America's River II

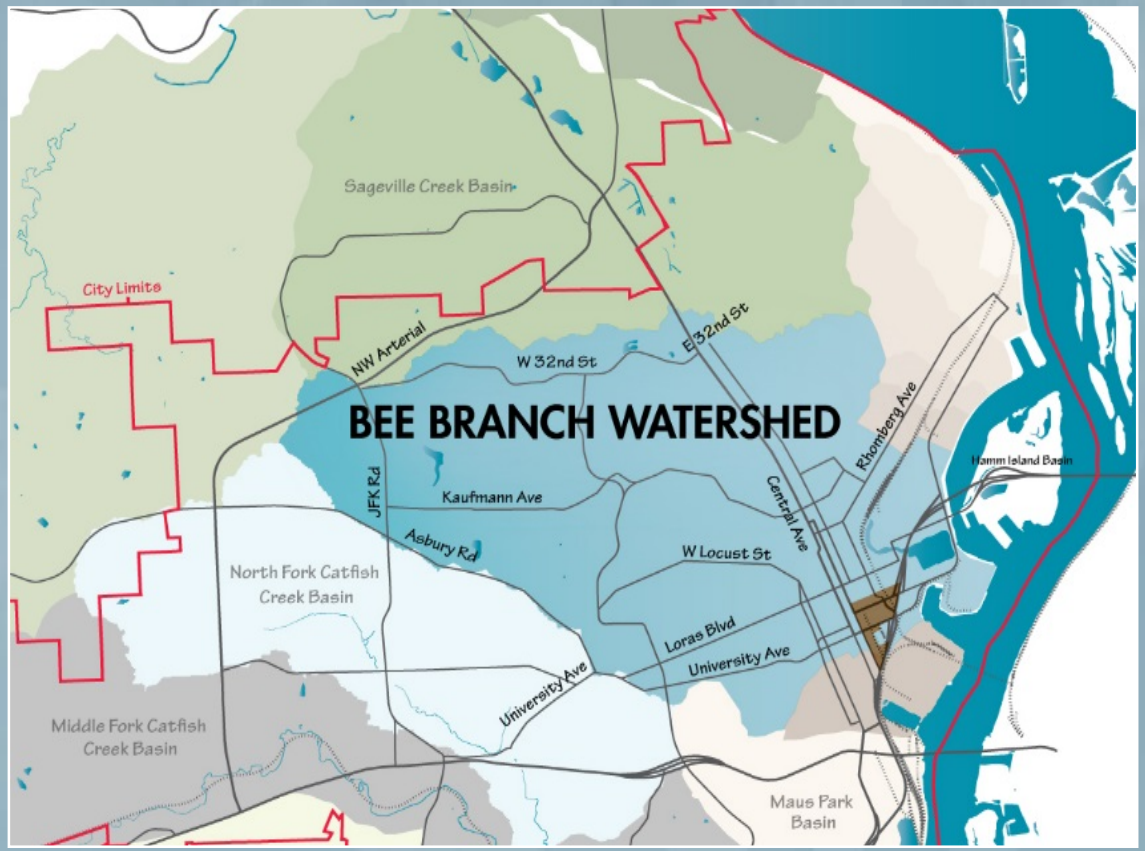
Bee Branch Creek Restoration

City of Dubuque, Iowa

Mark Shubak, P.E. Strand Associates

Bee Branch Watershed

- Drains to the Bee Branch Creek/Culvert, tributary to the Mississippi
- Approximately 6.5 sq. miles
- Over 50% of Dubuque residents either work or live in the watershed.



Bee Branch Creek Restoration

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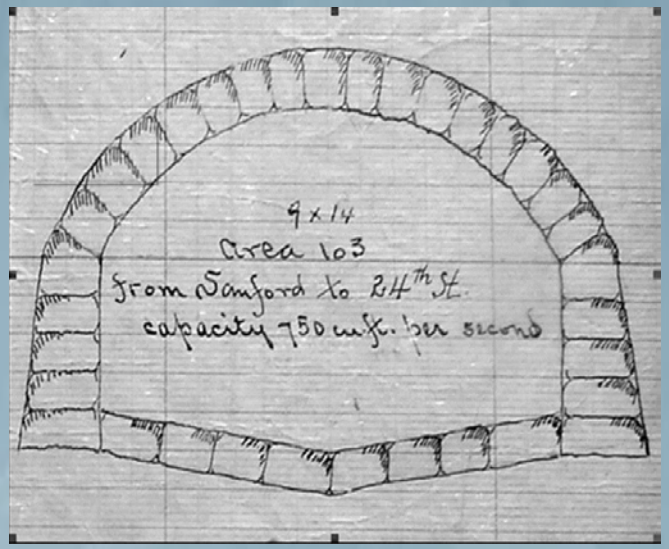
Existing Limestone Arch Culvert



