

# Lessons Learned in Permitting for the Yellow River Pilot Project

presented by  
Slavash Beik (CBBEL) and Bob Barr (IUPUI-CEES)  
for  
Indiana Farm Bureau 2018 Drainage School  
August 22, 2018  
Indianapolis, IN



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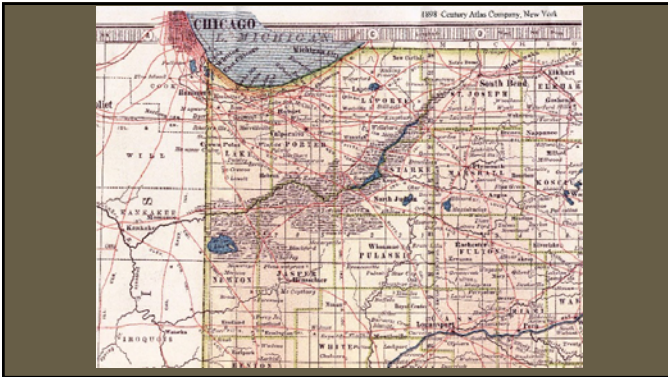
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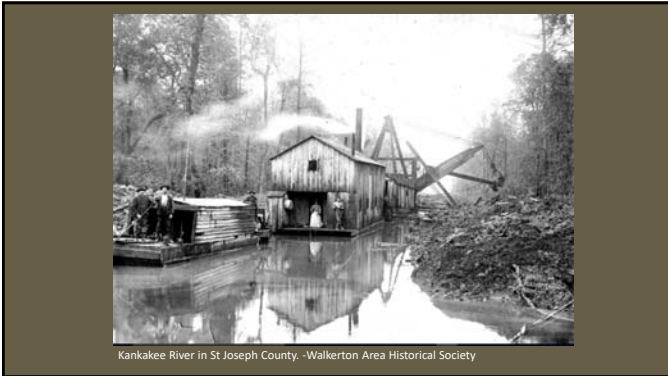
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Kankakee River in St Joseph County. -Walkerton Area Historical Society

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Photo, Northwest Indiana Genealogical Society Collection

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Traditional Restoration Example, Kankakee River , Indiana, June 2015 - reach was "restored" in 2013

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### Yellow River Flooding, Erosion, and Sedimentation Management Work Plan

- Problem Statement
  - Too much, repeated maintenance expenditures needed to deal with significant bank failures, erosion, and sediment aggradation
  - Too much sediment is going to Illinois
  - Yellow River cited as a major sediment source
  - Yellow River plan could be regarded as a Pilot for the Kankakee watershed
- System Assessment initiated and funded by KRBC
- Our Charge
  - Pinpoint the root causes
  - Develop a Work Plan with sustainable solutions (where to do what)

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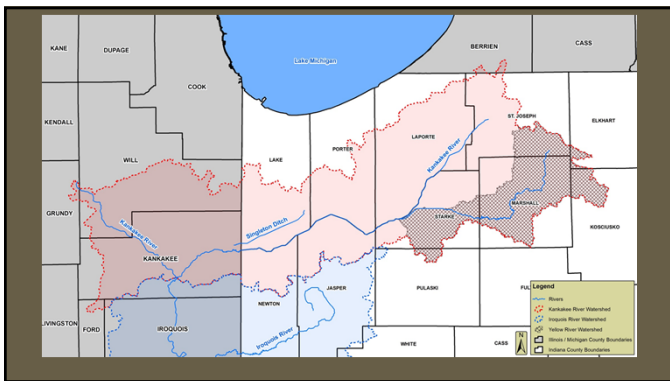
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### Yellow River Erosion and Sediment Management Plan Findings

- Major sources of sediment production:
  - Sand on headwater land surfaces
  - Severe streambank erosion between Knox and Starke-Marshall County line
- Major cause for severe aggradation in lower reaches:
  - Too much incoming sand
  - Lack of an efficient sediment transport mechanism

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### Channel Geometry

Location	Approx. Bankfull Width (ft)	Regional Equation Bankfull Width (ft)	Description of Measurement Location
1	22	33	Man-made ditch
2	30	48	Man-made ditch
3	45	54	Man-made ditch
4	49	63	Man-made ditch
5	54	68	Man-made ditch
6	70	78	Natural channel
7	84	82	Natural channel
8	89	84	Natural channel
9	96	87	Natural channel
10	88	88	Natural channel
11	101	90	Channelized stream
12	102	92	Channelized stream
13	129	93	Man-made ditch




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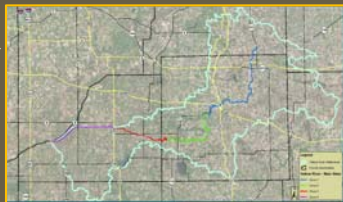
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### Yellow River Erosion and Sediment Management Plan Recommendations

