

## Watersheds Update

It Takes Collaboration and Teamwork!



April 19, 2022  
City Council Workshop



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## Watersheds Update

### City of Ames Public Works Department:

John Joiner, Director  
Tracy Peterson, Municipal Engineer  
Cesar Cintron, Civil Engineer II  
Liz Calhoun, Stormwater Resource Analyst  
Jake Moore, Stormwater Specialist

### City of Ames W&PC Department:

John Dunn, Director  
Neil Weiss, Asst Director  
Maryann Ryan, Laboratory Supervisor  
Ashley Geesman, Enviro. Engineer  
Dustin Albrecht, Enviro. Specialist

### Prairie Rivers of Iowa:

Penny Brown Huber, Executive Director  
Jessica Butters, Pollinator Conservation Specialist  
Dan Haug, Water Quality Specialist



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## Watersheds Update

### Streams in Ames



- ❑ Onion Creek: 880 feet
  - ❑ Clear Creek: 6,565 feet
  - ❑ College Creek: 6,880 feet
  - ❑ Worle Creek: 5,450 feet
  - ❑ loway Creek: 9,387 feet
  - ❑ South Skunk River: 7,730 feet
- Total =36,892 feet or 6.99 miles



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# UPDATE TO COUNCIL: WATER QUALITY MONITORING IN STORY COUNTY

2022-04-19

Dan Haug, Water Quality Specialist

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# April 19, 2022 Ames City Council Workshop: Watersheds Update

**Class A1**  
**NOT ASSESSED**  
[Presumptive Use](#)

**Class A1**  
**WINOFI**  
[Presumptive Use](#)

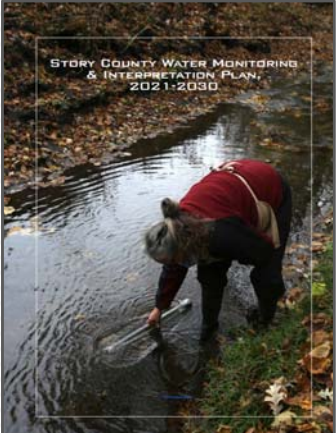
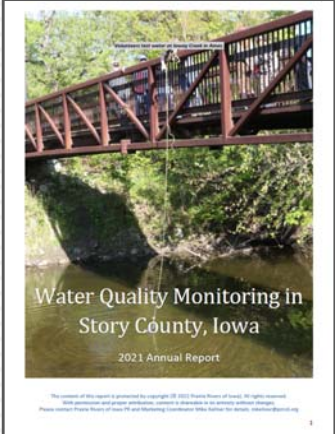
**Bacteria: Indicator Bacteria- E. coli**

Support Level	Water in Need of Further Investigation (WINOFI)
Impairment Code	3b - Use potentially impaired based on an evaluated assessment.
Cause Magnitude	Moderate
Status	Continuing
Source	Unknown: Source Unknown
Source Confidence	Low
Cycle Added	2018
Impairment Rationale	Geometric mean criterion exceeded
Data Source	Special project/study

On this day in loway Creek, *E. coli* bacteria was 10x the primary contact recreation standard.

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## Accomplishments, 2021


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# Partners

	\$\$	Training	Events	
Kits	Lab	Database	Data analysis	
				
\$\$	\$	\$	\$	
			 	

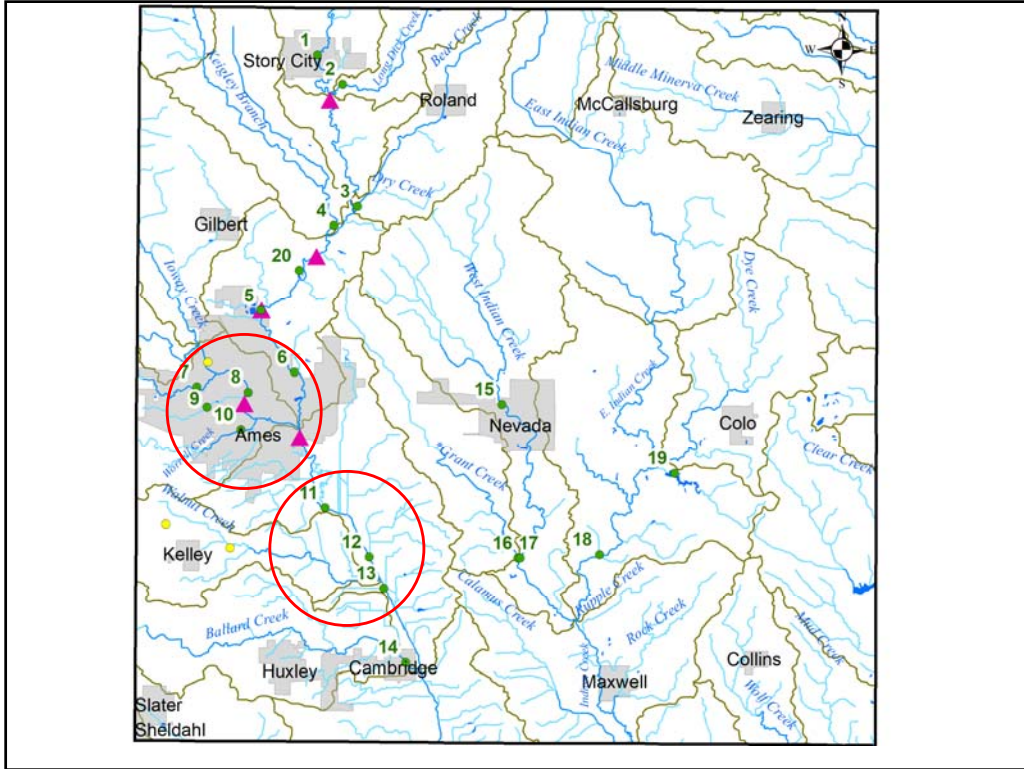
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# Lab testing



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# April 19, 2022 Ames City Council Workshop: Watersheds Update



