

# Valley Creek Watershed and Stream Restoration

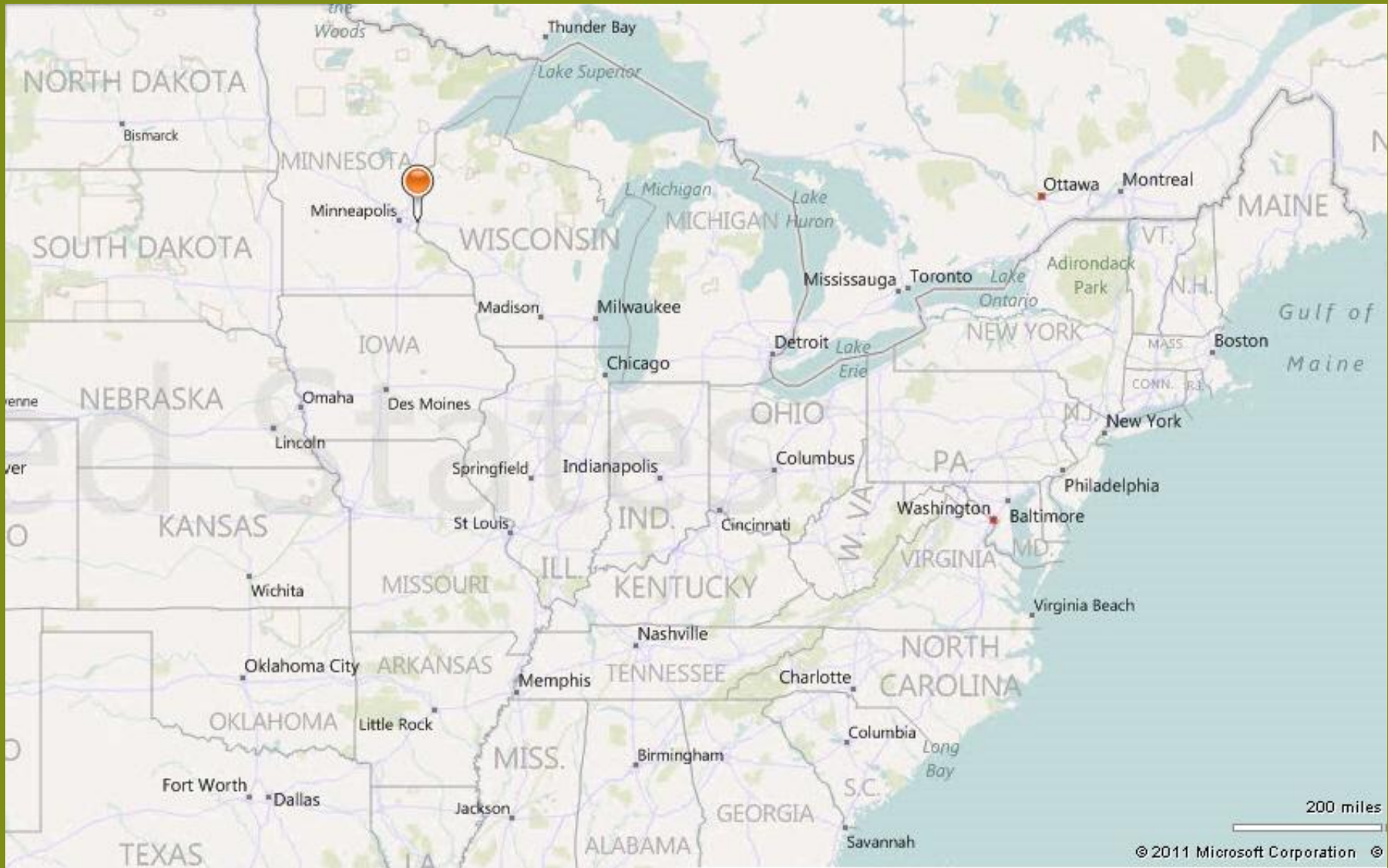
## 4<sup>th</sup> National Conference on Ecosystem Restoration

