Reservoir Habitat Workshop: Sedimentation

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Outline-Sedimentation

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- Sources of sediment
- Impacts
  - How reservoirs differ from lakes and rivers
- What you can do
  - Watershed
  - Within the reservoir
- Examples
- Lessons learned
- Questions?


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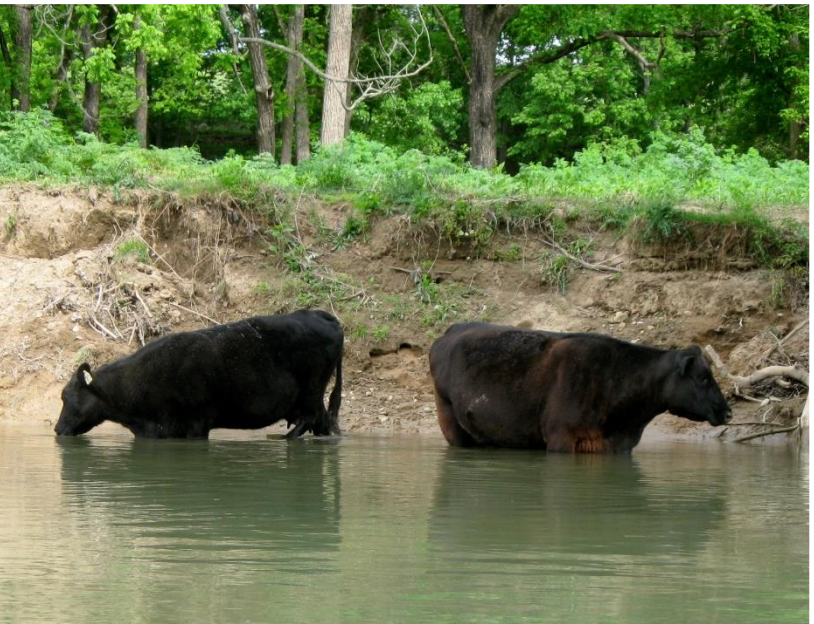

Watershed > 90% stabilized

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Watershed < 20% stabilized

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Degrades
Accumulates
Watershed Ratio 150:1

Reservoir impacts

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- Physical
  - Loss of volume, increasing shallow areas
  - Homogenized littoral areas and no basin relief
  - Shoreline erosion (Lynde's talk)
- Water quality
  - Excess nutrients (Reed's talk)
    - Algal blooms, HAB's
  - Decreased clarity, less sun penetration
    - Reduces rooted vegetation, converts to algal dominance

What can you do?

- Work in the watershed
  - Raise awareness
  - Implement BMP's
- Estimate sedimentation inputs
  - Identify the sources (erosion types, entry points-stream channels, overland)
  - Model mobilization rates (NRCS-hydrology, soils, land practices)
- Develop protective measures
  - Watershed and reservoir

Watershed Measures

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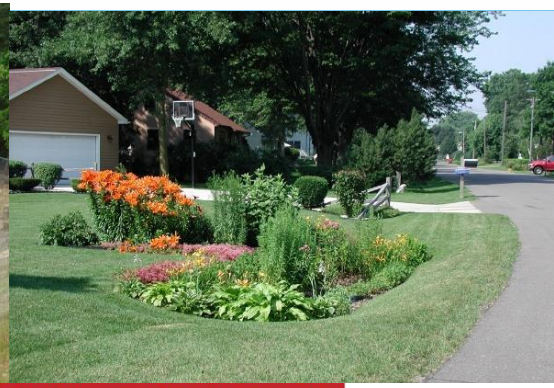

