Ioway Creek Restoration at Brookside

Public Meeting

March 10, 2022

whks engineers + planners + land surveyors

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DNR

Welcome

Public Works Department
Tracy Peterson, Liz Calhoun, Cesar Cintron

Parks and Recreation Department
Keith Abraham

WHKS Inc.
Derek Thomas, Amber Hershey, Meghan Funke

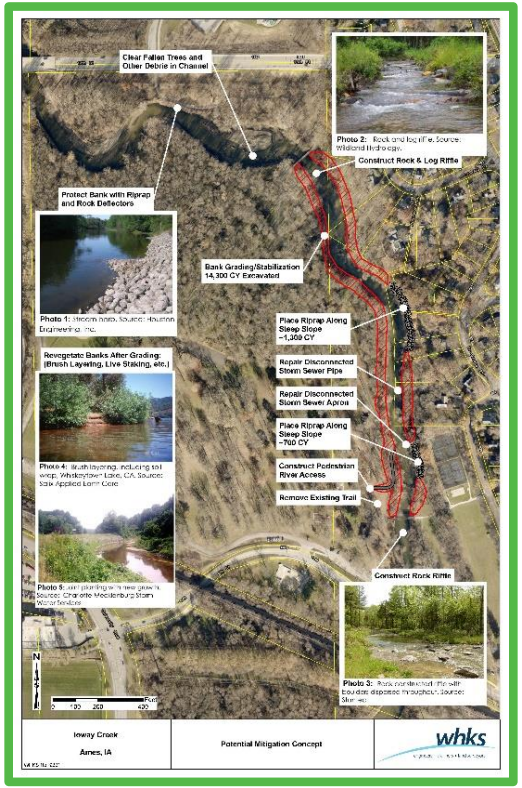
Iowa DNR
Nate Hoogeveen, Ben Dodd

Project Goals

- Stabilize east slope and stream banks and reduce erosion
- Restore stream function
- Improve water quality
- Remove invasive plants
- Increase habitat and plant diversity
- Reduce flow from top of east slope
- Provide recreational opportunities/access to stream

2021 Concept

- Stream bank grading
- Rip-rap on slope and at tennis courts
- Repair of storm sewer outlets
- Access to the creek
- In stream rock riffles



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Feedback Received

- Construction impacts
- Tree impacts
- Project aesthetics, i.e. natural features vs. rip-rap
- Degraded water quality and habitat
- Public access to creek and recreational opportunities
- Invasive species
- Habitat protection
- Revegetation and maintenance

Responses to Feedback

- Incorporate Landscape Features
- Enhance Conservation of Habitat
- Include Iowa DNR Rivers and Fisheries
- Realign the stream to the west
- Reduce tree clearing on private properties

Expanded Team

- River experts
- DNR Fisheries experts
- Water quality stakeholders
- Biologists
- Ecologists/pollinator experts
- Landscape Architects

Fall and Winter

- Met with IowaDNR to discuss options using IRRT
- Met with Iowa DNR Fisheries and ecologists about habitat opportunities
- Updated City Council and Parks and Recreation Commission
- Located and mapped trees
- Revised design with expanded team

Public Outreach

March 10 - Stream alignment, hydraulics, Iowa River Restoration Toolbox, improving water quality, oxbow restoration opportunities, DNR Fisheries

March 21- Invasive species, options for re-vegetation, discussion of trees to be removed and protected, habitat restoration and enhancement, educational and recreational opportunities

April 5 – General meeting to provide input before final design

All meetings held in City Auditorium starting at 5:30 PM

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Iowa Department of Natural Resources

