

# Spring Lake Rehabilitation & Naturalization – A Case Study in Aurora, IL



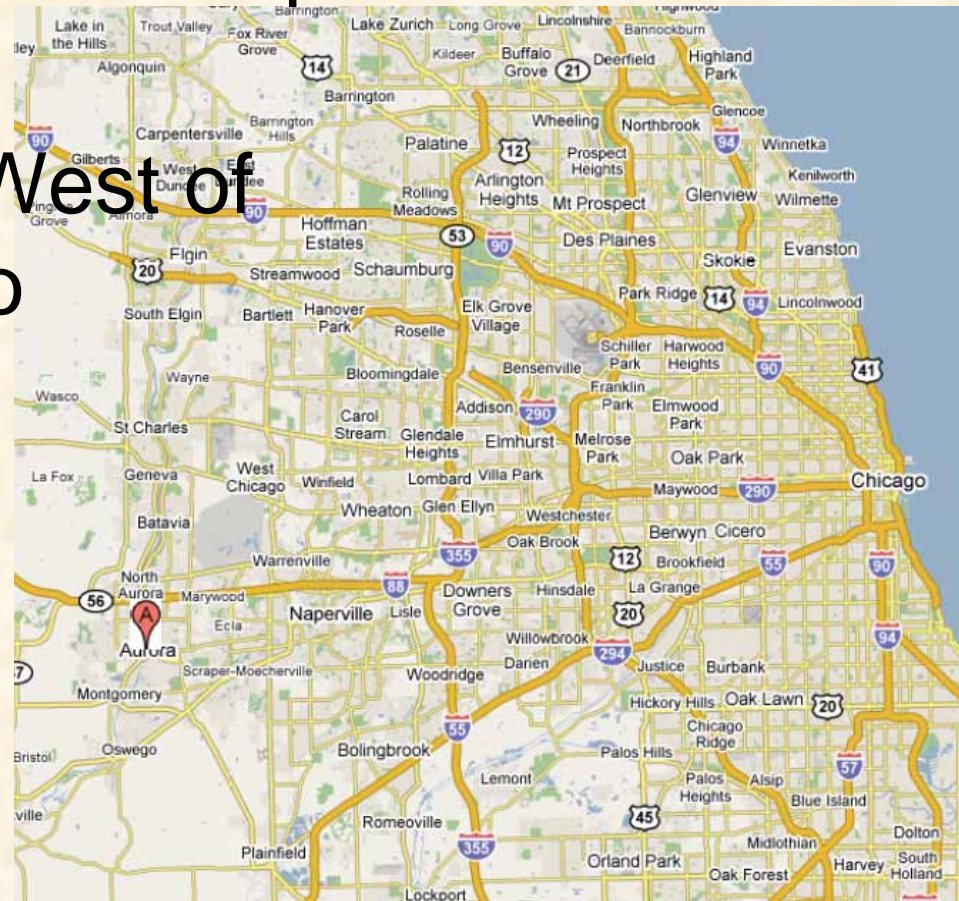
# Spring Lake Naturalization

- Project Location & Scope
- Construction Phasing / Planning
- Shoreline Treatment
- Modifications
- Challenges Faced
- First Year Results
- Lessons Learned