Limestone Arch Culvert
Constructed in early 1900s

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Presidential Disaster Declarations in:

1999

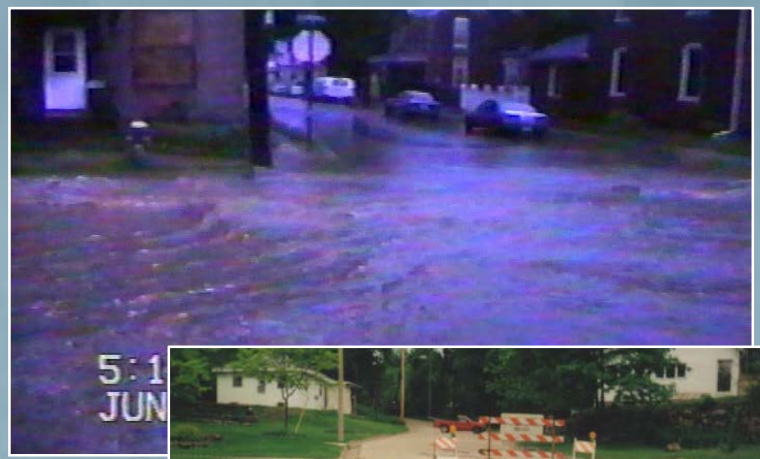
2002

2004

2006

2010

2011



$70 M in damages

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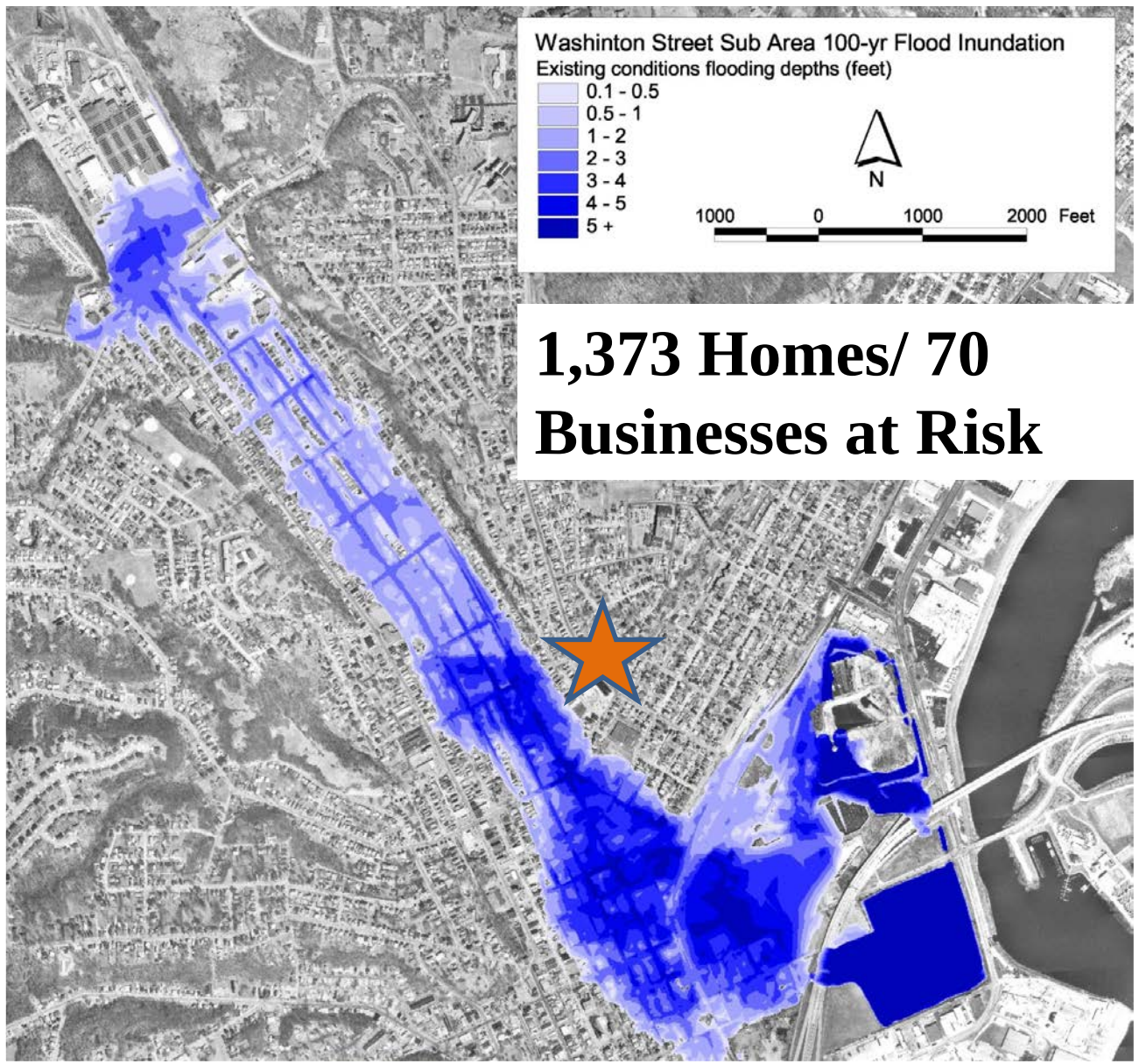
Bee Branch – pre-project flooding extents