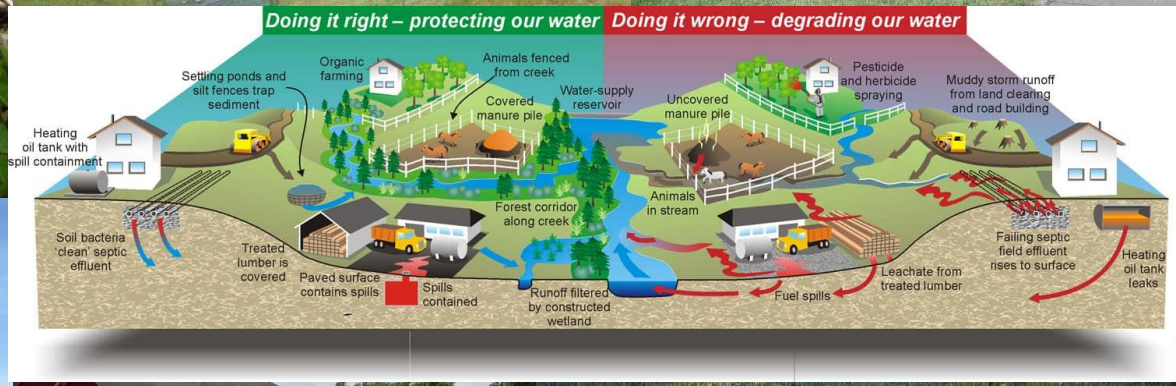

Example

Lessons learned

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Example

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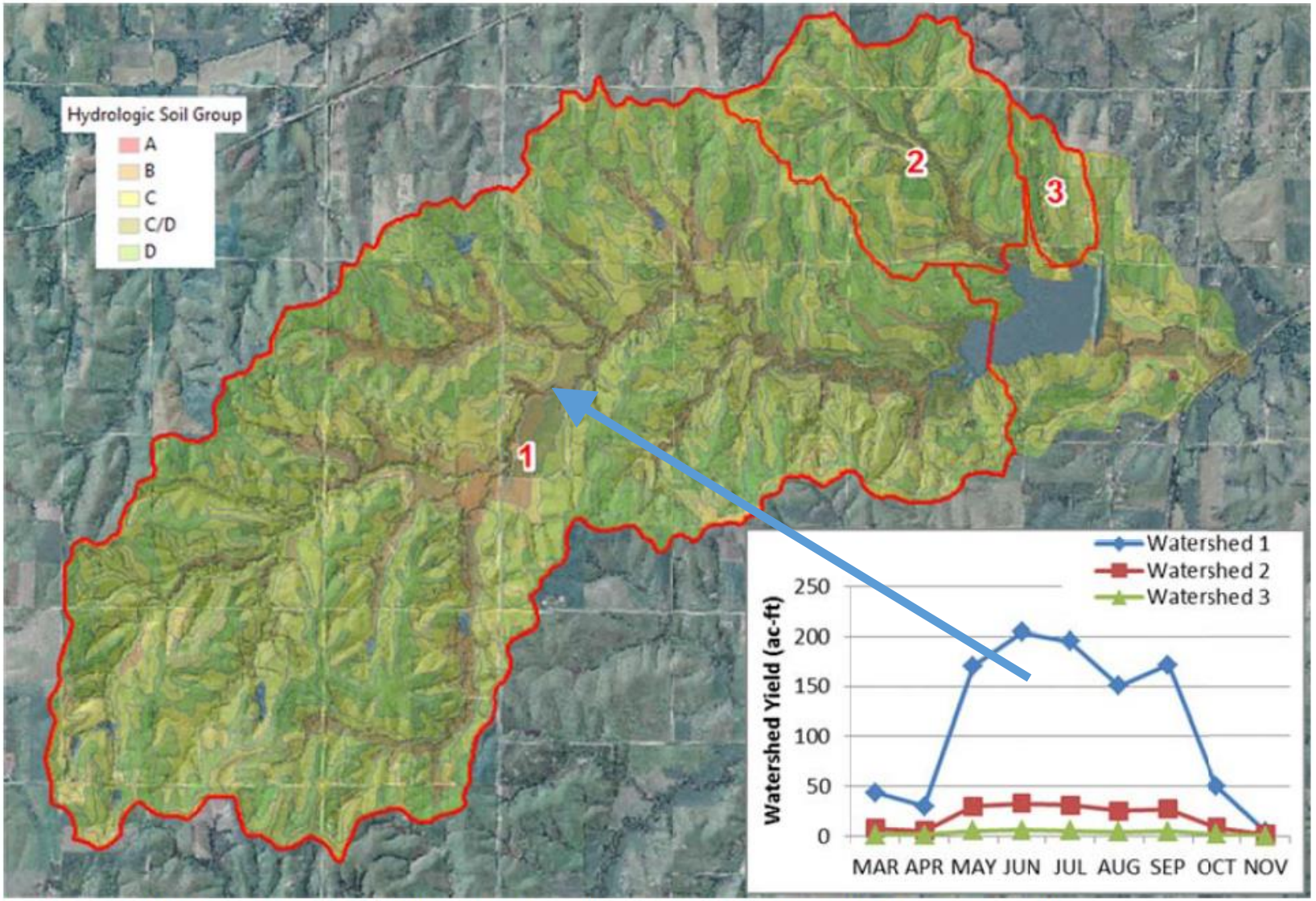

Figure 1. Watershed Yield Analysis – Average Monthly Volume (ac-ft)