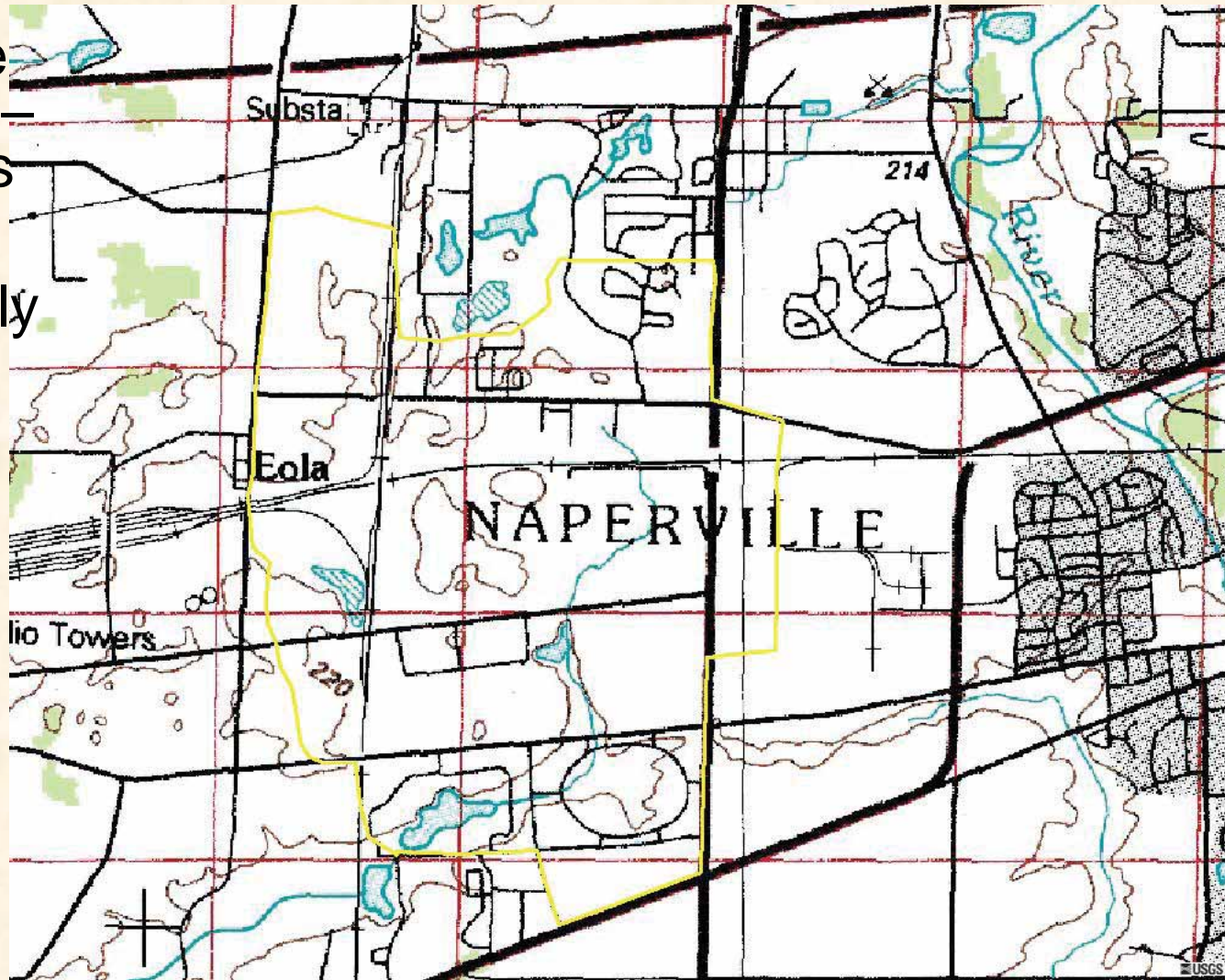
# Aurora, IL

- 2<sup>nd</sup> Largest City in IL – Population Approx. 175,000
- Roughly 40 Miles West of Downtown Chicago



# Spring Lake - Aurora, IL

- Spring Lake Constructed – Early 1970s
- Approximately 23.7 Acres
- Mostly Urbanized Watershed
- Drains 3.75 Sq. Miles





# Spring Lake - Aurora, IL



# Spring Lake Bathymetric Survey

**Fish Community:** Bluegill (56%) and largemouth bass (18%) most abundant. Bluntnose minnow, black crappie, hybrid sunfish and black bullhead comprised an additional 22%.

**Species average size, length:** Nearly 75% of largemouth bass were under 6 inches. Bluegill population skewed toward intermediate size fish (3 to 5 inches). Moderately abundant black crappie population with fish up to 8 ½ inches that adds to diversity of fishery.