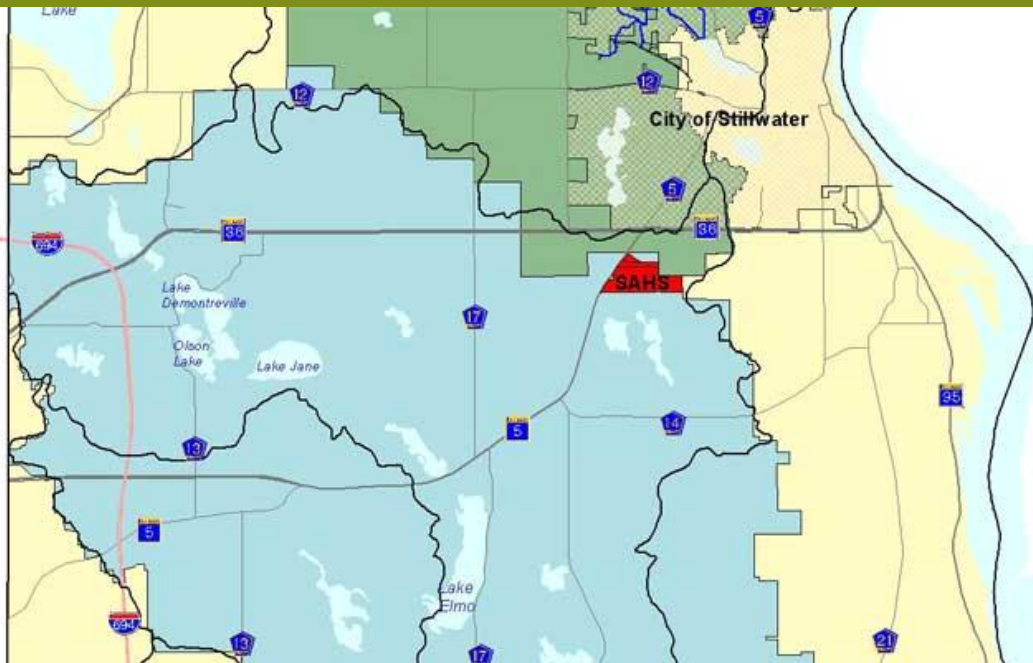
Jeffrey Lee, Tom MacDonald, and Jeff Weiss  
Barr Engineering Co.  
August 2011

# Habitat Improvement on Valley Creek

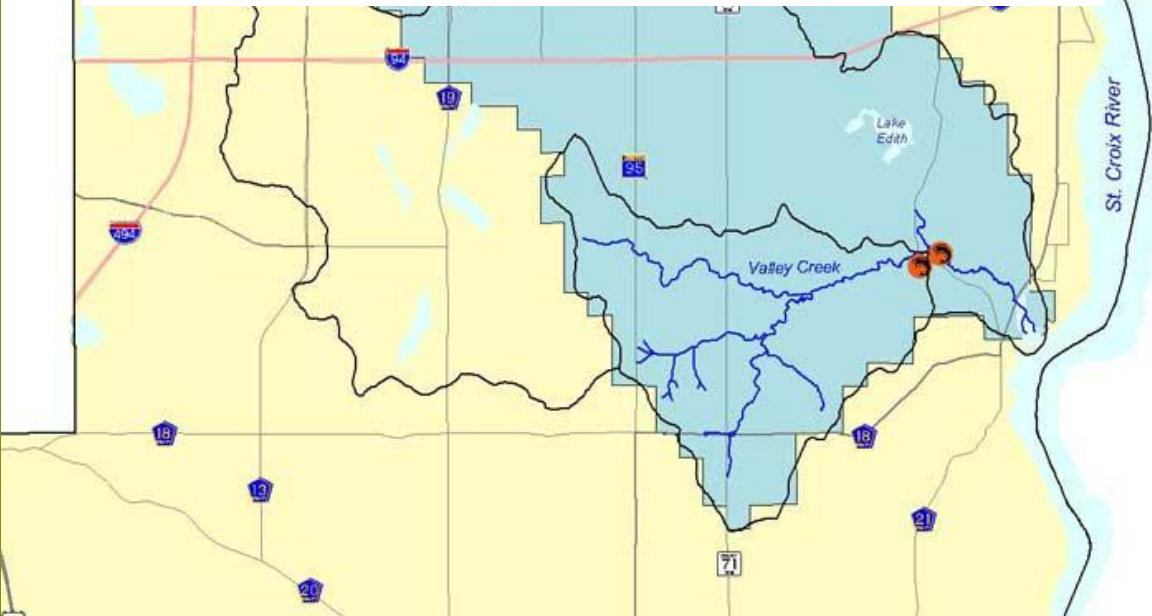


- Background
- Project Summary
- Monitoring
- Lessons Learned





Valley Branch Watershed District Boundaries



# Valley Creek

- One of 13 trout streams within the Twin Cities metropolitan area
- Naturally reproducing population of native brook trout and brook lamprey
- Large populations of non-native brown and rainbow trout
- Top 10% for trout production (*personal communication with Tom Waters and Ray Newman*)