Assumed deposition

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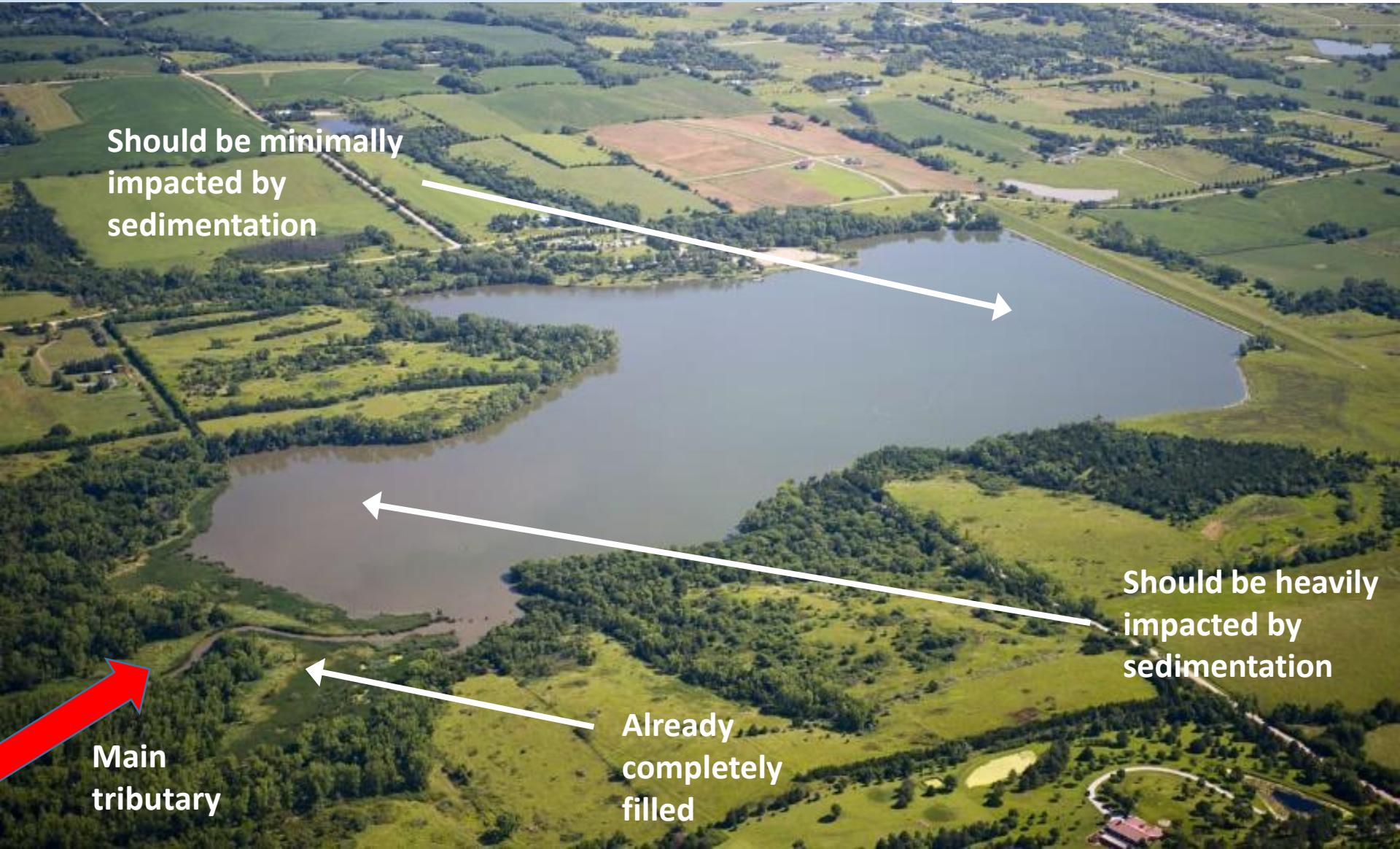