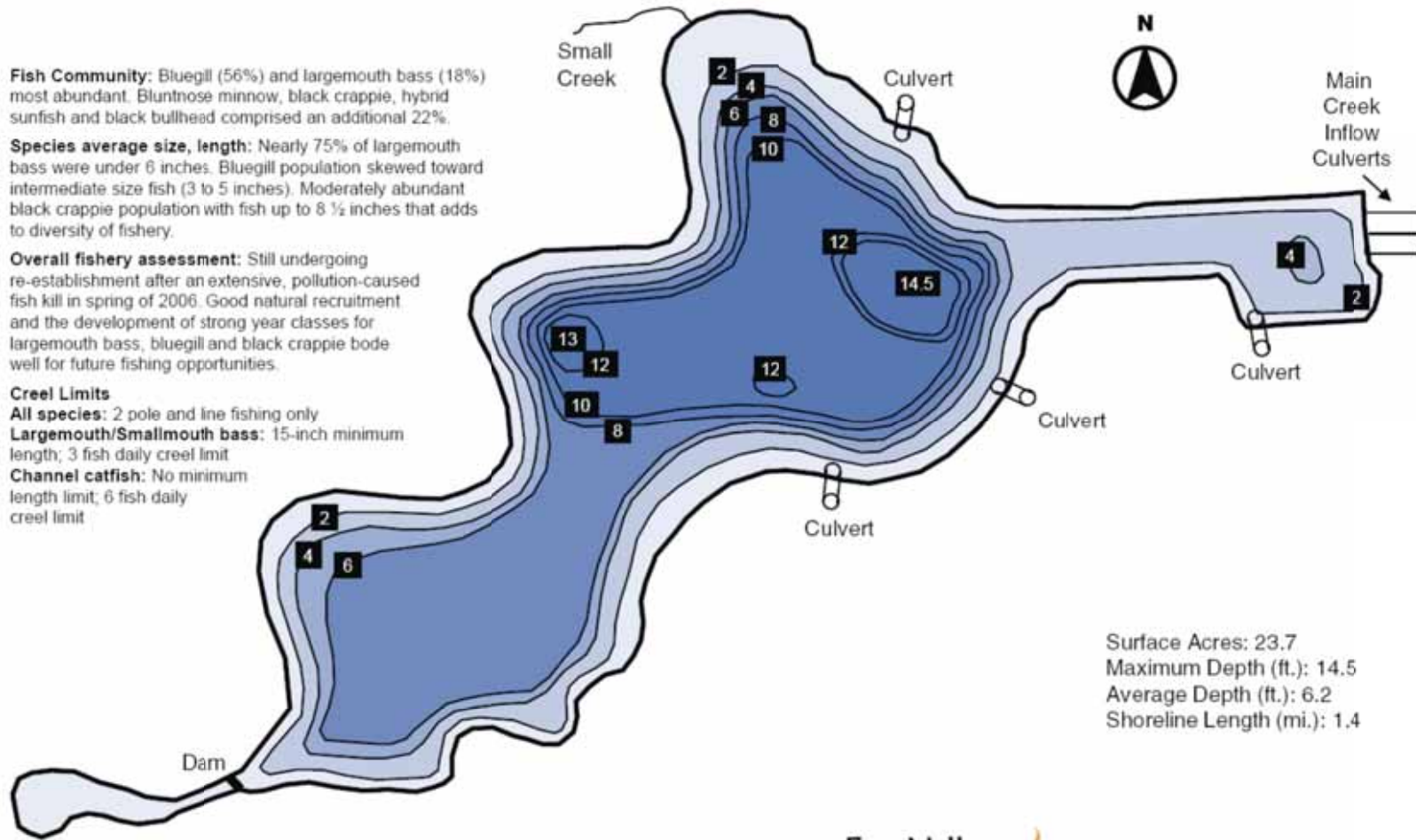
**Overall fishery assessment:** Still undergoing re-establishment after an extensive, pollution-caused fish kill in spring of 2006. Good natural recruitment and the development of strong year classes for largemouth bass, bluegill and black crappie bode well for future fishing opportunities.

**Creel Limits**

**All species:** 2 pole and line fishing only

**Largemouth/Smallmouth bass:** 15-inch minimum length; 3 fish daily creel limit

**Channel catfish:** No minimum length limit; 6 fish daily creel limit



Surface Acres: 23.7  
 Maximum Depth (ft.): 14.5  
 Average Depth (ft.): 6.2  
 Shoreline Length (mi.): 1.4



IDNR – Division of Fisheries  
 Lake survey 9/19/07



# Spring Lake Shoreline Conditions



# Spring Lake Weir Modification and Shoreline Stabilization

- Unique Partnership for Project
  - Fox Valley Park District – Owner
  - City of Aurora – Owner
  - Spring Lake Homeowners Association – Owner
  - Wiseman Hughes, Inc. – Nearby Residential Developer
- Permitting requirements for new Wiseman Hughes development project directly upstream of Spring Lake led to the initiation of the project.
- Illinois DNR – Office of Water Resources - Floodplain Impact Permit
- US Army Corps of Engineers – Section 404 Regional Permit
- Illinois EPA – 401 Water Quality Certification
- Kane-DuPage County Soil & Water Conservation District – Soil Erosion and Sediment Control Plan – Technical Standard Implementation Review
- Kane County Stormwater Ordinance