1,373 Homes/ 70 Businesses at Risk

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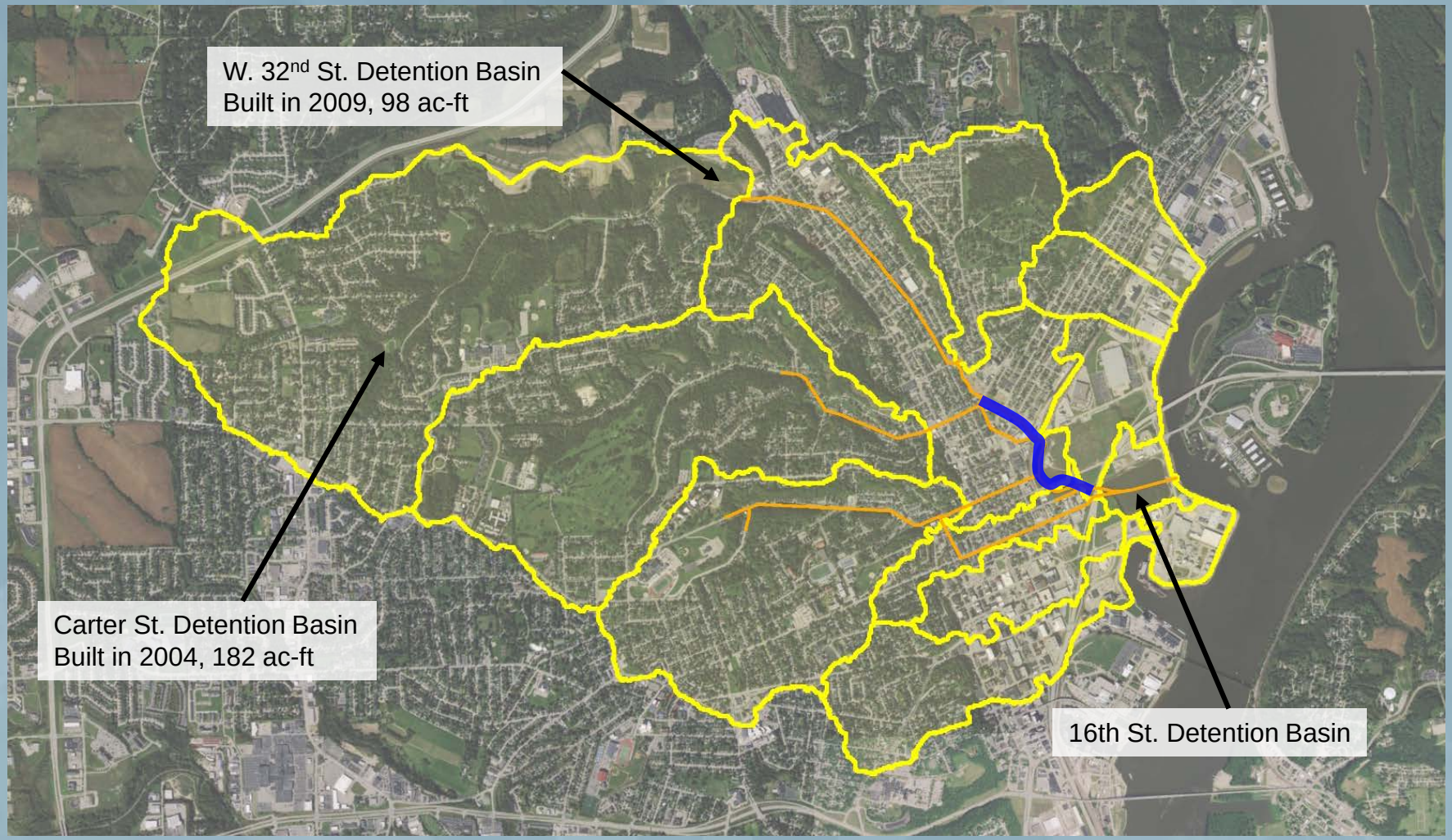
Bee Branch Watershed