Lessons learned

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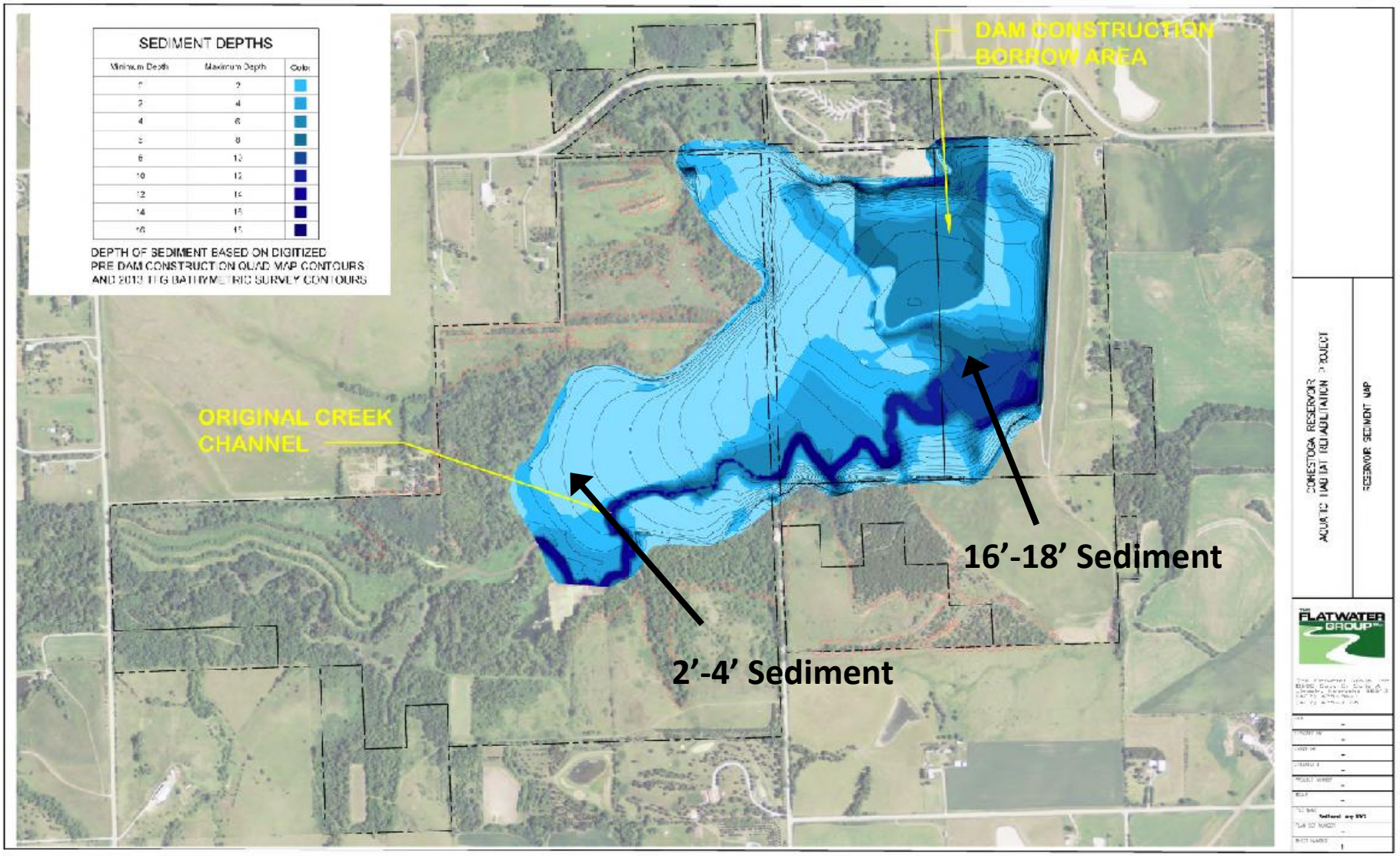

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- Develop protective measures
  - Watershed, stream channel, and reservoir