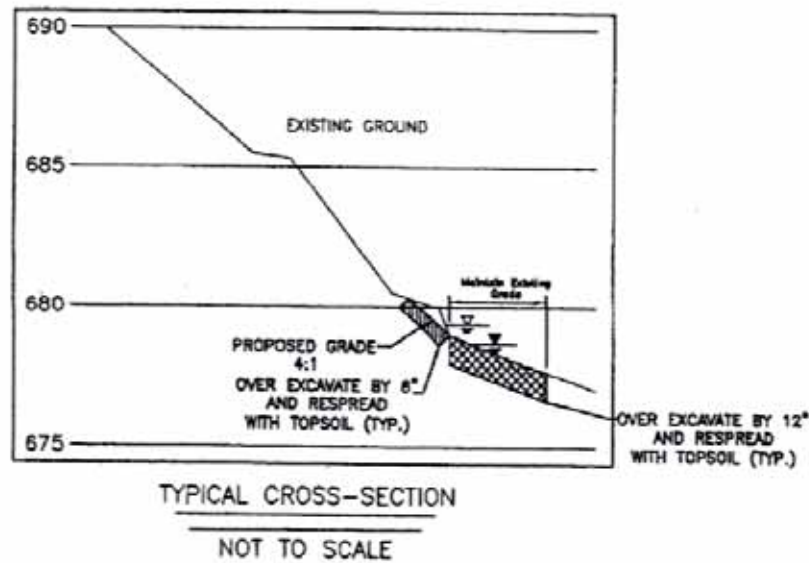




# Spring Lake – Weir Modification & Shoreline Stabilization

## Plans

NOTE:  
WHENEVER POSSIBLE, ERODED SHORELINE IDENTIFIED DURING CONSTRUCTION THAT WAS NOT DESIGNATED TO BE REGRADED SHALL BE GRADED TO ELIMINATE VERTICAL SLOPES.





# Spring Lake – Weir Modification & Shoreline Stabilization



- Existing Weir Structure



# Spring Lake – Weir Modification & Shoreline Stabilization

- Project Phasing
  - Saw Cut Weir
  - Allow Lake Levels to Lower
  - Assess Feasibility of Equipment Access
    - Time work to utilize dry season (mid summer)
  - Grade and Reshape Shorelines
  - Seed and Blanket Shoreline
  - Install Wetland Plugs
  - Manage Shoreline Vegetation



# Spring Lake – Weir Modification & Shoreline Stabilization



- Weir - Saw Cut and Modification
- Drop invert of weir
  - From 678.10 to 677.35



Mid June 2007

# Spring Lake – Weir Modification & Shoreline Stabilization



- Observed water level after lowering of weir allows for determination of NWL in Spring Lake
- Additional modification of weir would allow for additional control of water levels
  - Facilitate Construction
  - Long Term Management & Maintenance