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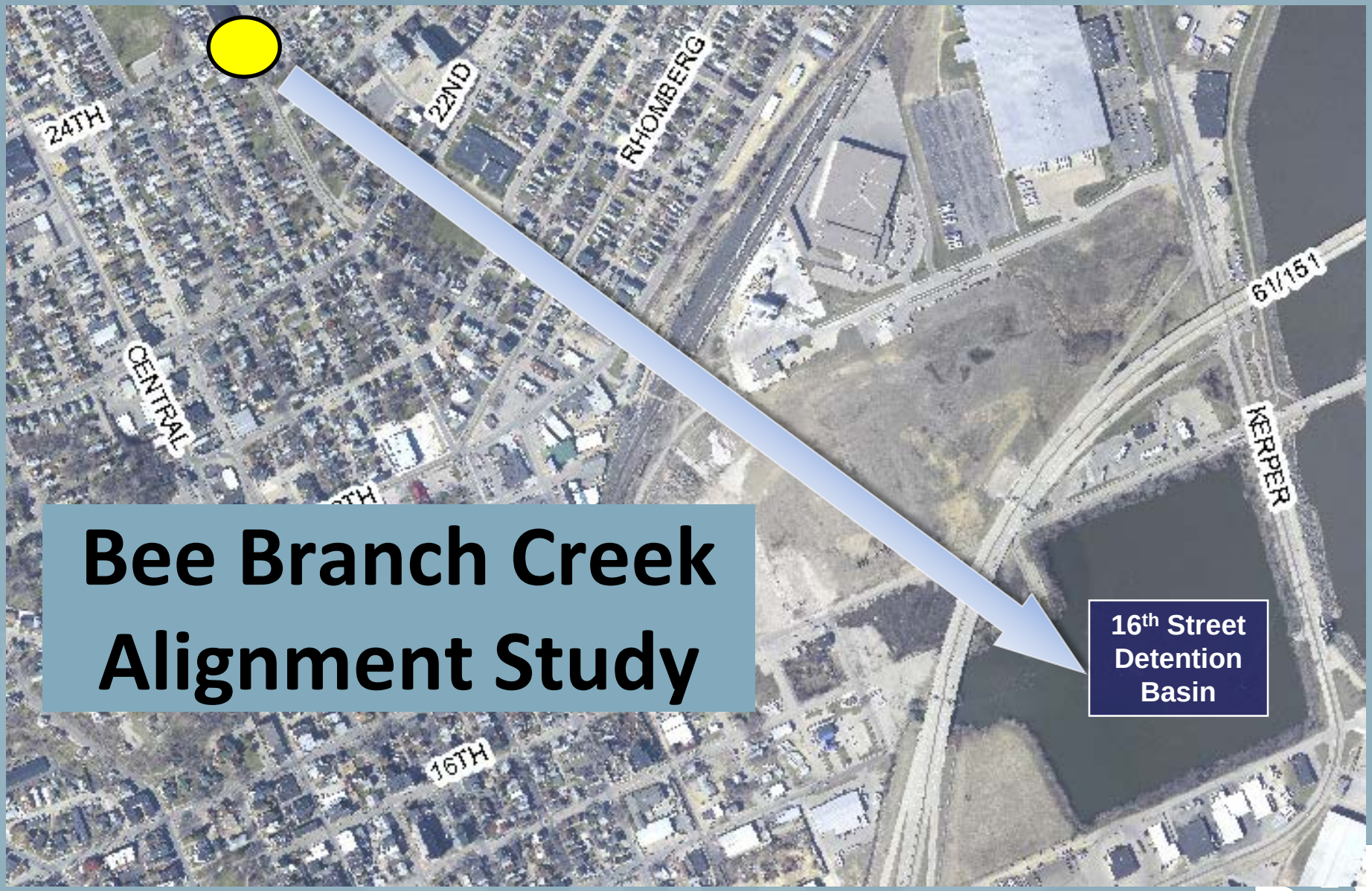
Bee Branch Watershed



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The Bee Branch Creek Daylighting Solution is a.....

"Multiphased, fiscally responsible investment to:

1) Mitigate flooding

2) Improve water quality

3) Stimulate investment

4) Enhance quality of life"

- From 2004 to 2009, commercial property values increased by 39% citywide in Dubuque, but they fell by 6% in the flood prone areas.

- Daylighting Project will prevent an estimated $582 million in damages over the 100-year design life of the project.