Excavation is expensive

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Usually possible but pricey

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Be flexible

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Lessons learned

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Stream Channel Measures

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Artificial wetlands

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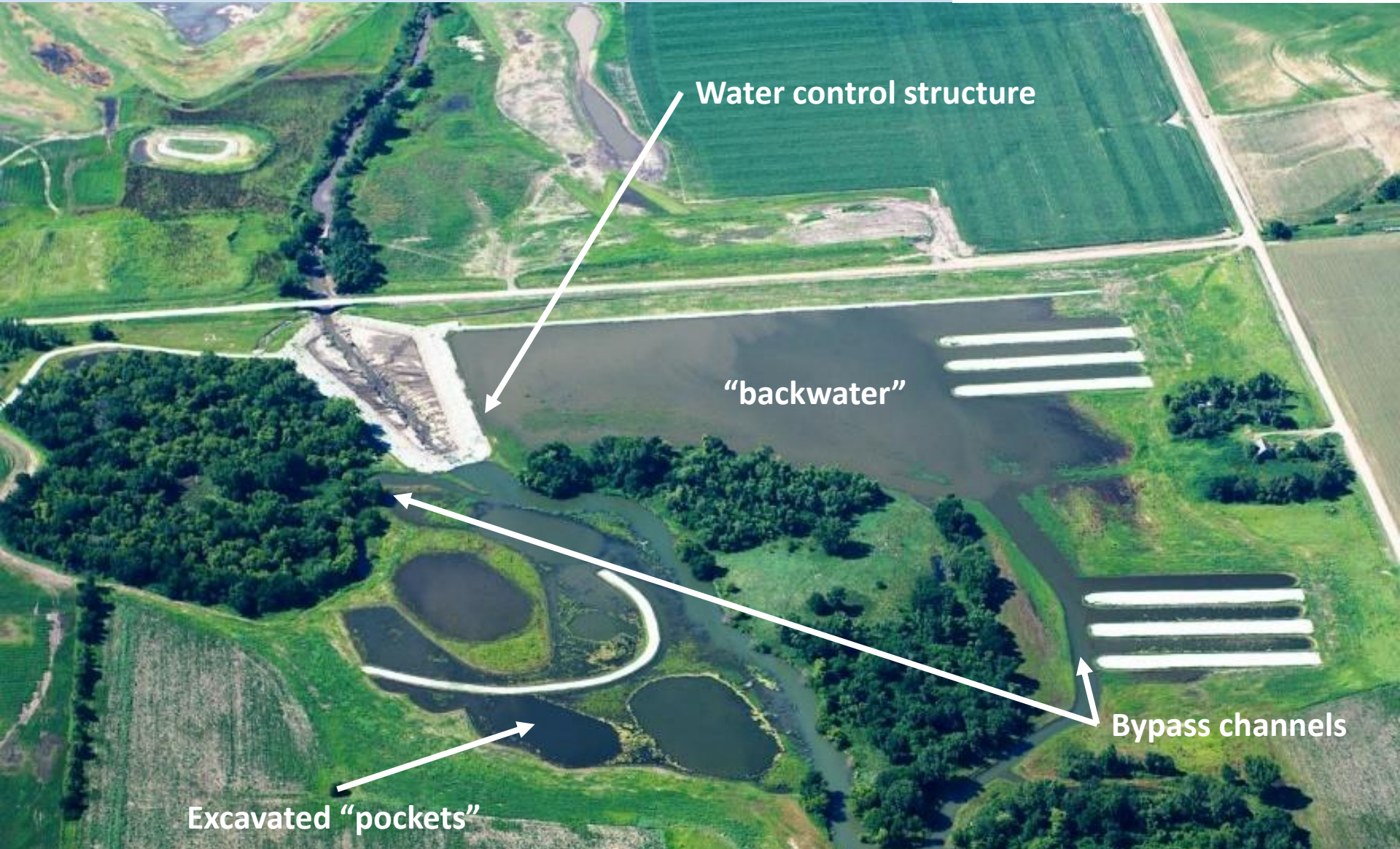

Example

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Stream channel measure

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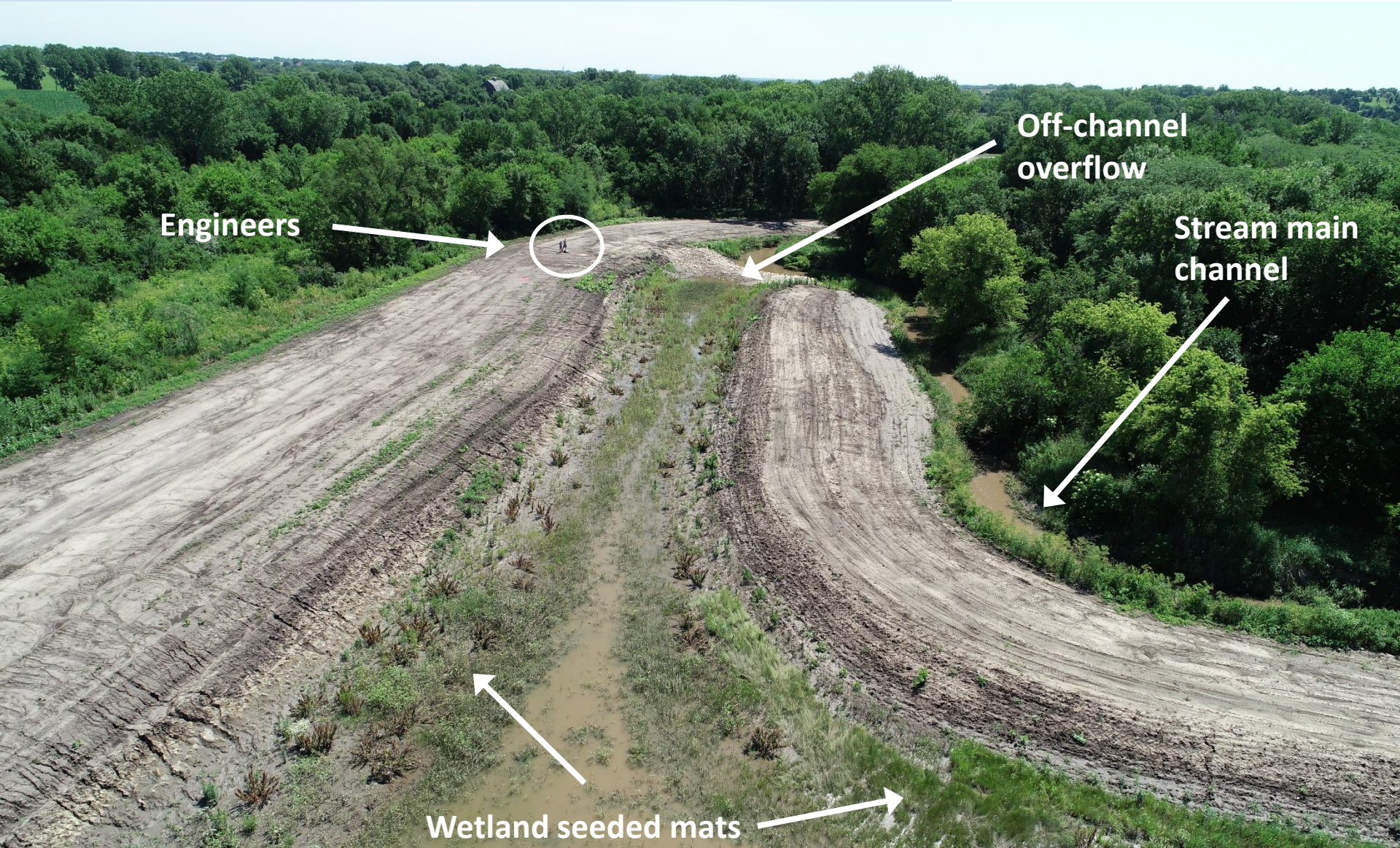