Leading Iowans in caring for our natural resources

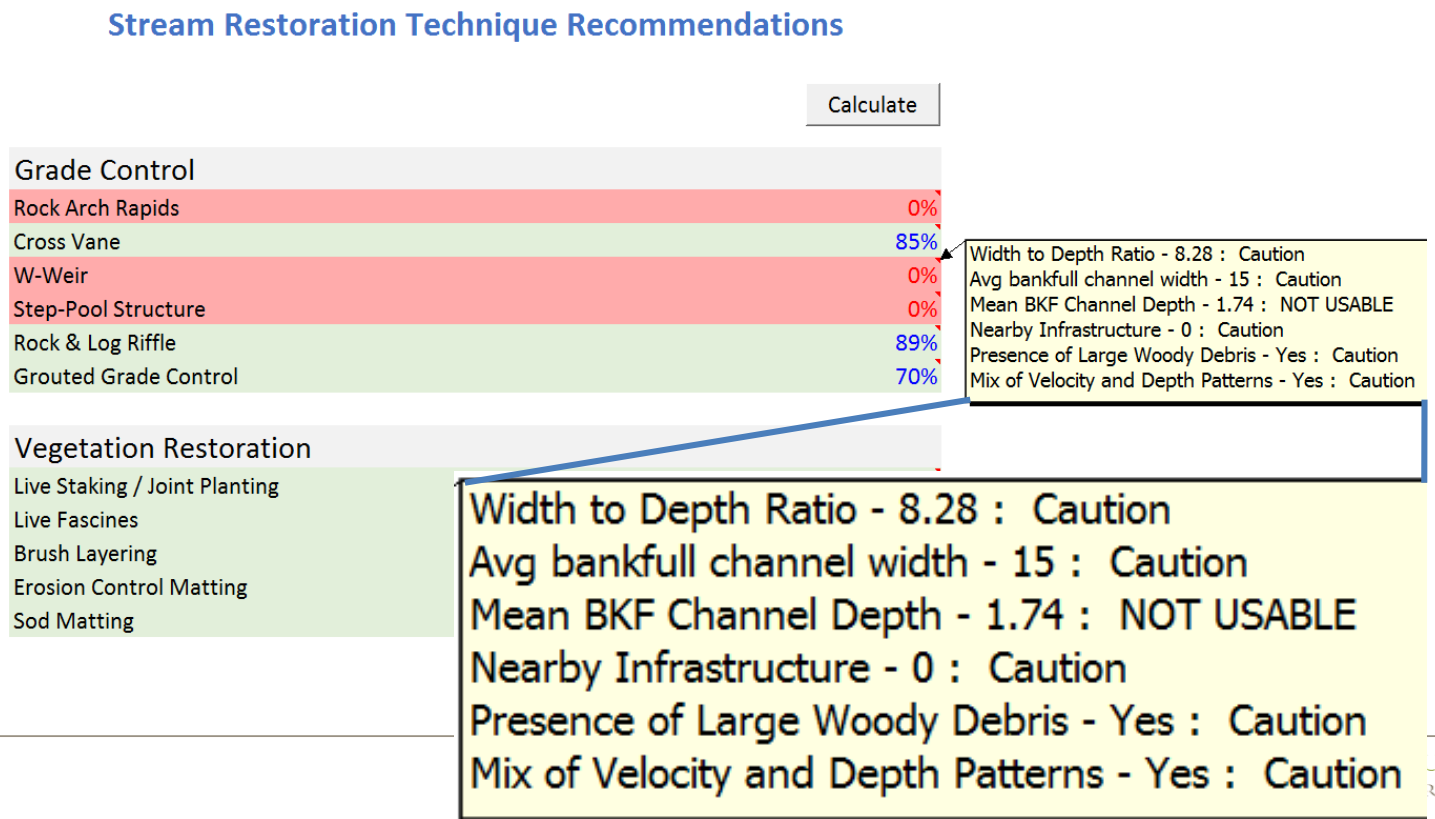
Iowa's River Restoration Toolbox

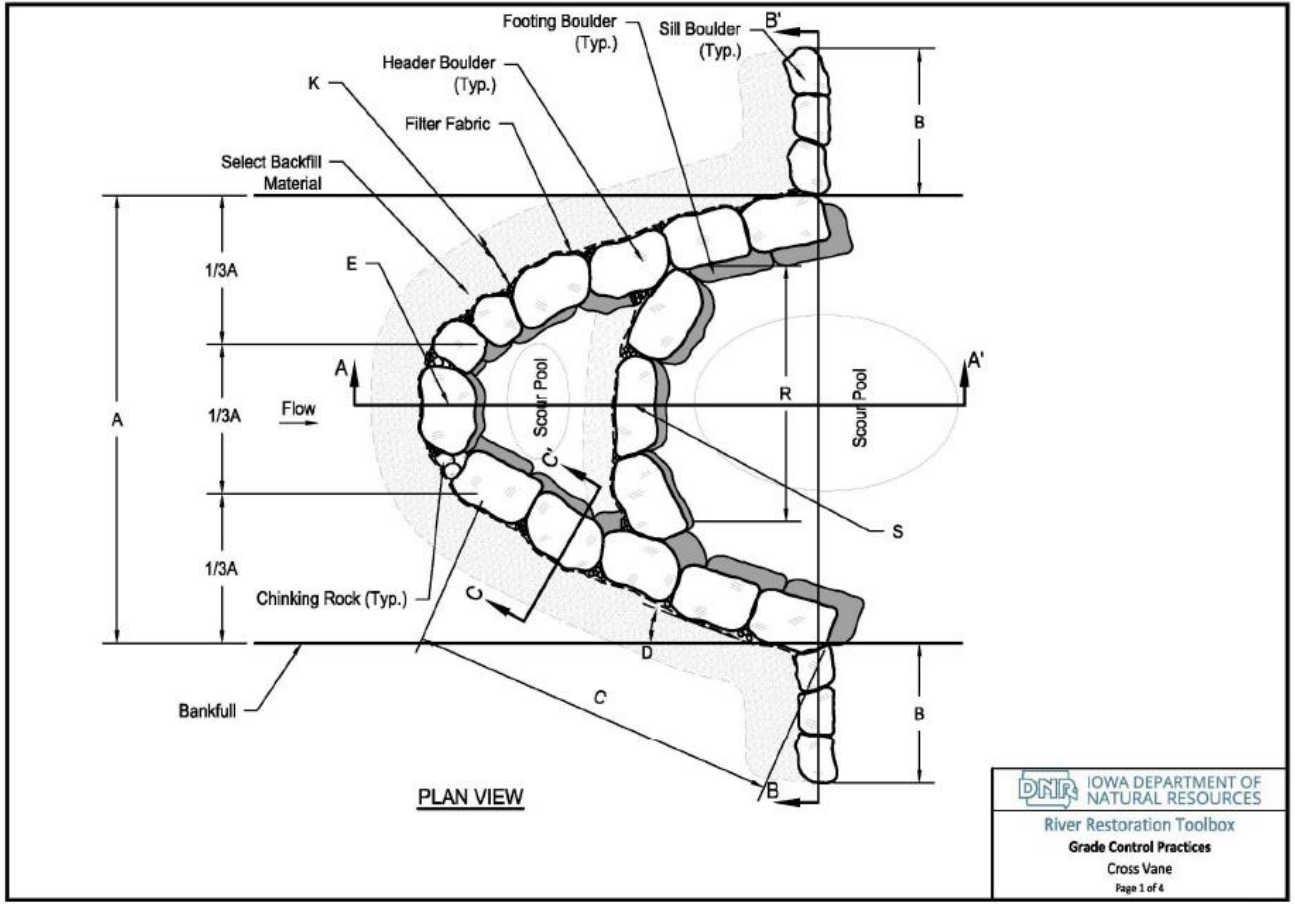
Kayla Lyon, Director

River Restoration Toolbox

- Developed in 2018 as a series of best management practices developed to assist designers in stream stabilization and restoration projects
- Two main parts:
  - Data Entry/Decision Tool (Assessment)
  - Practice guide with dozens of drawings, specifications, and dimensions
- Natural materials.
- Reviewable design checklists for permitting, funders, PMs, etc.

River Restoration Toolbox Recommendations




Footing Boulder (Typ.)
Sill Boulder (Typ.)
B'
Header Boulder (Typ.)
K
Filter Fabric
Select Backfill Material
B
1/3A
E
A
A'
A
1/3A
Flow
Scour Pool
R
Scour Pool
C
S
1/3A
Chinking Rock (Typ.)
C
D
Bankfull
C
B
B
PLAN VIEW
IOWA DEPARTMENT OF NATURAL RESOURCES
River Restoration Toolbox
Grade Control Practices
Cross Vane
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Version 1.0 2/17/2017

Example: Bear Creek Restoration in Dyersville

- Limited access and depths for habitat
- Limited recreational opportunities
- Poor aesthetics
- Eroding banks

Finding Bankfull

- Retailers report continued kayak shortages.
- Crowded parking areas.
- Visits to communities with whitewater facilities were in high demand.

Values Adjusted

- Test design iterations in the Design column
- Compare recommended practices in Ranking tab.

