC Thomas	6.74	3.96	9.70	8.17	8.35	5.94
Dry Donn	2.64	3.18	5.43	5.32	6.46	NA
ICS	5.83	2.49	7.58	6.17	7.74	4.90

	2010	2011	2012	2013	2014
ICLM	8.95	9.25	3.89	12.01	12.93
IC Thomas	7.28	7.00	3.52	9.62	10.28
Dry Donn	5.83	5.89	2.85	7.89	7.59
ICS	6.02	5.89	2.72	7.75	8.40

May – August averages of NO₃-N (mg/L)

Dissolved reactive phosphorus



Dissolved reactive phosphorus



P loading

- Again, using USGS gauge information at Thomas Park for flow data
- DRP reported as $PO_4^{3-} \rightarrow Convert to P$
- 0.271 lb of P (in the form of DRP)/acre
 Using total area of watershed
- For comparison purposes, range of total P/acre in the 2004 IDNR Nutrient Budget was 0.3 to 3.2 pounds/acre
- In a different study, we are measuring both DRP and total P; total P is, on average, 1.92 times higher than DRP
- Applying this factor gives an *estimated* total P loading of 0.52 pounds total P/acre from March to November (31,000 pounds total)

E. coli in Indian Creek



Note – log 10 scale

E. coli in Indian Creek



Note – log 10 scale

TSS



Sediment loading

- Again, using USGS gauge information at Thomas Park for flow data
- Works out to 64.9 Ibs./acre March to November
- Averaged over watershed (including impermeable surfaces)



Biological assessement

- Carried out by staff from the State Hygienic lab
- Data available at IDNR's Bionet web site
 - https://programs.iowadnr.gov/ bionet/
- Assessment of
 - o Fish population
 - o Invertebrate population
 - o Habitat
- Converted to a quantitative score



Biological assessment

Go to Site

Cedar Rapids	- Wilder Dr	Trailhead					
Fish Session Data		Fish Health 0		FIBI	Collected Fish		
Sample Date: 8/2	7/2013	I DELTA	0		Species	Catch	0
imeframe: 083	30-1000	# Non-DEI T- D-	0	68	Bluntnose Minnow	102	0
each Size (ft): 845	5	P NORPOEL IS O		00	O Bluegill	72	o
tethod 🛛 Sta	ndard Wadeat	ie Equipment 0		Warm Water	O Central Stoneroller	59	0
ample Quality: Go	bo	Shockers: 3		Good	O Common Shiner	39	o
ast Update: 3/1	0/2014 2 31 35	PM Blocknets: 1		O Green Sunfish 37			
					O Spotfin Shiner	36	0
ession Comment	15				Golden Redhorse	32	0
No comments record	sed.				Gizzard Shad	32	0
Project Tags					Bigmouth Shiner	30	0
Topoct regs					Smallmouth Bass	29	0
None					Fantail Darter	25	0
IBI Calculation Fa	actors	Fish Index of Biotic	Integrity	0	 Highfin Carpsucker 	22	0
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00/04/0	1 8834	Native Con	20	0.24	 Creek Chub 	18	0
otal Eich:	6.16	Rucker Spp	20	10.00	 White Sucker 	17	0
ish per 500 ft	382	Sans Son	6	5.58	 Sand Shiner 	16	0
Intal Species	32	BINV Son	10	8.85	O Carmine Shiner	14	0
Excluded Species	0	% Top 3 Abundant	36.07	9.93	Northern Hog Sucker	12	0
Exotic Species:	1	% BINV	15.70	3.52	Common Carp	1	0
LMB-BG:	2	% Omnivore	28.64	6.78	Challback Checknolse	0	0
	_	5 Top Carnivore	4.64	5.94	Contrack Carpsucker		
alculation Last Upd	lated:	% Litho Spawner	7.74	3.42	Cargemouth Bass		0
5/9/2014 12:14:	38 PM	Tolindex	6.15	6.11	Jonnny Darter	4	0
		Adj CPUE	49.7	4.97	Orangespotted Sunfish	2	0
		DELT % Adj	0	0.00	Crangemioat Darter	2	
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FIBI Score Explained

ATATA INTA

-

Sites that score between 51 - 70 are considered good. Fish (excluding tolerant species) are fairly abundant to very abundant. If high numbers are present, intermediately tolerant species or tolerant species are usually dominant. A moderately high number of fish species belonging to several families are present. The three most abundant fish species typically comprise two-thirds or less of the total number of fish. Several long-lived species and benthic invertivore species are present. One or more sensitive species are usually present. Top carnivore species are usually present in low numbers and often one or more life stages are missing. Species that require silt-free, rock substrate for spawning or feeding are present in low proportion to the total number of fish. Fish condition is good, typically less than 1% of the total number of fish exhibits external anomalies associated with disease or stress.