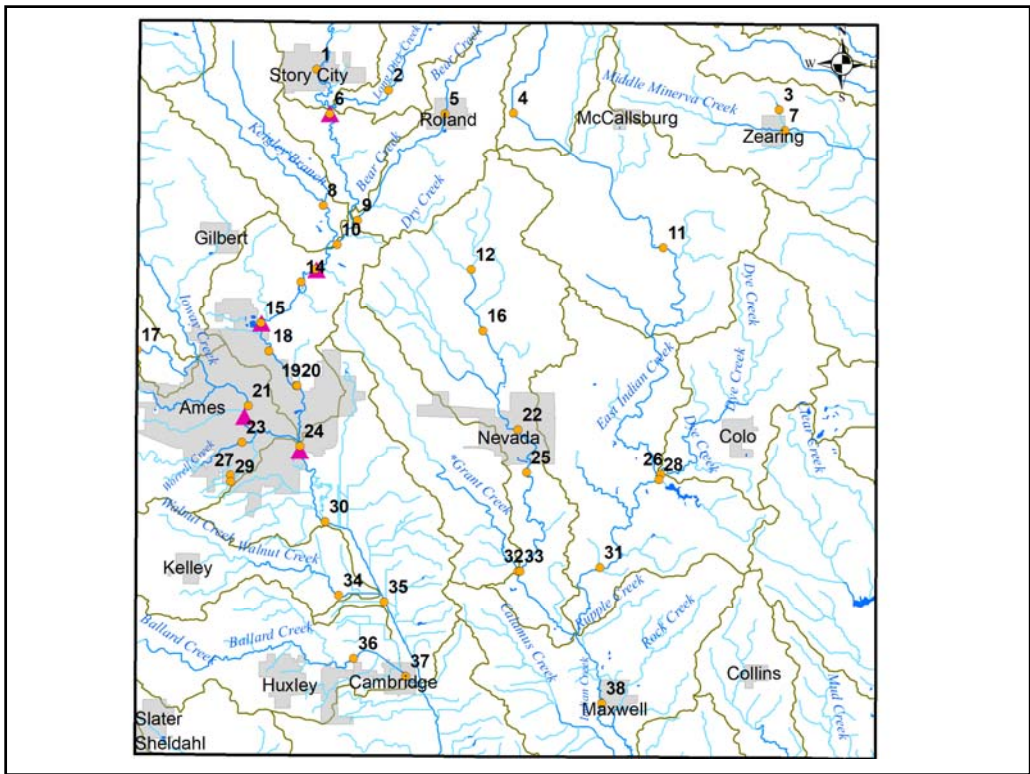
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## Volunteer testing in the field

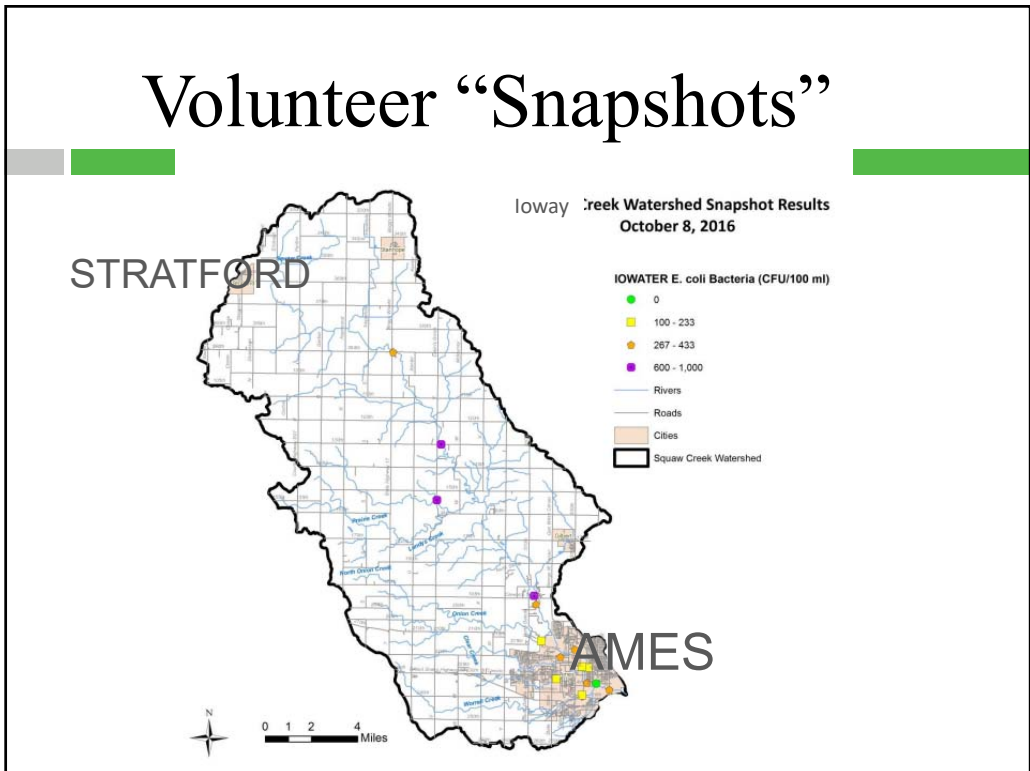


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# April 19, 2022 Ames City Council Workshop: Watersheds Update

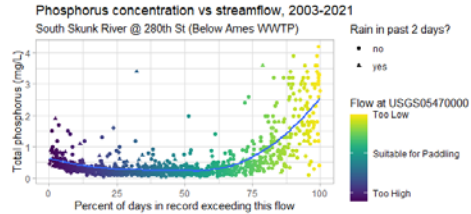
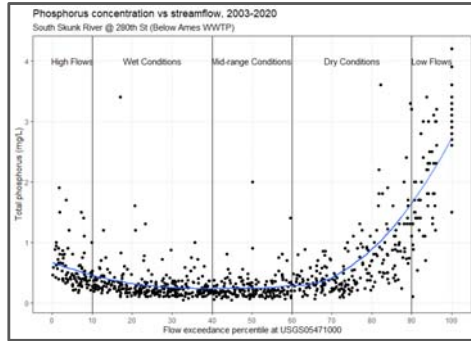


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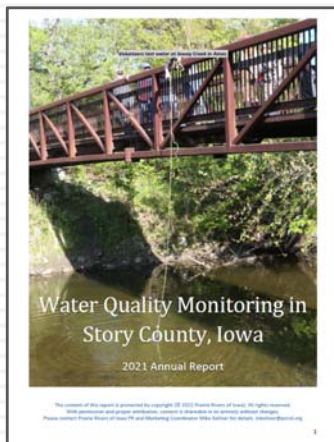
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## Interpreting and communicating the data



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## Findings, 2021



### Duff Hygiene and Nutrient Losses

This year was the dry to have much influence on Duff Hygiene. Focusing on normal to wet periods will help to identify hot spots where conservation practices are needed and evaluate whether conservation practices are working.