Review Functional Design

Copy Conditions | Re-Calculate | Clear Conditions

Note: Enter most representative value for each parameter.	Existing Conditions	Design Conditions
Bank Height Ratio	1.00	1.00
Entrenchment Ratio	35.40	35.00
Bankfull Cross Sectional Area	294.00	275.00
Bankful Discharge Design	1250.00	1250.00
Regional Curves - Bankfull Cross Sectional Area	279.76	279.76
Regional Curves - Bankful Discharge	1113.94	1113.94
Bankful Velocity	2.47	5.49
Schumm Channel Evolution Stage (Select from drop-down list)	Stage IV	Stage VI
Dominant Bank Erosion Hazard Index (BEHI) Rating (Select from drop-down list)	high	very low
Minimum Buffer Width (Measured from Outside Edge of Belt Width)	Perennial Vegetation >50 feet beyond Belt Width	Perennial Vegetation >50 feet beyond Belt Width
Bankfull Width	113.00	53.20
Radius of Curvature	144.00	170.00
Meander Width Ratio	1.25	2.65
Pool to Pool Spacing Ratio	1.80	4.50
Pool Maximum Depth Ratio	1.88	2.57
Width to Depth Ratio	25.22	12.44
Water Surface Slope (%)	0.0595	0.0595

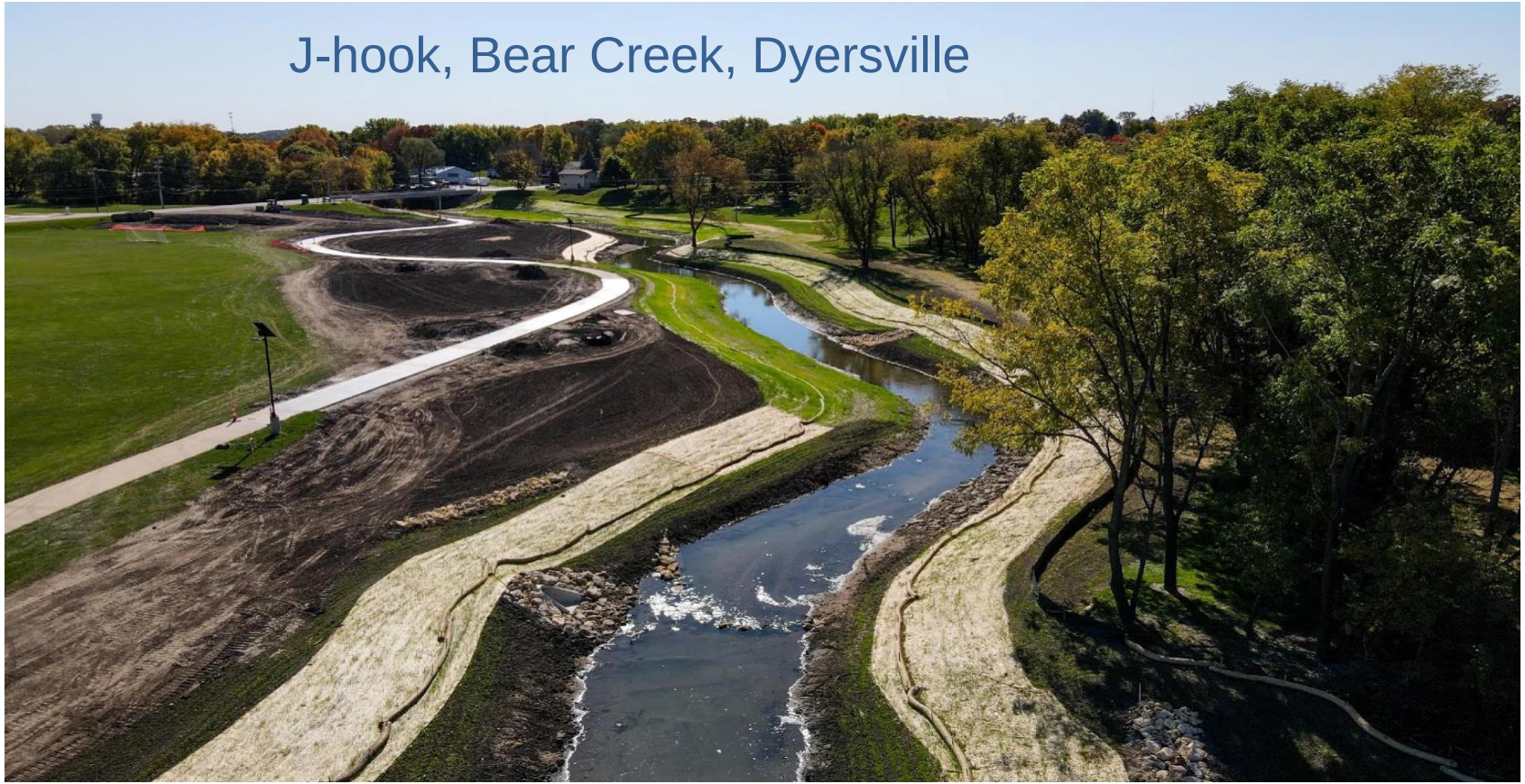
Fix Riffle Cross Sections First, If Needed. Then Apply Practices