Lessons learned

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Reservoir Measures

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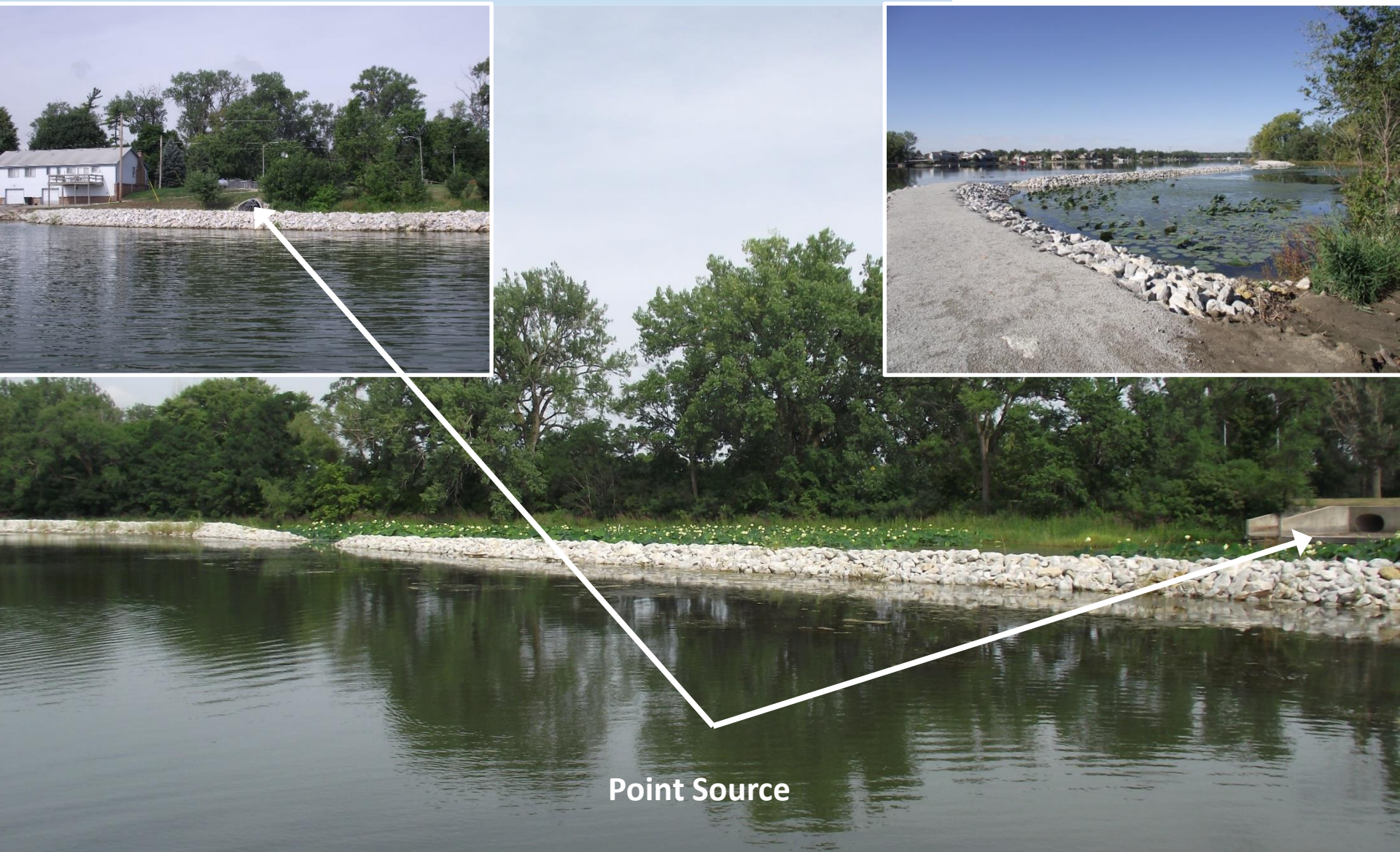