### Nutrient Enrichment and Algae Blooms in Lakes and Streams

During dry conditions, the highest nutrient levels are below wastewater treatment plants.



### Fish and the Insects They Eat

Low dissolved oxygen is harming invertebrates in some streams. Effluent from wastewater treatment plants could be a factor, but some patterns are still unexplained.



### Recreation and Waterborne Illnesses

E. coli bacteria was usually low at swimming beaches and parts of the South Skunk River, but high in most creeks. We can narrow down likely sources of contamination by checking whether bacteria is highest during low flows or high flows.



### Erosion and Sediment Impacts on Aquatic Life

Unsettled stormwater from older neighborhoods can have extremely high levels of sediment, phosphorus, and bacteria.

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# Key findings from 2021 monitoring



### Gulf Hypoxia and Nutrient Losses

This year was too dry to have much influence on Gulf Hypoxia. Focusing on normal-to-wet periods will help to identify hot spots where conservation practices are needed and evaluate whether conservation practices are working.



### Nutrient Enrichment and Algae Blooms in Lakes and Streams

During dry conditions, the highest nutrient levels are below wastewater treatment plants.



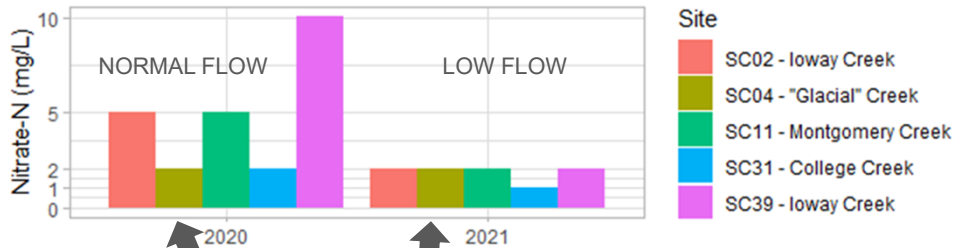
### Fish and the Insects They Eat

Low dissolved oxygen is harming invertebrates in some streams. Effluent from wastewater treatment plants could be a factor, but some patterns are still unexplained.

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## Low nitrate almost everywhere

Differences between sites, measured at two May snapshots

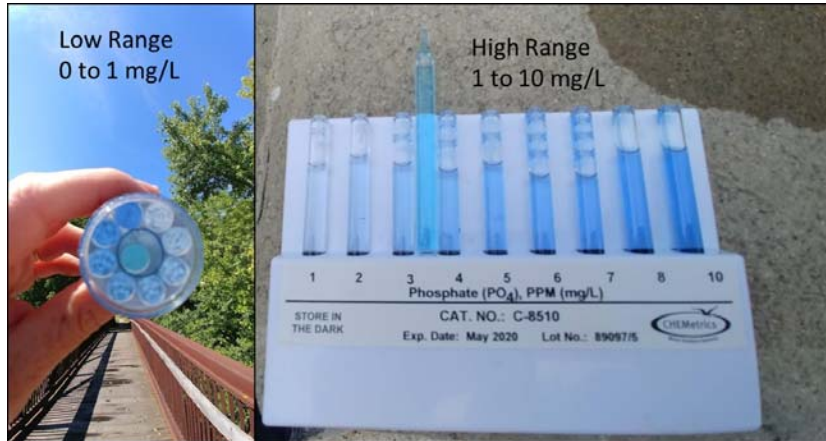


CREP Wetland

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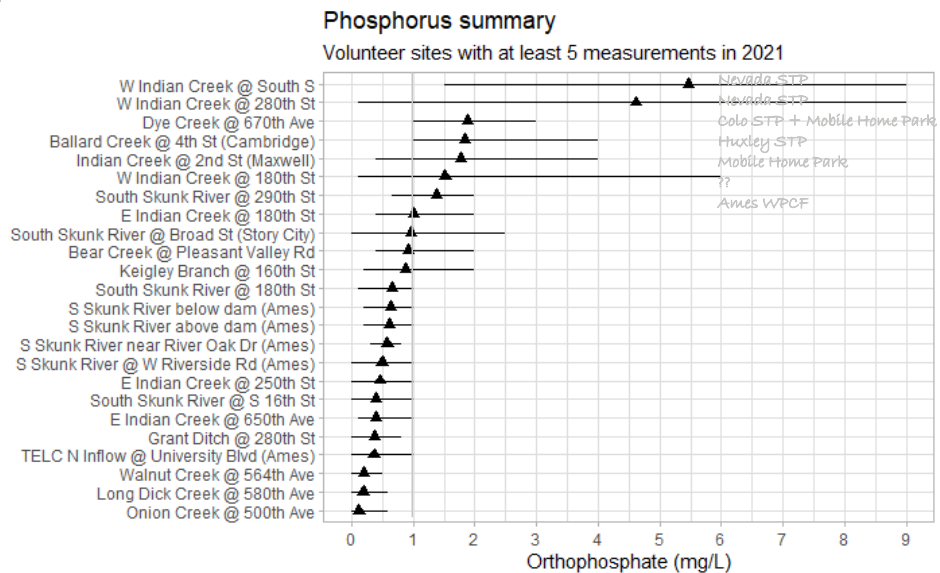


# High phosphorus



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# High phosphorus: volunteer results