Toe Protection/Stabilization	
Toe Wood	81%
Stone Toe Protection	100%
Fabric Encapsulated Soil Lifts	100%
Log Vane with Boulder Hook	85%
Single & Double Wing Deflector	88%
Vegetated Banks	46%

Channel Definition Structure	
Cut-Off Sills	85%
Engineered Log Jams	77%
Longitudinal Peaked Stone Toe	88%
Bendway Weirs	92%
Stream Barbs	88%

Cross Vane, Bear Creek
Dyersville

J-hook, Bear Creek, Dyersville



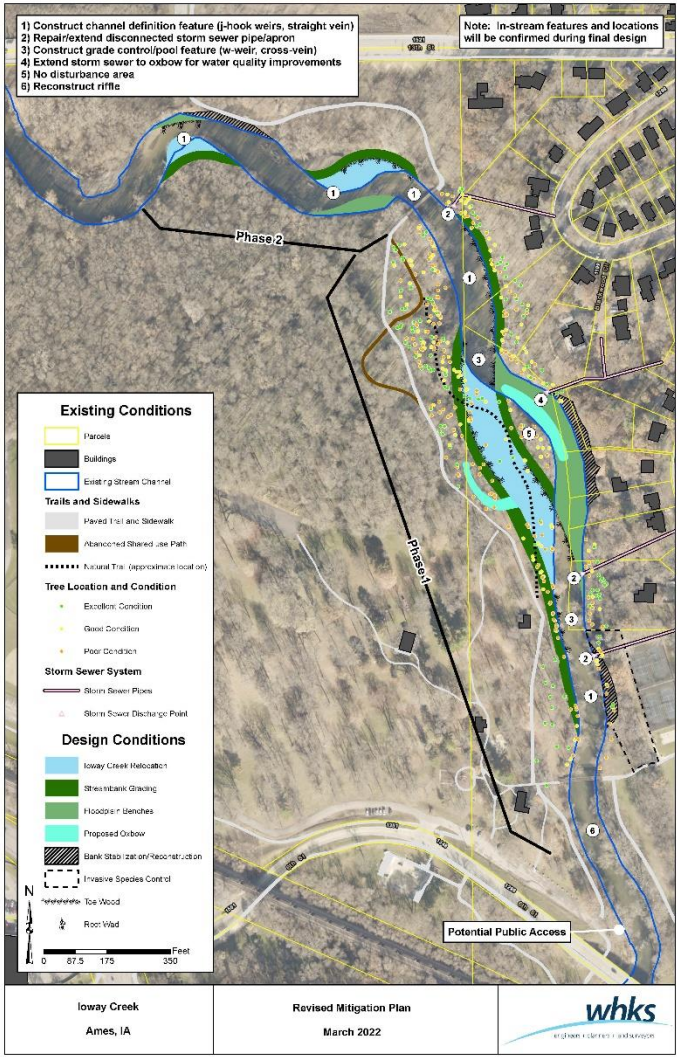
Monitoring After Year 1

Ioway Creek

- Headwater tributary South Skunk River
- Freshwater mussels
- Smallmouth Bass fishery
- Restoration

Ioway Creek Brookside - Fisheries Benefits

- Reconnection
- Reduce sediment & phosphorus loading
- Enhance instream habitat
- Improve access



2022 Mitigation Plan Overview

Highlights of New Plan

- 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

Highlights of New Plan

- 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

Bank Erosion at Path North of Pedestrian Bridge

Future Outreach and Contact Information

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Contact: Liz Calhoun, liz.calhoun@cityofames.org (515)239-5575

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Thank you!

Questions?

Please visit a station for further discussion and input

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DNR