Reservoir Measures

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Examples

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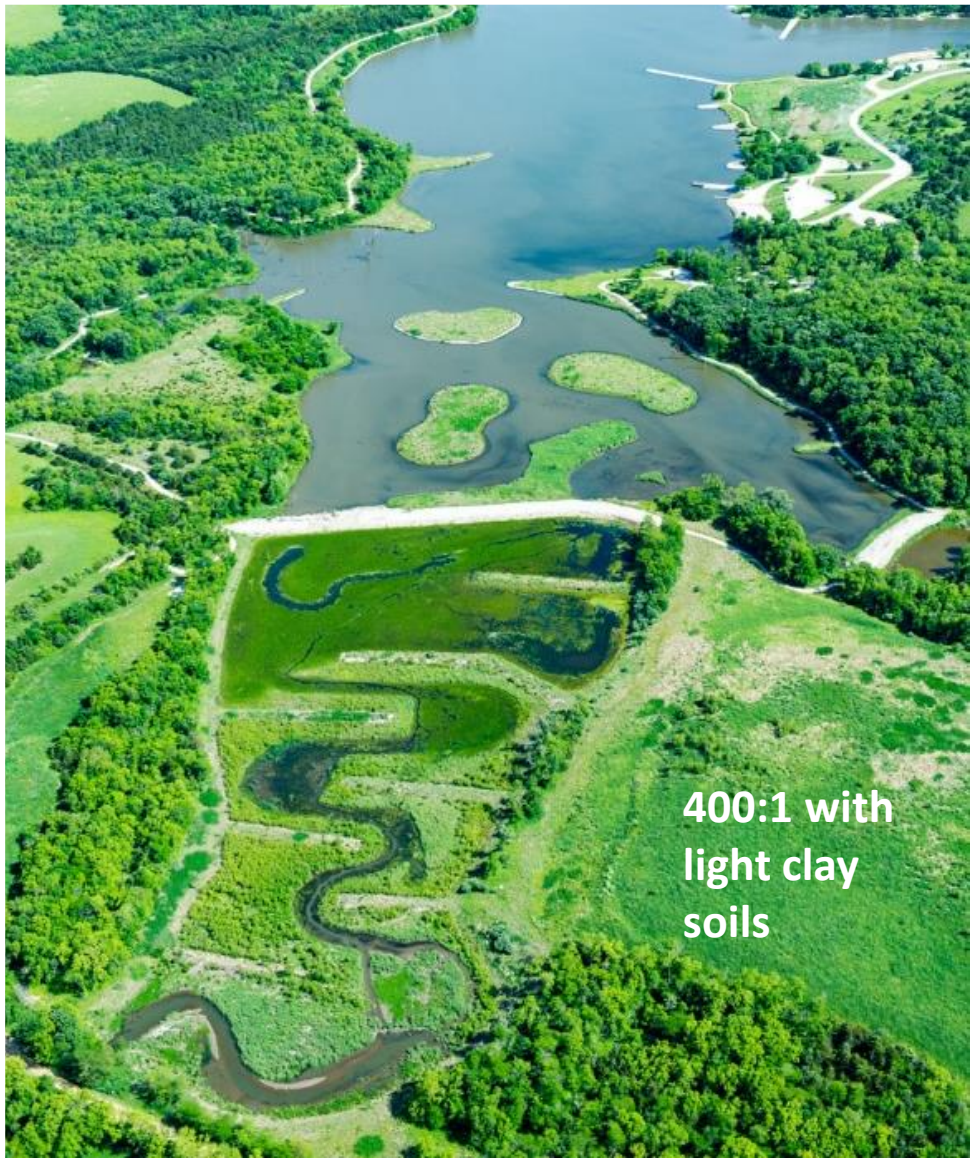