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BEE BRANCH CREEK – 1 MILE CORRIDOR

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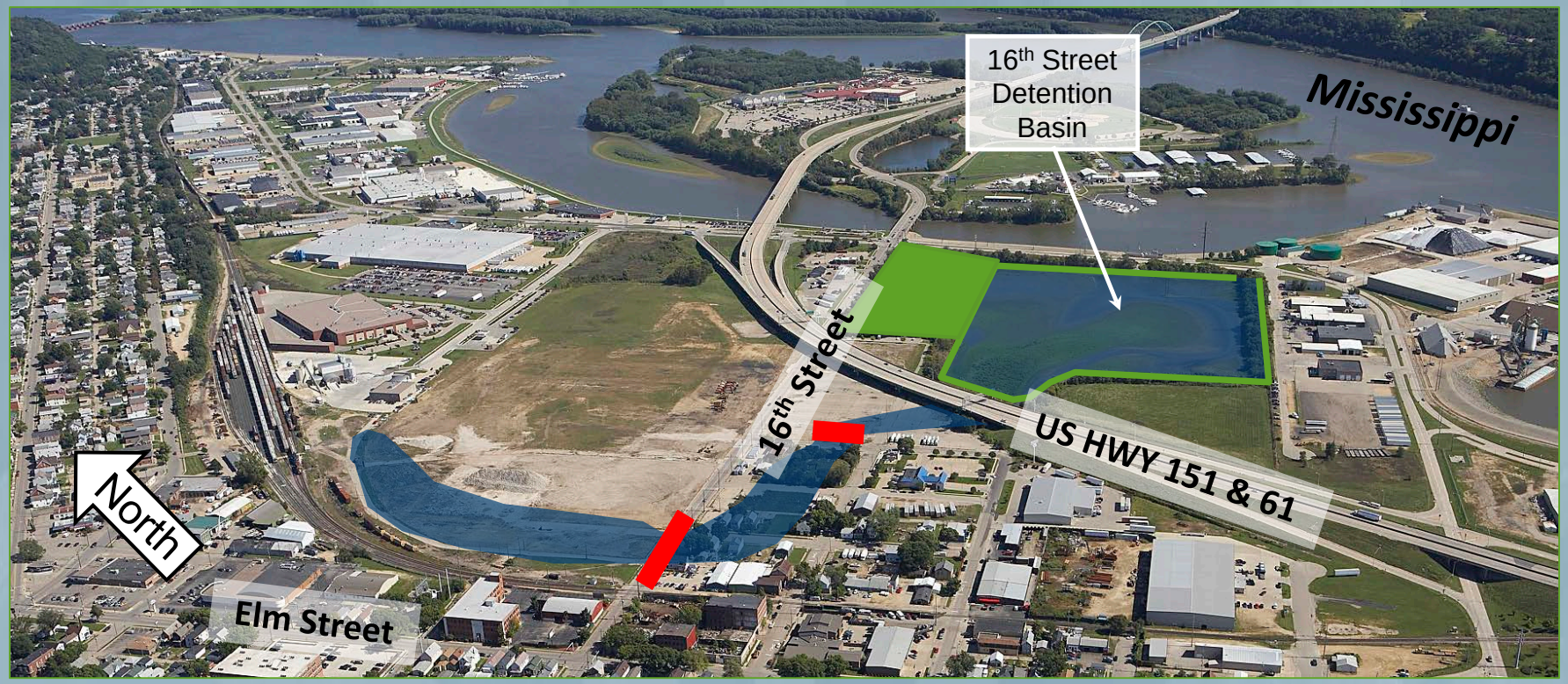
PHASE I: LOWER BEE BRANCH



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CONSTRUCTION

Spring 2010, construction starts on the

Lower Bee Branch Creek Restoration Project

……with construction completed in Fall 2011.

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PHASE I: LOWER BEE BRANCH

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Lower Bee Branch Channel

Downstream of 16th Street Bridge

Downstream of Sycamore Street Bridge

Upstream of 16th Street Bridge

16th Street Detention Pond

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Lower Bee Branch – Enhanced Wildlife Habitat

<u>2014 IOWA DNR FISH ASSESSMENT</u>

- **14 Species of Native Fish**
- **High Blue Gill Population**
- **Moderate Bass, Pike, and Perch Population**

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Upper Bee Branch Creek - Overall Site