- Watershed: Soil Health, Flatter Bank Slopes/ 2-Stage Laterals where poss.
- **Zone 1:** Establish/Maintain Buffer, Flatter Bank Slopes/ 2-Stage where poss.
- **Zone 2:** Monitor, Maintain Riparian Corridor
- **Zone 3:** Stabilize Banks Using Toe Wood (Start with a Pilot Project)
- **Zone 4:** Narrow Bankfull Width by Building Floodplain Benches Using Toe Wood




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### Addressing Streambank Erosion Sediment Source



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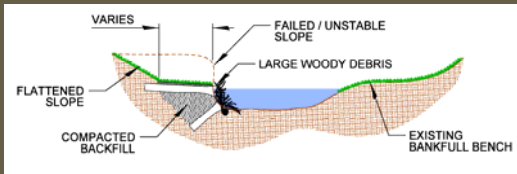
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### Addressing Streambank Erosion Sediment Source

- Stabilize banks - Use "Toe wood" technique for bank stabilization
- Develop typical cross sections for bank reconstruction
- Develop cost estimates for reach
- Initiate pilot projects to refine model



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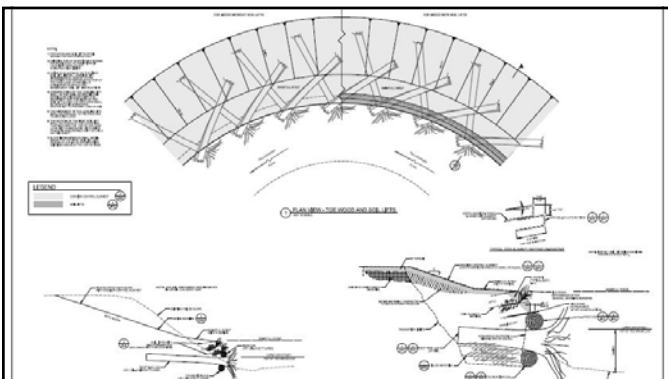
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**Permitting Challenges**

- Significant Outreach and Pre-Coordination with Review Agencies
  - IDNR
  - IDEM
  - USACE
  - USFWS
  - NRCS
- The Self-mitigating Nature of Project and Restoration Approach
- Overcoming the perception that toewood would not persist
- Demonstrating that changing channel dimensions would not affect flood capacity
- Balancing the ongoing tree loss from unstable banks with tree removal to provide the necessary large wood

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Pre-Project 07/26/17

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Yellow River in Starke County, Indiana (Pilot Project Site - During) 12.06.2017

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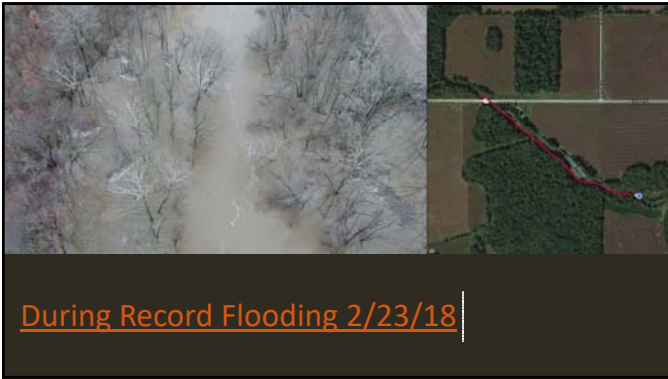
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During Record Flooding 2/23/18

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Post Flood 4/10/18

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**Lessons Learned**

- **Further pursue a streamlined permitting approach** with agencies to avoid potential delays.
- **Utilize a different project delivery method** to improve/increase value engineering for a given project. This could also lead to a lower cost requirement for drawing development. Cost saving incentives could be included to promote efficiency

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**Kankakee River Erosion, Sediment, and Flood Risk Management Work Plan**

- **Diagnose the Root Causes** of Erosion, Sedimentation, and Flooding through Detailed Field and Desktop Assessment
- **Communicate the Extent** of Existing Risks and Expected Trends (Changing Climate)
- **Identify Strategies** for Addressing the Issues in a System-wide Approach
- **Develop a Work Plan** for Implementing Various Strategies Specific to Each Area Within the Watershed (Main Stem Reaches, Laterals, Urban Areas, Ag Areas)



**A Joint Indiana – Illinois Effort to Address a Legacy Problem Facing Both States!**

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### Take Away Points

- A detailed **function-based stream assessment** is necessary to pinpoint sources of stream instability
- **Nature-based stream restoration** techniques are quite effective, self-mitigating, and cost-beneficial for addressing stream instability, especially in sand bed systems
- **Continuing education and outreach** about how and why the project is being done is critical. Tools that aid in seeing the scope and progress of the project such as low-altitude videography data provided by UAVs are critical
- Project success depends on the **foresight and leadership** shown by the 8-county officials, agencies (including Farm Bureau), and legislators

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### QUESTIONS?

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