West of Cottage Grove Parkway, south of Hwy. 100

MOIMA BIONET

ndan Creek Bug Series #1476 BMEI - Warm Water

Indian Creek: Cedar Rapids - Wilder Dr Trailhead

Benthic Macroinvertebrate Sampling Series #1476

Index of Biotic Integrity Value Metric' Score" MH Total Taxa 55 10.00 SH Total Taxa 13.33 6.32 MH EPT Taxa 8.50 SH EPT Taxa 8.33 5.79 MH Sensitive Taxa 6.36 SH Ephem % 25.00 3.32 SH EPT % 87.35 9.15 SH Chiron % 3.93 9.71

5.41

65.31

63.44

5.32

Analysis Com	ponents
BMIBI Type:	Warm Water
Sample Date:	8/27/2013
Sampling Series:	Series #147
Drainage Area (mi ²):	76.447
Log10 Drainage Area:	1.8834
Sampling Gear:	Hess

BIOLOGICAL MONITORING & ASSESSMENT

65

Good BMIBI last calculated 7/1/2014 7 20:50 AM

BMIBI - Warm Water Score

Sample sessions used in this analysis

> 8/27/2013 Hess #5824 (True) 8/27/2013 Hess #5825 (True) 8/27/2013 Hess #5826 (True) * 8/27/2013 Qualitative #5827 (True)

"Final tBI is sum of scores multiplied by 0.8333

"Mouse-over metric for full name **BMIBI Score Explained**

SH Scraper %

SH Top3Dom %

SH Dom FFG %

MHBI

This site was analyzed using the BMBI-Warm Water 9 assessment methodology.

5.51

6.22

6.09

Sites that score between 56 - 75 are considered good. A slight reduction in number (Ephemeroptera, Piecoptera, Tricoptera) of taxa; however, good numbers of taxa are present, including several sensitive species, EPT taxa are fairly diverse and dominate the community. The most sensitive taxa and some habitat specialists may not be present and/or are reduced in abundance. The community is balanced, with no taxon excessively dominating in abundance. One functional feeding group, often collector filterers or collector gatherers, may be somewhat dominant.

This location has been classified as a survey site. Survey sites are compared to reference sites within the same ecoregion. A reference site represents natural stream qualities that are least disturbed by human activities within the watershed. Reference sites are grouped by ecoregion to establish a benchmark against which these test streams are compared.

EcoRegion Comparison

This site is in the Iowan Surface 9 ecoregion. There have been 86 benthic macroinvertebrate sampling sessions collected at reference sites in this ecoregion. These sessions display the following Warm Water score range characteristics:



Biological assessment

[Log On]					Q ★ 1		Go to Site	[Log On]				<u> </u>	Go to S
DEPARTMENT OF NATURAL RES	A	BIONET	Вю	ogical Monito	iring & Assessment			DEPARTMENT OF NATURAL RESC	A	Biol		onitoring & Assess	MENT
East Indian Creek	Fish Session	9/26/2013						East Indian Creek	Bug Series #14	77 BMIBI - War	rm Water		
East Indian Cre Marion (HW3	ek 9)							East Indian C	reek: №	arion(H	W39)		
Fish Session Data		Fish Health		<u>FIBI</u>	Collected Fish®	Catab		Benthic Macroi	invertebi Integrity	ate Samp	pling Series #1477 Analysis Compo	nents	BMIBI - Warm Water Score
Timeframe: 09:5 Reach Size (ft): 619 Method 2 Star Sample Quality: Goo Last Update: 4/29	/2013 i0-10:30 idard Wadea id i/2014 7:48:	# DELTS 0: # Non-DELTS 0: able <u>Equipment</u> 0 Shockers: 1 09 AM Blocknets: 0	0	65 Warm Water Good	 Central Stoneroller Bluntnose Minnow Blacknose Dace Creek Chub Johnny Darter 	204 141 108 99 66	00000	Metric* MH Total Taxa SH Total Taxa MH EPT Taxa SH EPT Taxa MH Sensitive Taxa	Value 33 10.67 9 4 4	Score** 10.00 10.00 7.01 5.89 7.13	BMIBI Type: WW Sample Date: 97 Sampling Series: Se Drainage Area (mi ²): 4.3 Log10 Drainage Area: 0.0 Sampling Gear: St	arm Water 26/2013 r <u>ies #1477</u> 39 5893 rb	64 Good BMIBI last calculated 7/1/2014 7.20:52 AI
Session Comments No comments records Project Tags None	<u>s</u> ed.	Fick Index of Director	I	9	 Southern Redbelly Dace White Sucker Orangethroat Darter Bigmouth Shiner Common Shiner Suckermouth Minnow Bilueqiil 	40 31 22 9 6 4 4	0000000	SH Ephem % SH EPT % SH Chiron % SH Scraper % SH Top3Dom % SH Dom FFG %	4.54 55.09 30.45 11.22 81.01 53.85	0.58 5.77 7.03 2.51 7.14 7.69 5.52	Sample sessions used in > 9/26/2013 Surber #5828 > 9/26/2013 Surber #5829 > 9/26/2013 Surber #5830 > 9/26/2013 Qualitative #5	this analysis (True) (True) (True) 831 (True)	
	ctors	Fish Index of Blotic	Integrity		Green Sunfish	3	0	*Mouse-over metric for full	name	0.02			
Drainage (mi): Log(DA) ⁽¹⁾ : Total Fish: Fish per 500 ft:	4.8900 0.6893 741 599	Metric Native Spp Sucker Spp Sens Spp	Value 14 1 3	10.00 4.45 7.62	 Brook Stickleback Fathead Minnow 	3 1	00	*Final IBI is sum of scores I BMIBI Score Explai	multiplied by 0.83 ned using the BMI	³³ BI-Warm Wate	er 🛙 assessment methodology		
Total Species: # Excluded Species: # Exotic Species: # LMB-BG:	15 0 0 1	BINV Spp % Top 3 Abundant % BINV % Omnivore % Top Carnivore	3 61.13 12.42 23.35 0	7.25 10.00 7.56 10.00 0.00				Sites that score betwee numbers of taxa are pre some habitat specialists abundance. One function	n 56 - 75 are esent, includir s may not be onal feeding o	considered go ng several sen: present and/or proup, often co	ood. A slight reduction in number (isitive species, EPT taxa are fairly (r are reduced in abundance. The c ollector filterers or collector gathere	Ephemeroptera, Pleo liverse and dominate ommunity is balance ers, may be somewha	optera, Tricoptera) of taxa; however, goor the community. The most sensitive taxa a d, with no taxon excessively dominating in t dominant.
Calculation Last Upda 5/9/2014 12:14:3	ated: IS PM	% Litho Spawner Tolindex Adj CPUE DELT % Adj	0.54 6.27 78.84 0	0.65 5.92 7.88 0.00				This location has been that are least disturbed	classified as a by human ac	a Candidate Re tivities within th	teference Site. Further study is req he watershed.	uired to determine if	this site represents natural stream qualitie
FIBI Score Explained	ed n 51 - 70 ar	Mouse-over metric for full na e considered good. Fish (e	ame xcluding tole	erant species) are	e fairly abundant to very abundant	If high num	bers are	EcoRegion Com This site is in the this ecoregion. T	i parison Iowan Surfac hese session	e 🛛 ecoregion s display the fo	n. There have been 86 benthic ma ollowing Warm Water score range (croinvertebrate samp haracteristics:	oling sessions collected at reference sites

families are present. The three most abundant fish species typically comprise two-thirds or less of the total number of fish. Several long-lived species and benthic invertivore species are present. One or more sensitive species are usually present. Top carnivore species are usually present in low numbers and often one or more life stages are missing. Species that require silt-free, rock substrate for spawning or feeding are present in low proportion to the total number of fish. Fish condition is good; typically less than 1% of the total number of fish exhibits external anomalies associated with disease or stress.

This location has been classified as a Candidate Reference Site. Further study is required to determine if this site represents natural stream qualities

East of Hwy. 13 near Indian Bridge Road

Go to Site



Iowa Water Quality Index – ICS (MV Rd.)





Water Quality Goals: Input Form

If you were unable to attend the "Indian Creek Watershed Plan - Water Quality Goals: Lunch, Learn & Input Session" on Wednesday, August 13th or would like to provide additional information, please fill out this form, save it and e-mail it to jennifer.fencl@ecicog.org.

> Water Quality Chapter of the Indian Creek Watershed Management Plan

Goal 1: In line with the Iowa Nutrient Reduction Strategy non-point source reduction goals, encourage and implement practices to reduce concentrations of nitrogen by 41% and phosphorus by 29% in the Indian Creek Watershed over the next 20 years.