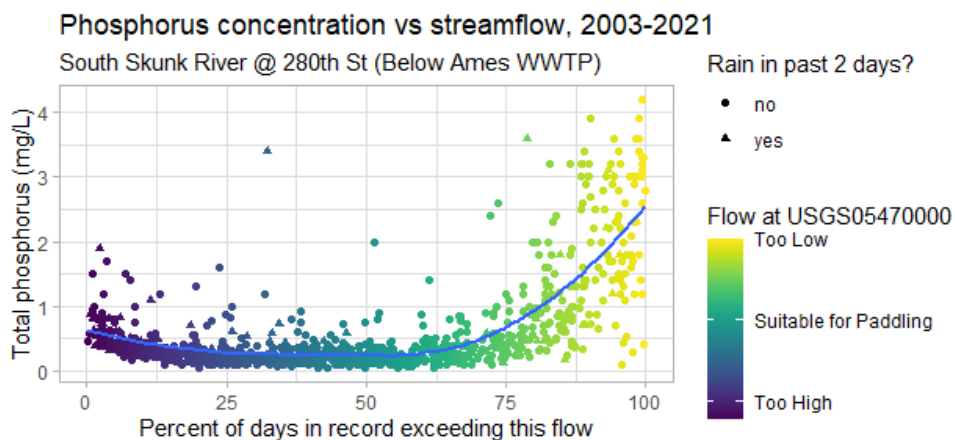
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## Outfall from Ames WPCF



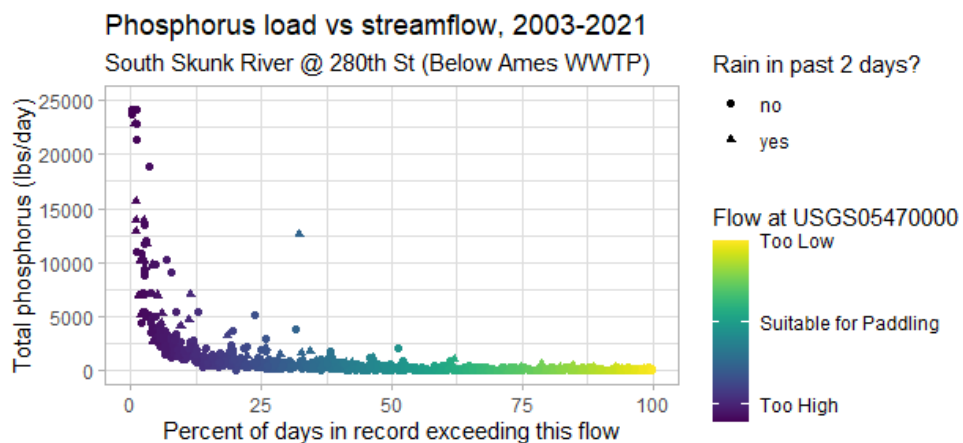
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## High phosphorus: lab testing



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## Low flows not important for Gulf



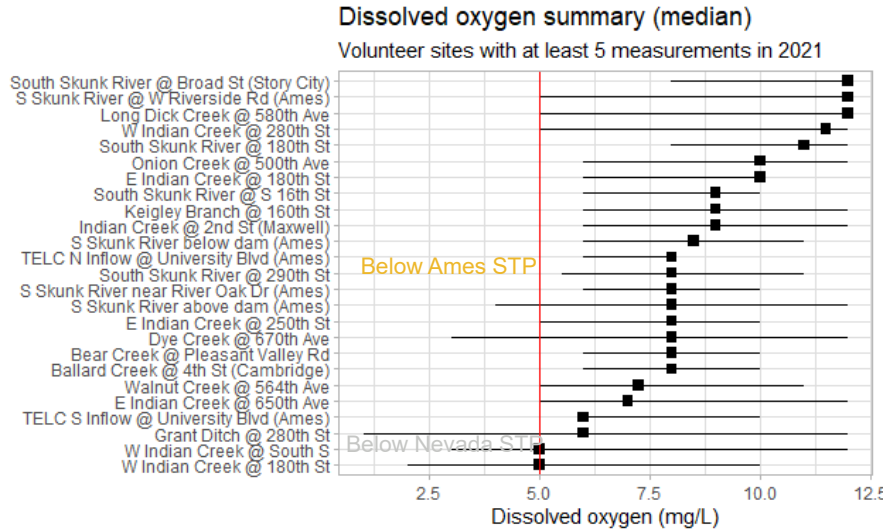
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## Is effluent affecting creek critters?



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## Is effluent affecting creek critters?



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## Key findings from 2021 monitoring



### Recreation and Waterborne Illnesses

*E. coli* bacteria was usually low at swimming beaches and parts of the South Skunk River, but high in most creeks. We can narrow down likely sources of contamination by checking whether bacteria is highest during low flows or high flows.

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## Bacteria results, 2021

South Skunk River



Ioway Creek



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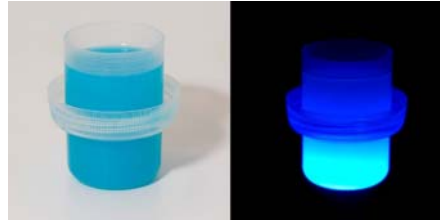
## Bacteria results, 2021

- Lakes are safer for swimming than

Site	Number of samples (need 7)	Samples exceeding <i>E. coli</i> standard	<i>E. coli</i> geomean (MPN/100mL)
West Peterson Park Lake (beach)	15	2	17
Hickory Grove Lake	15	3	58
S. Skunk River @ N River Valley Park	8	1	72
S Skunk River @ W Riverside Rd (Ames)	8	1	98
S. Skunk River @ Broad St, Story City	8	3	134
Bear Creek @ Pleasant Valley Road	7	3	159
West Indian Creek @ 280 <sup>th</sup> St (Nevada)	8	7	315

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## Narrowing down bacteria sources