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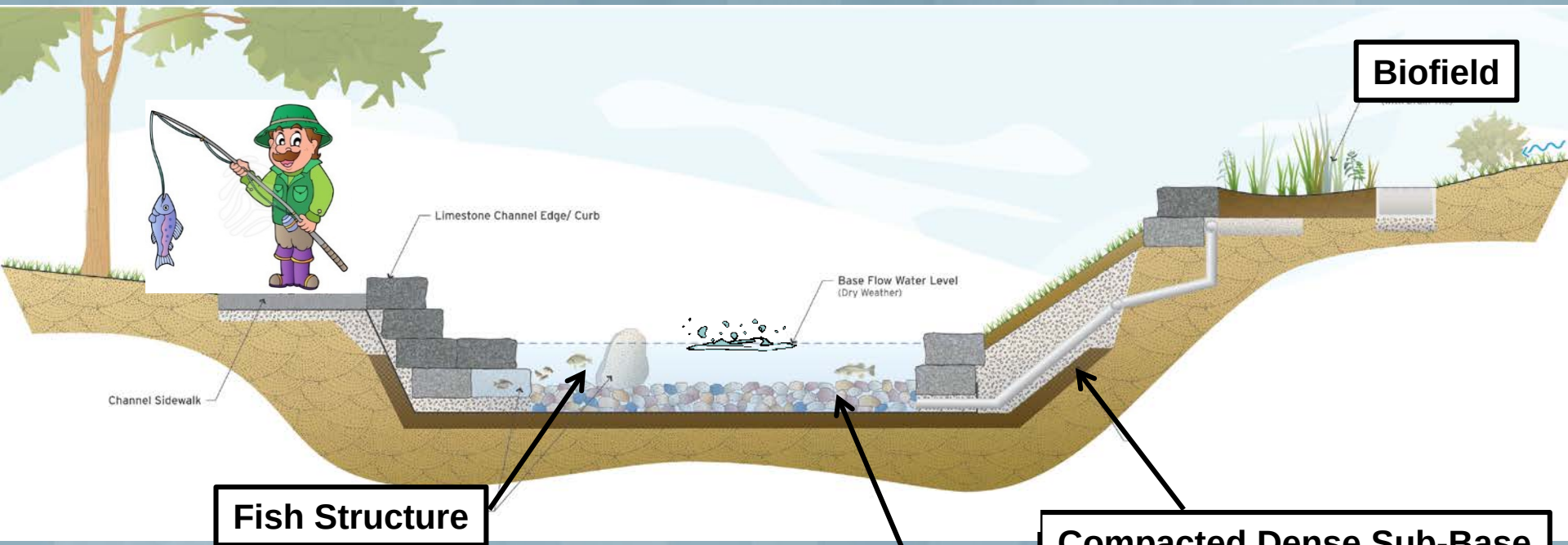
Upper Bee Branch Creek
Typical Channel Section



Biofield

Fish Structure

Compacted Dense Sub-Base

Cobble Channel Bottom

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Stormwater Quality – Biofields (Infiltration Basins)

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Stormwater Quality – Permeable Pavers

250 Green Alleys Reconstructed in the Bee Branch Watershed by 2040

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Stormwater Quality - Green Alleys

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Stormwater Quality – Permeable Pavers

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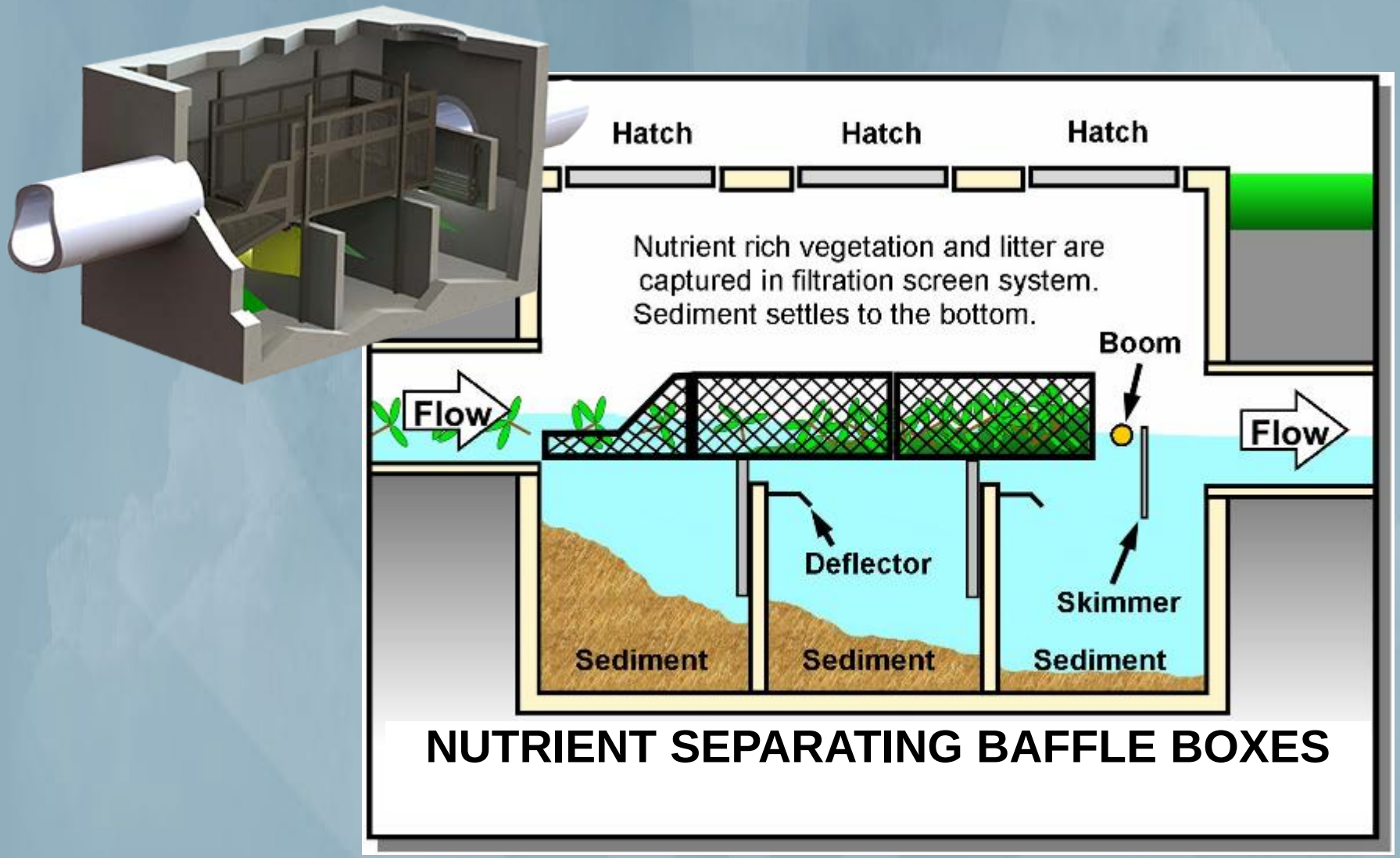
Stormwater Quality – Treatment devices