Example

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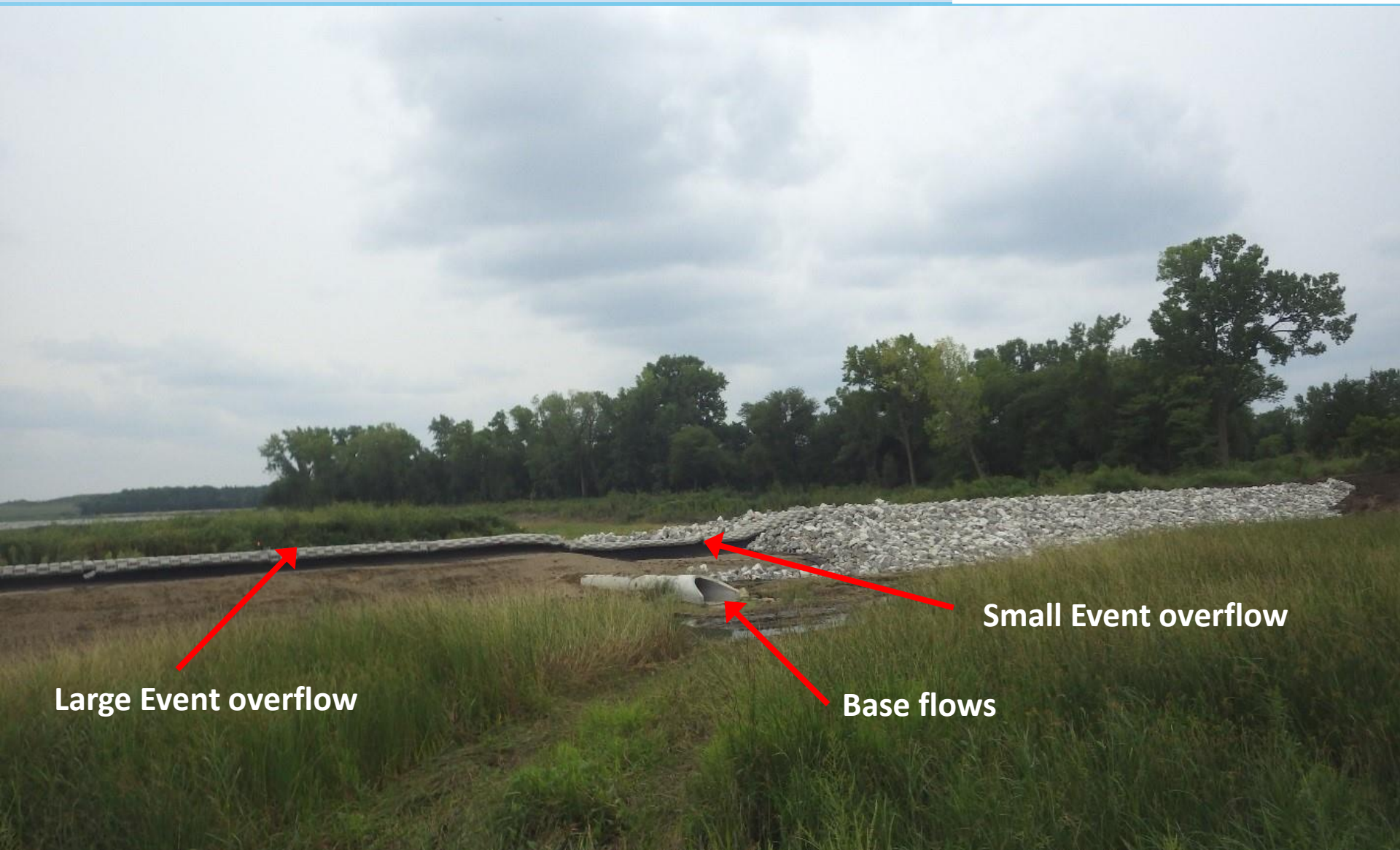

Lessons learned

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Reservoir Measures

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Lessons learned

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Example timeline

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Rehabilitation “work”

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Completed retention basin

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Summary

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Combating reservoir sedimentation

- Gather information on the watershed and reservoir
  - What kind, how much and where is it coming from?
- Partner to build awareness and coalitions
  - Promote BMP's
  - Seek cost-share for work
- Install protective measures
  - Prevent or slow mobilization within the watershed if possible
  - Divert/trap as much as possible before reaching reservoir
  - Minimize impacts to reservoir habitat with measures that trap at entrance point, and can be easily maintained.

Questions?

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Stop shoreline erosion

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