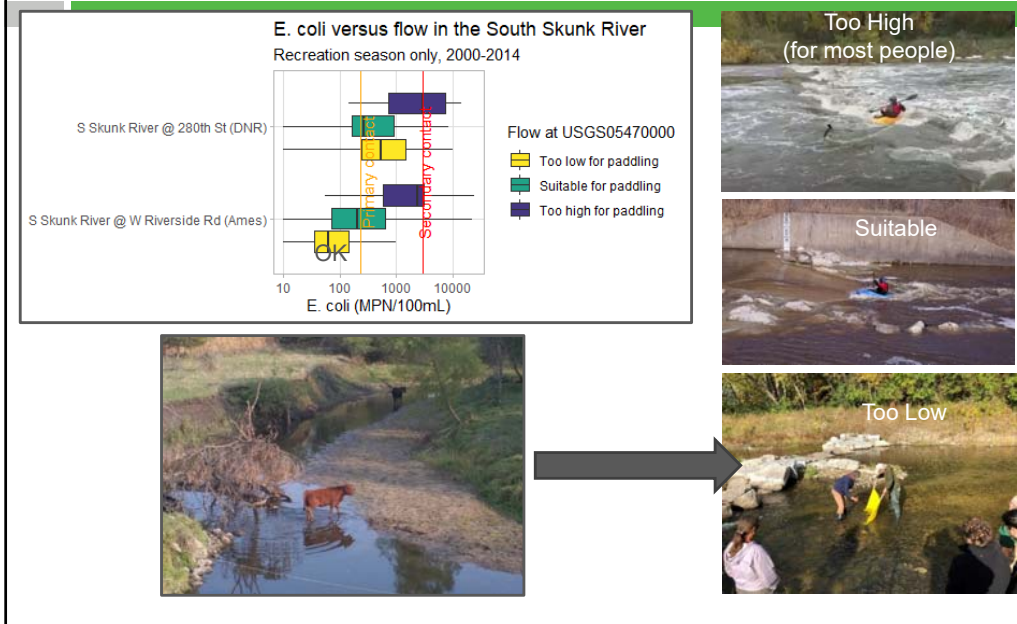
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## Narrowing down bacteria sources



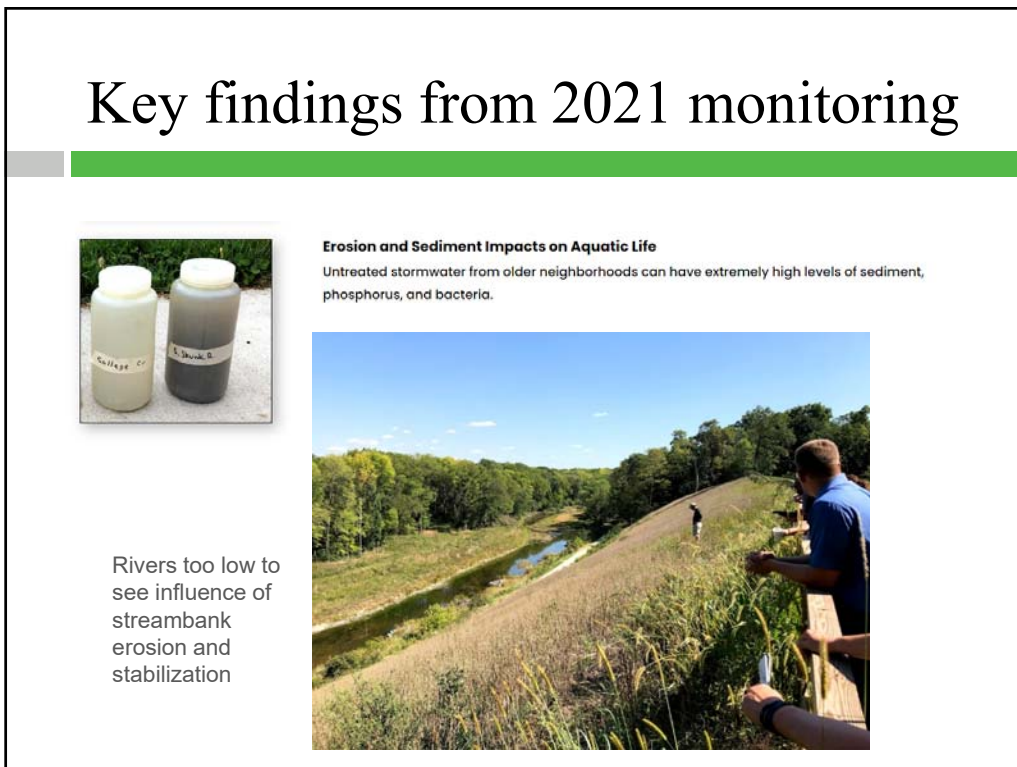
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## Narrowing down bacteria sources



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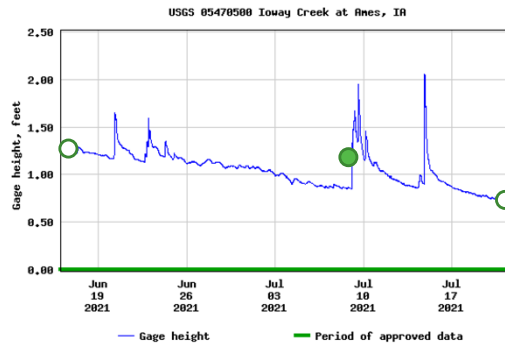
## Key findings from 2021 monitoring



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## Many pollutants worse after rain...

Ioway Creek @ 6th St	TSS (mg/L)	E. coli (CFU/100 mL)	Total Phosphorus (mg/L)	Nitrate-N (mg/L)
June 16, baseflow	7	904	0.14	5.50
July 9, storm event	1,316	25,200	1.42	0.60
July 21, baseflow	7	441	0.17	1.00



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## ...from areas not treated by ponds

TSS	1 mg/L	TSS	1006 mg/L
E. Coli	20 CFU/100mL	E. Coli	53,200 CFU/100m
Phosphorus	0.02 mg/L	Phosphorus	0.79 mg/L



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### Connection between storm sewers and creeks



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### W&PC WATERSHED UPDATE



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### Watershed-based Nutrient Reduction