Late June 2007



# Spring Lake – Weir Modification & Shoreline Stabilization



- Water Control Structure
  - 12” Diameter hole with inv. 18” below weir crest

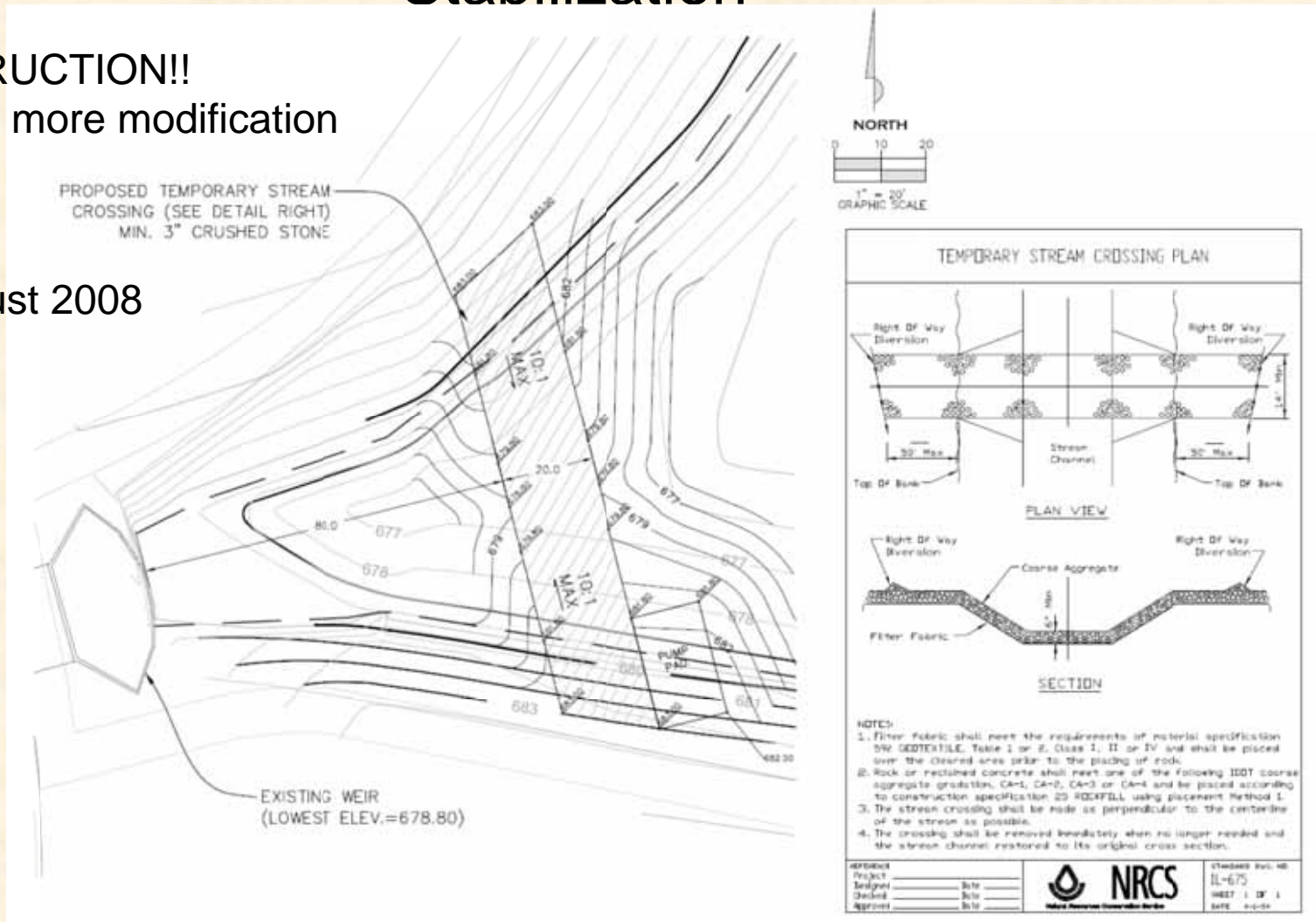


September 2007

# Spring Lake – Weir Modification & Shoreline Stabilization

To CONSTRUCTION!!  
With one more modification

Mid-August 2008





# Spring Lake – Weir Modification & Shoreline Stabilization



- Temporary Crossing
  - Crest above HWL
  - Low Point in Center
- Bypass Pumping