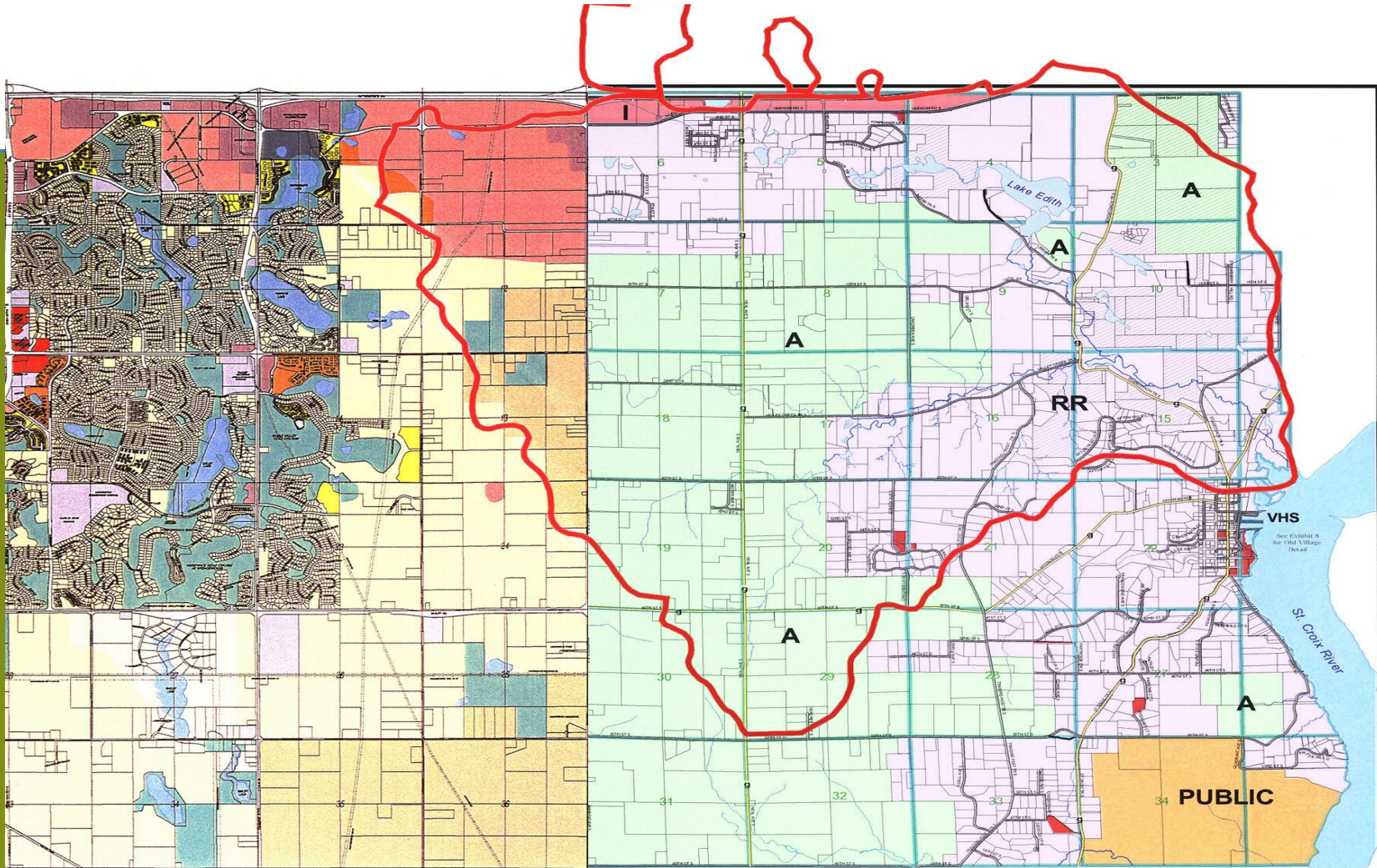


# Valley Creek

- **Flows into the St. Croix River, a federally designated Wild & Scenic River**
- **St. Croix at Valley Creek's mouth is listed as impaired for turbidity by the MPCA**
- **Estimated 1,400 tons of sediment per year enter Valley Creek from its watershed**