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Stormwater Quality – Treatment devices

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Stormwater Quality - Floating Islands

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Floating Treatment Island Design

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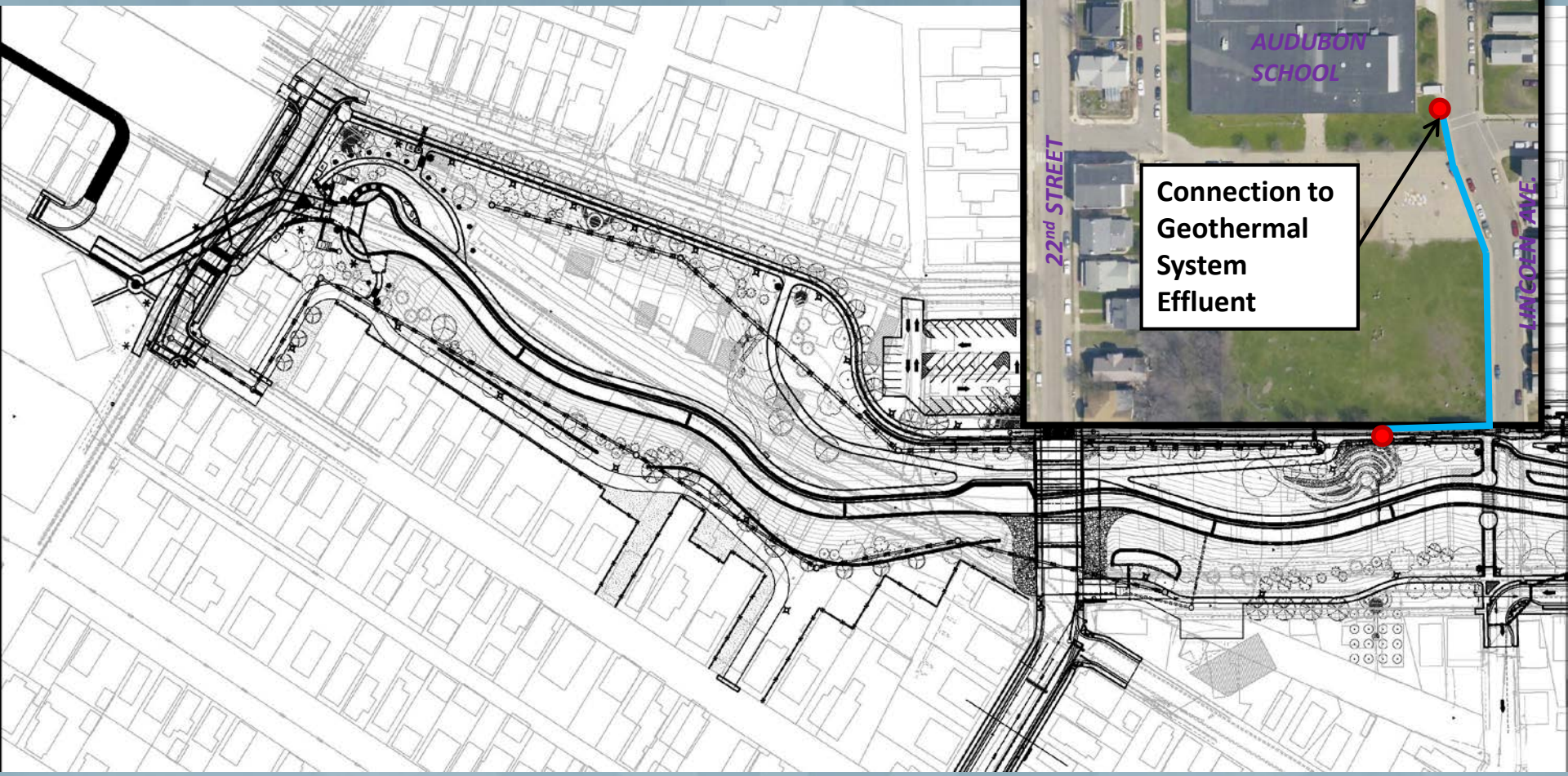
Creek Aeration Features