August 19, 2008

# Spring Lake – Weir Modification & Shoreline Stabilization



- Temporary Lake Level Draw Down
  - 2.5 Feet Below NWL
- Grading of Side Slopes



August 22, 2008



# Spring Lake – Weir Modification & Shoreline Stabilization



- Temporary Lake Level Draw Down
  - 2.5 Feet Below NWL
- Grading of Side Slopes



August 22, 2008

# Spring Lake Shoreline Repair

## A New Concern Arises

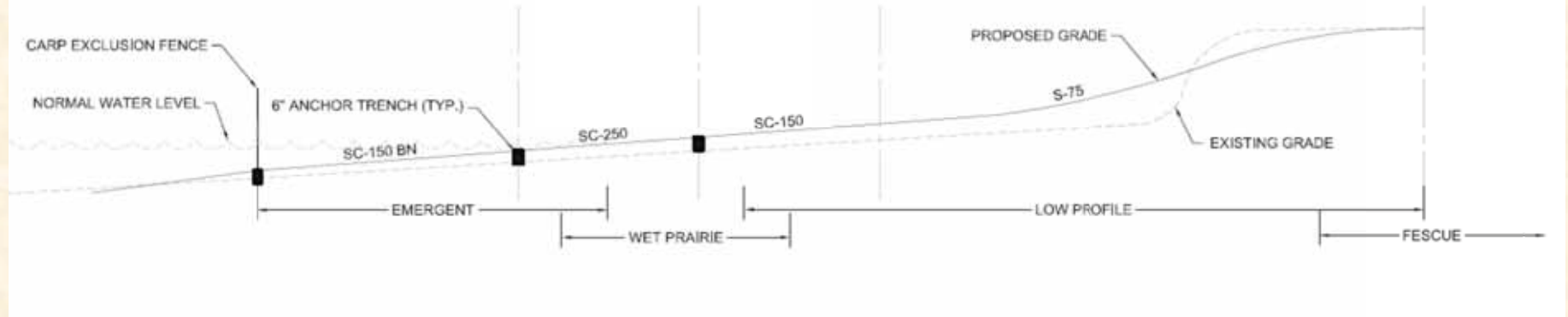
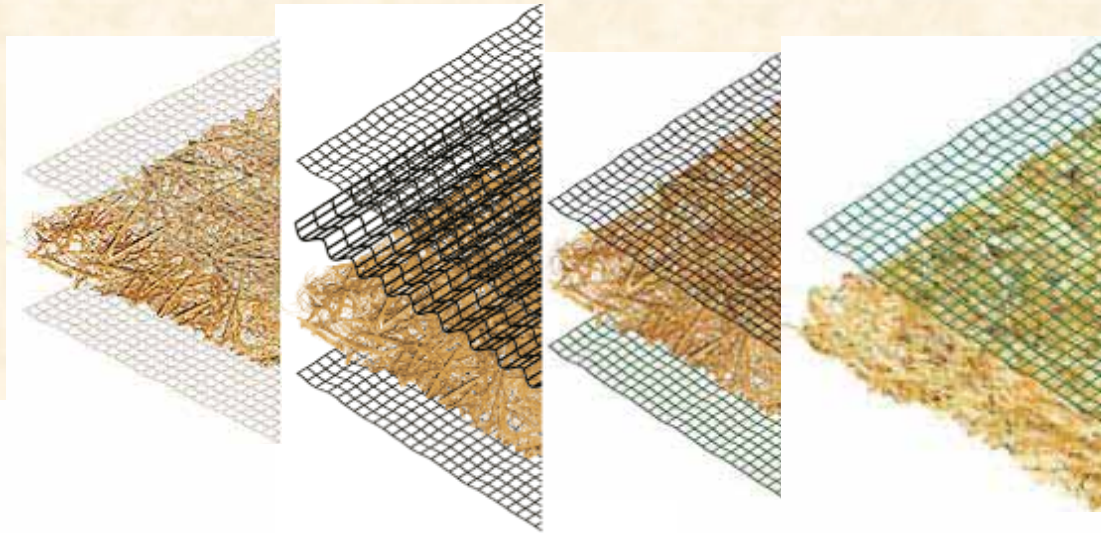


- Common Carp (especially large ones) and newly planted shorelines with wetland species do not mix well



# Spring Lake Shoreline Repair

## The "New" Shoreline Treatment



# Spring Lake – Weir Modification & Shoreline Stabilization



- Temporary Lake Level Draw Down
  - 2.5 Feet Below NWL
- Grading of Side Slopes



August 25, 2008



# Spring Lake – Weir Modification & Shoreline Stabilization



- Observed Normal Water Level Surveyed and Flagged to Mark Centerline of TRM
- Carp Exclusion Fence installed in anchor trench of matting