# Valley Creek Watershed Land Uses



  
**CITY OF**  
**Woodbury**  
 LAND USE

- City Centre
- Places to Shop
- Places to Work
- Mixed Use
- Open Space
- Public/Semi-Public
- High Density Urban Residential
- Medium Density Urban Residential
- Urban Mixed Residential
- Rural Estate
- Urban Reserve

*afton*

1:29779



0 0.25 0.5 0.75 1 Miles

LAND USE PLAN

- St. Croix River \ Lakes
- Parcels
- Sections
- Waterways
- intermittent
- perennial
- Land Use Plan
- Agriculture
- Industrial
- Public
- Rural Residential
- Village Historical
- City Parks
- Private Open Space

- Road System
- CITY
- COUNTY
- STATE
- INTERSTATE
- Private

□ = 40 acre parcel

St. Croix River  
Photo: Nile Fellows



# 2005 Erosion Inventory



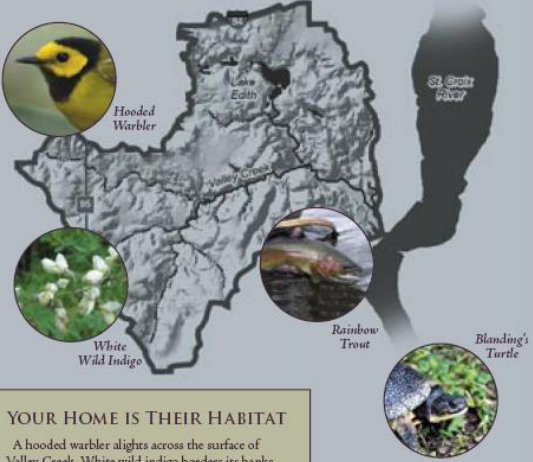
- **90 Erosion Sites in 7 Tributary Ravines**
- **> 60 In-Stream Erosion Sites**
- **33 Road Runoff Erosion Sites**



# Valley Creek Repair & Rehabilitation Program

- Fall 2006 – Winter 2007/08: Developed cost-share program
- Fall 2006: Contacted landowners of priority sites
- 2007: Designed initial projects
- Spring and Summer 2008: Constructed initial projects
- 2010: Dam Removal
- 2011: Belwin/Hartwell Properties Feasibility Study