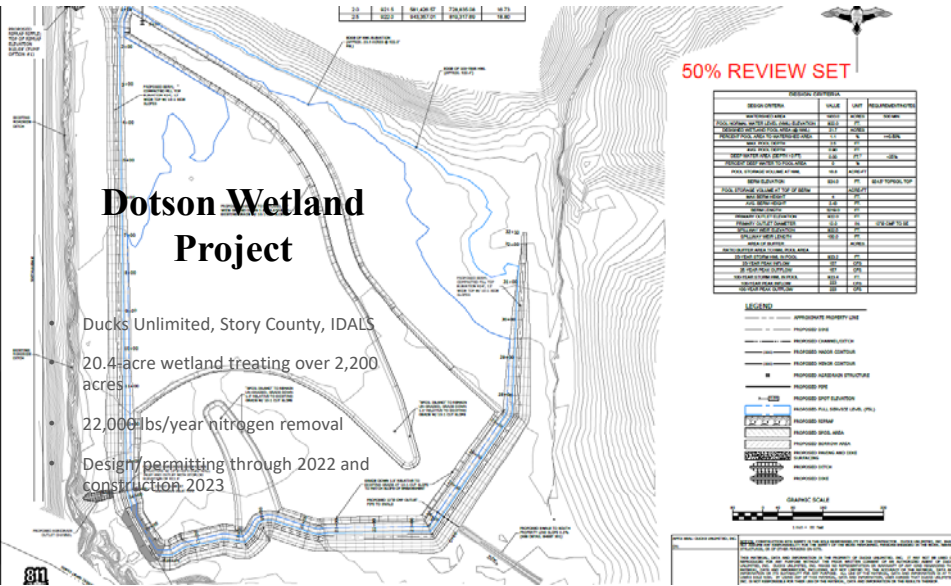
- \$200K/Year Investment "Outside the Fence"
- Iowa Nutrient Reduction Exchange
- DNR Memorandum of Understanding



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## Dotson Wetland Project

- Ducks Unlimited, Story County, IDALS
- 20.4-acre wetland treating over 2,200 acres
- 22,000 lbs/year nitrogen removal
- Design/permitting through 2022 and construction 2023



WETLAND TYPES			
WETLAND CODE	VALUE	AREA	PERCENTAGE TOTAL
WETLAND TYPE 1	1.00	1000	50.00%
WETLAND TYPE 2	2.00	2000	10.00%
WETLAND TYPE 3	3.00	3000	15.00%
WETLAND TYPE 4	4.00	4000	20.00%
WETLAND TYPE 5	5.00	5000	25.00%
WETLAND TYPE 6	6.00	6000	30.00%
WETLAND TYPE 7	7.00	7000	35.00%
WETLAND TYPE 8	8.00	8000	40.00%
WETLAND TYPE 9	9.00	9000	45.00%
WETLAND TYPE 10	10.00	10000	50.00%

50% REVIEW SET

GREAT LAKES/ATLANTIC REGION  
DUCKS UNLIMITED

SITE PLAN  
DOTSON  
STORY COUNTY  
IOWA


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## Story County Edge-of-Field Project

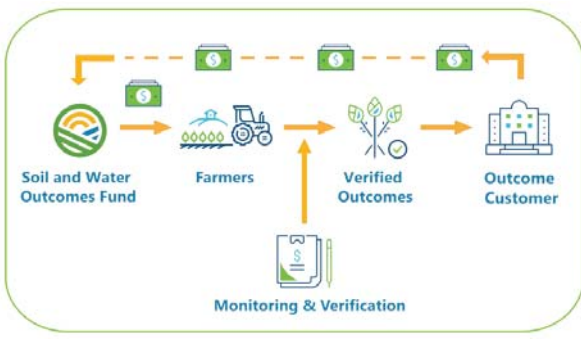
- Story County, Polk County, JEO Consulting Group, Heartland Co-op, Natural Resource Conservation Service, IDALS, and Iowa State University.
- Central Fiscal Agent Funding Model
- 25+ Bioreactor/Saturated Buffer Sites
- Construction Summer/Fall 2022
- Landowner outreach already starting for 2<sup>nd</sup> round



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## Soil and Water Outcomes Fund




- Partnership with Iowa Soybean Association
- Cover Crops placed on 4000+ acres in Story County
- Nutrient Reductions (2020,2021)
  - 120,000 lbs Nitrogen
  - 7,000 lbs Prosperous

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## Land Retirement – Moore Memorial Park


- Partnership with Ames Parks & Recreation Department
- 40 Acres Prairie Restoration
- IFA Grant Funding
- Seeding Anticipated Early Summer




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## AMES WATER TREATMENT PLANT OPEN HOUSE

APRIL 23, 2022  
10 AM - 2 PM



The City of Ames Water & Pollution Control Department invites you to attend the Water Treatment Plant Open House on Saturday, April 23, from 10 AM - 2 PM. The event will offer public tours, community engagement, kids activities, and more!



1800 E. 13th Street | Ames, IA 50010 | 515.239.5150  
[www.CityOfAmes.org/Water](http://www.CityOfAmes.org/Water)

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## Public Works Update

- ❑ Ames was the 15<sup>th</sup> city to be granted the award.
- ❑ Award aligns with the City's principles of promoting, restoring and protecting our waterways and the Prairie Rivers of Iowa's mission to promote economic development through the restoration and conservation of Iowa's cultural and natural resources.



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## Iowa River Town of the Year 2021

### Efforts to Promote Streams

- ❑ 3 access points to the newly designated Skunk River Water Trail
- ❑ S. Skunk River low-head dam mitigation project in North River Valley Park
- ❑ Over 9 miles of shared use paths along streams
- ❑ Streambank stabilization projects using methods from the newly developed Iowa River Restoration Toolbox
- ❑ Watershed signs at bridges to encourage stewardship and discourage dumping
- ❑ Annual cleanup events that have removed 17 tons of trash from local rivers



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## Watersheds Update

### Low Head Dam Modification: loway Creek @ Lincoln Way

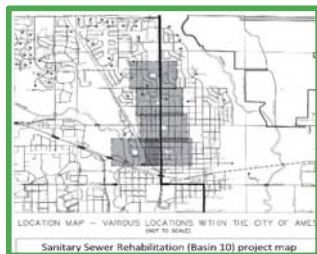


- ❑ Completed in 2017
- ❑ Modified grade-control sheet pile with concrete cap with v-notch weir
- ❑ Series of rock weirs below sheet pile
- ❑ Bank regrading and stabilization
- ❑ Bench at base of bank slope for safety