Installation Completed  
September 3, 2008



# Spring Lake – Weir Modification & Shoreline Stabilization



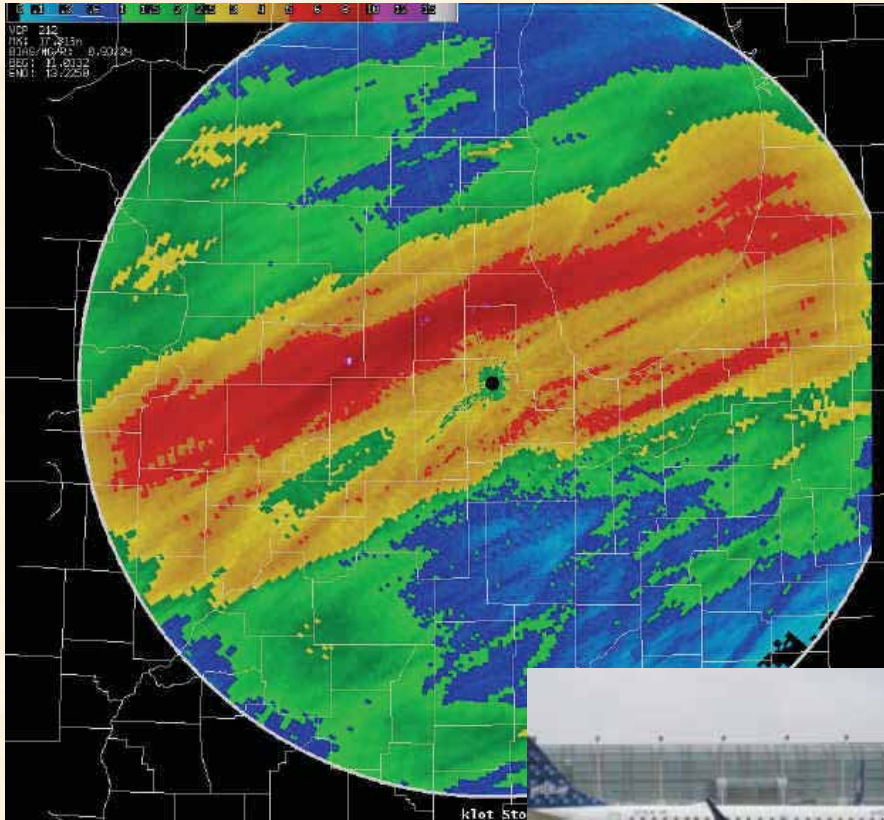
- Temporary Crossing Removed
- Gate Valve and Water Control Structure Installed at Weir

Installation Completed  
September 3, 2008





# Spring Lake – Weir Modification & Shoreline Stabilization



- Nothing Like an Early Test
- September 5<sup>th</sup> -14<sup>th</sup> - Remnants of Two Hurricanes Head North
- September 13<sup>th</sup> – Record Single Day Rainfall in Chicago – 6.67”
- September 12<sup>th</sup> -14<sup>th</sup>
  - Aurora Rainfall – 9.78”



# Spring Lake – Weir Modification & Shoreline Stabilization



- Flooding in Region Extensive
- High Water Mark – After September 15<sup>th</sup>
  - Approximately 4 feet above NWL



September 5, 2008





# Spring Lake – Weir Modification & Shoreline Stabilization



- Flooding in Region Extensive
- High Water Mark – After September 15<sup>th</sup>
  - Approximately 4 feet above NWL



September 19, 2008

# Spring Lake – Weir Modification & Shoreline Stabilization



- Additional Flooding in December and February
- Erosion More Extensive than September 2008 Flooding
  - 2.3 Inches of Heavy Rain on 8 inches of Snow and Frozen Ground on December 27



Photos February, 2008



# Spring Lake – Weir Modification & Shoreline Stabilization



- Spring Evaluation
- Loss of cover crop in wet zones due to flooding
- Water levels lowered to promote germination of wet zones throughout growing season of 2009
- Wetland Plug Installation Mid-Summer 2009



May 2, 2009

# Spring Lake – Weir Modification & Shoreline Stabilization



- **2009 Management & Monitoring**

- Extensive Wet Mesic Zone Establishment
- Plugging was more successful in upper portions of emergent zone
- HOA issues with protection fencing and scalping buffer areas
- Prolonged high water levels and drastic fluctuation in lake levels





# Spring Lake – Weir Modification & Shoreline Stabilization

## Lessons Learned

- Project coordination is critical for success
- Modification of plans (with the appropriate insight and oversight) is necessary
- Selection of appropriate erosion control blanketing and is key to success
- I would substitute S-150 (double netted straw blanket) for single netted straw on upper side slopes
- Just cause it says “Normal” Water Level, doesn’t mean it will be so
- Management and Maintenance will be necessary for ultimate success





# Questions?

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