Please provide your reaction, thoughts, ideas, and suggested action steps for this goal below. Consider adding ideas using the following framework:

- Education / Communication
- Policy
- Practices
- Measure / Monitor

Water Quality Chapter of the Indian Creek Watershed Management Plan

Goal 2: Reduce sediment loading by 35% in the Indian Creek Watershed over the next 20 years.

Please provide your reaction, thoughts, ideas, and suggested action steps for this goal below. Consider adding ideas using the following framework:

- Education / Communication
- Policy
- Practices
- Measure / Monitor

Water Quality Chapter of the Indian Creek Watershed Management Plan

Goal 3: Remove Indian Creek and Dry Creeks from the Impaired Waters List. - Reduce E. coli levels to comply with state standard for swimming /wading

Please provide your reaction, thoughts, ideas, and suggested action steps for this goal below. Consider adding ideas using the following framework:

- Education / Communication
- Policy
- Practices
- Measure / Monitor

Water Quality Chapter of the Indian Creek Watershed Management Plan

Please provide your general input to the draft goals or the water quality section of the plan.

If you would like to provide additional information or receive future e-mails from the Indian Creek Watershed Management Authority, please fill out the information below.

First Name (optional)

Last Name (optional)

E-mail (optional)

Water Quality Focus Group August 13, 2014

Summary of Responses & Input

<u>Target Audiences</u>: A full list of attendees is included in this report. In general, the focus group participants represented city & county public works and planning staff; state level staff; agriculture interests; property owners; local college students; conservation interests; civic organizations; and development interests.

Focus group participants were asked to work in small groups and brainstorm strategies for one of the three draft goals presented. The small groups were encouraged to use the framework listed below as a way to group strategies. The small groups reported their ideas to the larger group and consensus formed around the strategies and ideas listed below.

Framework for goals and objectives:

- Education / Communication
- Policy
- Practices
- Measure / Monitor

One small group worked on providing direction for the goals overall utilizing the framework:

- 1. Education and communication should be targeted to specific audiences
- 2. Policies should favor incentives over regulation whenever possible
- 3. Practices should be targeted to the best areas to achieve improvements
- 4. Establish benchmarks for monitoring & measuring improvements two examples:
 - a. Tracking landuse changes
 - b. Tracking agriculture chemicals and lawn care chemicals

Draft Goal 1: In line with the Iowa Nutrient Reduction Strategy non-point source reduction goals, encourage and implement practices to reduce concentrations of nitrogen by 41% and phosphorus by 29% in the Indian Creek Watershed over the next 20 years.

- Agreed with a 20 year plan timeline, but felt strongly that specific goals or implementation strategies be divided into 5 year increments and progress be measured regularly
- At the State level, request \$6 million each year for cost share to implement conservation practices
- Tailor BMP / solutions to site specific land contours and soil types
- Encourage precision application of phosphorus
- Utilize bacteria inhibitor for fall application of nitrogen
- Promote view of soil as a whole system / encourage overall soil health & practices to improve
- Balanced approach

Draft Goal 2: Implement practices in both agriculture and urban areas to reduce sediment loading by 35% in the Indian Creek Watershed over the next 20 years.

- Agreed to set the baseline to current creek levels and to set goals to cut peak creek levels by some amount for a 2" and 5" rain event
- Encourage stream bank restoration projects
- Review rules for construction site erosion control practices and increase enforcement
- Encourage BMPs for construction sites
- Develop a regional stormwater detention catchment or basin; employ a treatment train approach
- More beavers
- Encourage installation of more buffer strips
- Promote the expertise of NRCS and SWCD staff for implementing BMPs
- Involve schools
- Support more monitoring work by Coe College and its students
- City outreach
- Implement BMPs related to the use of sand and salt on city streets
- Promote topsoil preservation in new development, even if the 4" rule is not continued by the state

Draft Goal 3: Remove Indian Creek and Dry Creeks from the Impaired Waters List by reducing *E.coli* levels to comply with state standard for swimming / wading and improving habitat over the next 20 years.

- Encourage proper maintenance of septic systems through both education and incentives / vouchers highlight why maintenance is important
- Encourage proper management of pet / dog poop through:
 - Awareness & education campaign what is the proper method & why
 - Posting signs and providing bags in public spaces
 - \circ $\,$ Increase fines for not picking up pet / dog poop $\,$
- Reduce geese droppings by deterring geese and discourage feeding
- Educate residents about the proper method(s) for draining private pools