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## Watersheds Update



### Sanitary Sewer Improvements

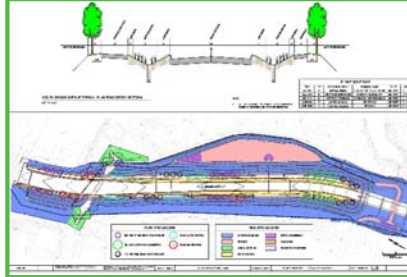
- ❑ Annual projects since 2015
- ❑ CIP Program Annual Avg \$4,466,600
- ❑ Fix fractures:
  - ❑ Spot Repair
  - ❑ Lining
  - ❑ MHs
- ❑ Upcoming:
  - ❑ High School Area
  - ❑ Veenker Golf
  - ❑ Worle Creek
  - ❑ Manatt's/Dayton
  - ❑ Basin 12



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## Watersheds Update

- S. 5<sup>th</sup> St. and S. Grand Ave.
- Wetland (92 Acre Watershed, treats WQ and Channel Protection Volumes (3.08" rain)
  - Water Quality Basin (WQ Vol. for 1.25" rain),
  - Bioswales along roadway, and
  - all Native Vegetation
- \$100,000 WQI Grant IDALS



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## Watersheds Update



Welch Avenue  
Tree Trenches  
and  
Permeable Pavers  
  
Treats Water  
Quality Volume for  
1.25" rain  
  
\$100,000 WQI  
Grant IDALS



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## Watersheds Update



Homewood Slope Stabilization

Stabilized extreme erosion added Native Vegetation



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## Watersheds Update



Loway Creek Restoration And Flood Mitigation

\$3.75M FEMA Grant



Pocket Wetlands



Removed approx. 750 tons trash, car parts, and tires

Tree Logs use for: Rootwads on project, Furniture, Trim, Pallets, and Homebuilding



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## Watersheds Update



Concept Plan 2021

Loway Creek Brookside Park

\$100,000 WQI IDALS Grant

\$500,000 WIF Grant

\$336,609 SRF Sponsored Project Grant



Preliminary Plan 2022

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## Watersheds Update



Concept Plan 2021

Loway Creek Brookside Park

3 Public Meetings Summer 2021

Feedback Rec'd

Worked w/ Stakeholders

New Alignment

3 Public Meetings March/April 2022



Preliminary Plan 2022

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## Watersheds Update

### loway Creek Brookside Park

- Reduce tree removal on private property
- Stabilize eroded banks
- Add natural in-stream practices like rock and log riffles, j hook vanes, cross vanes, toe wood
- Reduce flow from top of bank
- Relieve pressure from stream on east slope
- New oxbow to improve water quality from storm sewer outlet
- Use on-site wood and soil to rebuild east slope and stabilize stream banks
- Reuse material on-site (cut/fill)
- Reconnect floodplain with bench

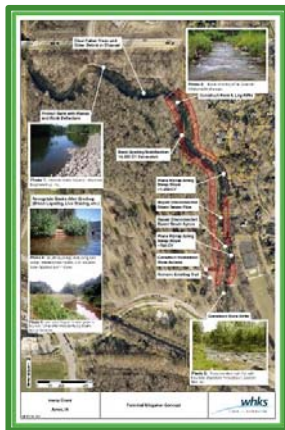


Preliminary Plan 2022



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## Watersheds Update



Concept Plan 2021

### loway Creek Brookside Park

Work with Adjacent Property Owners & Parks staff

75% Design Public Meetings Summer 2022

Permitting

Construction Winter 2022/23



Preliminary Plan 2022



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## Watersheds Update

### Construction Site Runoff Control Program Tracking

SWPPP Reviews/Approvals	2019-2020	2020-2021	2021-22
Single Family Homes	59	84	60
Commercial Reviews	13	10	12
Preliminary Plats	1	4	6
Plat additions with Public Improvements	2	2	2
City Project SWPPP Reviews	10	5	2
<b>NOIs Filed for GP #2</b>			
Total Projects	24	14	9
City Projects	5	4	1
Iowa State University Projects	6	2	1
Story County Projects	1	0	0
School District Projects	1	0	0
Private Projects (Gas Stations, Subdivision, Apartments, Hotels, Building Additions, Commercial Businesses)	11	8	7
<b>Weekly (City Project) &amp; Quarterly Inspections (Private Sites)</b>			
Total Conducted	471	563	544
City Projects	248	418	299
Private Projects (Commercial)	161	88	121
Single Family Inspections (Home Lots)	62	57	124
<b>Enforcement Actions</b>			
Number of Compliance Issues (Private Projects)	165	60	70

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## Watersheds Update

### Post Construction Program Plan Review and Approval

Type of Development	2019-2020		2020-2021		2021-2022	
	# Plans Reviewed	# Plans Approved	# Plans Reviewed	# Projects Approved	# Plans Reviewed	# Projects Approved
New Development	5	5	11	8	7	1
Redevelopment	0	0	4	4	4	4
Total	5	5	15	12	11	5

In addition, 25 site plans and subdivisions were reviewed and determined that they were part of a regional watershed that considered the proposed conditions or the proposed development was below ordinance thresholds for stormwater management.