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CREEK AERATION FEATURES

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CREEK AERATION – OUTFALL DAYLIGHTING (CONNECTION TO EXISTING BEE BRANCH CULVERT)

- **2.5 CFS Dry Weather Base Flow**
- **4 Foot Elevation Drop from Existing Culvert to New Channel Bottom**

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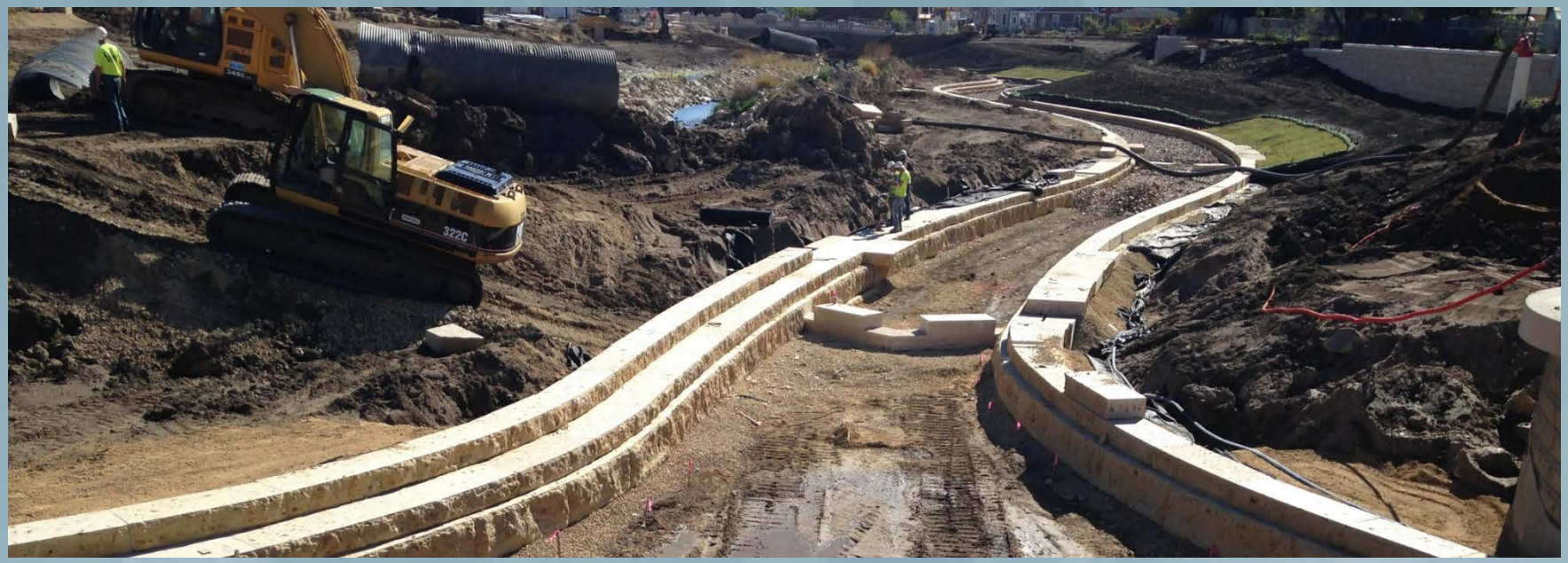
Channel Construction - Fish Habitat



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Upper Bee Branch Drone Flyover

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Questions or Comments

https://www.youtube.com/watch?v=XNDh2zjRD2U

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