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## Watersheds Update



Building Community through Conservation  
Stone Brooke Subdivision Management Plan



Coming Soon! Storm Drain Art  
Ames Public Art Commission  
(7 designs from 6 persons)  
(3 Campustown, 4 Downtown)

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## Watersheds Update



Ames High Bee Club Plants Natives in 24th Street Bio-Cell



Friends of Parks Groups

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# Watersheds Update

## 2021 Smart Watersheds Cost Share Rebate Program



Rebate Program	2019-2020	2020-2021	2021-2022
Rain Barrels	16	27	18
Composters	47	22	15
Soil Quality Restoration (1 approved but not completed)	3	12	6
Native Landscaping (1 approved but not planted)	1	6	6
Rain Gardens	2	1	0
Tree Voucher Event-Partnership with Ames Trees Forever (not held in 2020 or 2021)	100	0	0
Native Tree Rebate	N/A	35 applications, 58 trees	59 applications, 84 trees
<b>Total Rebate Applications</b>	<b>69</b>	<b>103</b>	<b>104</b>

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# Watersheds Update

## 2021 Watershed Outreach Events



### CitySide Articles

Month	Article Topic
April	<ul style="list-style-type: none"> <li>Virtual Earth Day on KHOI announcement</li> <li>Virtual EcoChat announcement focusing on trees and tree rebate</li> </ul>
May	<ul style="list-style-type: none"> <li>Skunk River Low Head Dam project celebration announcement</li> <li>10 Year Story County Water Monitoring Report announcement</li> </ul>
June	<ul style="list-style-type: none"> <li>Iowa Creek Flood Mitigation Project Moving Forward</li> <li>Native Tree Rebate</li> <li>Ames Named "Tree City USA"</li> </ul>
August	<ul style="list-style-type: none"> <li>Canoes, Kayaks, &amp; Paddle Board Rentals at Ada Hayden Park</li> </ul>
September	<ul style="list-style-type: none"> <li>Ioway Creek Stabilization Plans</li> <li>Pregracke Talk Rescheduled</li> </ul>
October	<ul style="list-style-type: none"> <li>Rummage RAMPage helps Non-Profits, recycles Materials community"</li> <li>Rebates Offered for Water Conservation</li> </ul>
February	<ul style="list-style-type: none"> <li>City Partners to Monitor Health of Local Waterways</li> </ul>

### Social Media Posts

DATE & SUBJECT	# LIKES, SHARES AND COMMENTS
Apr 2- Prairie burn in Christofferson Park	51
Apr 10 Stash the Trash Continues	3
Apr 11 Earth Day Appreciation on the Air - KHOI	3
Apr 11, Apr 17, Apr 24, Apr 30 Low Head Dam Celebration Announcements	187
Apr 29 Yard Waste Day Announcement	11
May 4 EcoChats Resource Recovery	1
May 9 Tree Planting Announcement	18
May 27 Smart Watersheds rebates	49
June 1 EcoChats Water	3
June 7 College Creek Cleanup	9
June 9, June 13 and June 18 No-Charge Waste Day	39
June 13 Native Tree Rebate	26
June 26, July 17 Rummage RAMPage Announcement	168
July 5 EcoChats-Watersheds	9
July 28 Outdoor Water Conservation Tips	18
Aug 25 Iowa State University WelcomeFest	9
Aug 31 Water Conservation/drought	40
Sep 5 and Sep 29 Chad Pregracke Announcement	78

Sep 16, Sep 18 River Town of the Year Events Announcement	29
Sep 28 Watershed Month Proclamation	4
Sep 30 Prairie River of Iowa Wild and Scenic Film Festival	6
Oct 1 Stream Cleanup Announcement	12
Oct 6, Oct 11 Fall Tree Plantings	15
Oct 7 Ioway Creek cleanup	12
Oct 8, Oct 22, Nov 9 Fall No-Charge Waste Days	34
Oct 12 Volunteer for Water Quality Snapshot	9
Oct 18 Native Landscaping Program	23
Oct 22 Ada Hayden Fishing Pier Ribbon Cutting	79
Oct 24, Oct 25 Nov 3, Nov 1, Nov 18, Nov 23, Nov 28, Nov 30, Dec 3, Dec 10, Dec 20, Mar 7, Mar 9, Mar 11 Climate Action Plan	184
Dec 18, Jan 18, Feb 23 Dog Waste Pickup	93
Feb 7 Ecochats are Back	2
Feb 13 Storm Drain Art Call to Artists	42
Feb 17, Feb 22 ISU Sustainapolloza	9
Feb 23-Dog waste pickup	35
Mar 1, Mar 3, Mar 9 Ioway Creek Restoration/Brookside Park Project Public Outreach Meetings	49
<b>TOTAL</b>	<b>1359</b>



KASI and KHOI Radio Interviews

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# Watersheds Update

## 2021 Watershed Outreach Events



Date	EcoChat Subject	# Attendees
Apr 2021	Trees	29
May 2021	Reduce/Reuse/Recycle	39
Jun 2021	Water	26
Jul 2021	Watersheds	42
Feb 2022	Climate Action Plan	10
Mar 2022	Watersheds	17

- Iowa State University Sustainapoolza Event
- Smart Trash Program Partnership
- Distribution of Deicer Brochure to Local Snow Removal Businesses
- Distribution of Letter to Local Carpet Cleaners
- Update to the Inspection and Maintenance Practices of Non-City Owned Stormwater Practices form

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# Watersheds Update

## 2021 Watershed Outreach Events



### October 2021 Watershed Awareness Month Proclamation



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## Watersheds Update

### 2021 Watershed Outreach Events



- ❑ Thu., September 30 Speaker: Chad Pregracke, Living Lands and Water-City Auditorium
- ❑ Fri., October 1 -Film Festival Collaboration with Prairie Rivers of Iowa – City Auditorium
- ❑ Sat., October 2: Stream Cleanup, Ioway Creek



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## Watersheds Update

### 2021 Watershed Outreach Events

Event/Group	Date	# Participants	Weight of Trash Collected
Stash the Trash	April 10	237	1,940 pounds (1 tire)
Ioway Creek Cleanup	October 2	29	2,500 pounds (13 car tires)
Outdoor Alliance/ Workiva Corp.	March 17	12	1,220 pounds



March 17 Workiva- Outdoor Alliance cleanup



October 2, 2021 Ioway Creek Cleanup

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## Watersheds Update

Ioway Creek Clean-up

Oct. 2, 2022



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## Watersheds Update

### Upcoming Watershed Events



- Wed., April 20: Pollinator Task Force
- Thurs., April 28: EcoChat @ Library, Birds, Bees & Pollinators
- April 29 to April 30: Stash the Trash
- Sat., April 30: Ioway Creek Cleanup
- Sat., October 1: EcoFair

Go to Prairie Rivers of Iowa website [www.prrcd.org](http://www.prrcd.org) to register and for more upcoming watershed related events

[www.cityofames.org/stormwater](http://www.cityofames.org/stormwater)

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