FROM THE HEADWATERS OF  
**VALLEY CREEK**  
TO THE  
ST. CROIX RIVER,  
**CLEAN WATER  
MAKES WAVES**

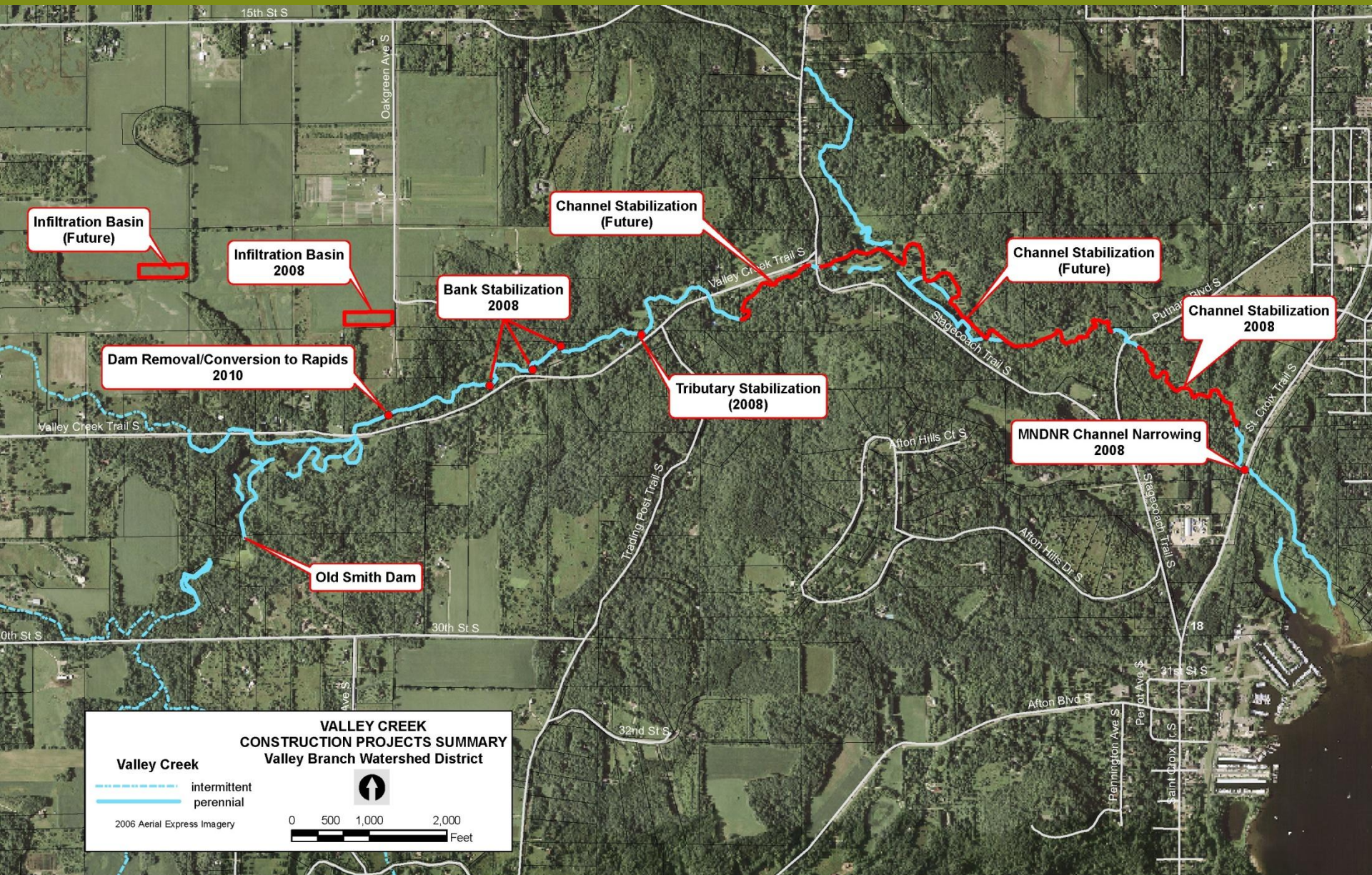


**YOUR HOME IS THEIR HABITAT**

A hooded warbler alights across the surface of Valley Creek. White wild indigo borders its banks, and trout rise in pursuit of caddis flies. Valley Creek is a special place, and as a landowner along the creek, you are a critical part of the creek's ecosystem.

As one of Minnesota's best trout-producing streams, Valley Creek is worth protecting. You can help to ensure clean water and a healthy habitat for the fish, plants, and wildlife that call Valley Creek home by participating in one of many restoration projects.

Valley Branch Watershed District



**Infiltration Basin (Future)**

**Infiltration Basin 2008**

**Bank Stabilization 2008**

**Channel Stabilization (Future)**

**Dam Removal/Conversion to Rapids 2010**

**Tributary Stabilization (2008)**

**Channel Stabilization (Future)**

**Channel Stabilization 2008**

**MNDNR Channel Narrowing 2008**

**Old Smith Dam**

**VALLEY CREEK  
CONSTRUCTION PROJECTS SUMMARY  
Valley Branch Watershed District**

Valley Creek

--- intermittent  
— perennial

2006 Aerial Express Imagery

0 500 1,000 2,000  
Feet

# Challenges - Johnson Property

- Severely incised/widened channel
- Sand bed and banks
- Poor vegetation
- “Active” landowner



## Design Included

- Excavate floodplain terraces
- 8 boulder riffles for grade control
- 45 root wads
- 7,000 feet of shoreline biolog
- Native grass, willow stakes and shrubs



# June 2011



# Stabilized 2,500 feet of the creek on three upstream properties



## Design included:

- Bank shaping/500 feet of shoreline biolog
- 1 boulder cross vane grade control; 2 boulder vanes for bank protection/direct flow
- 3 root wads

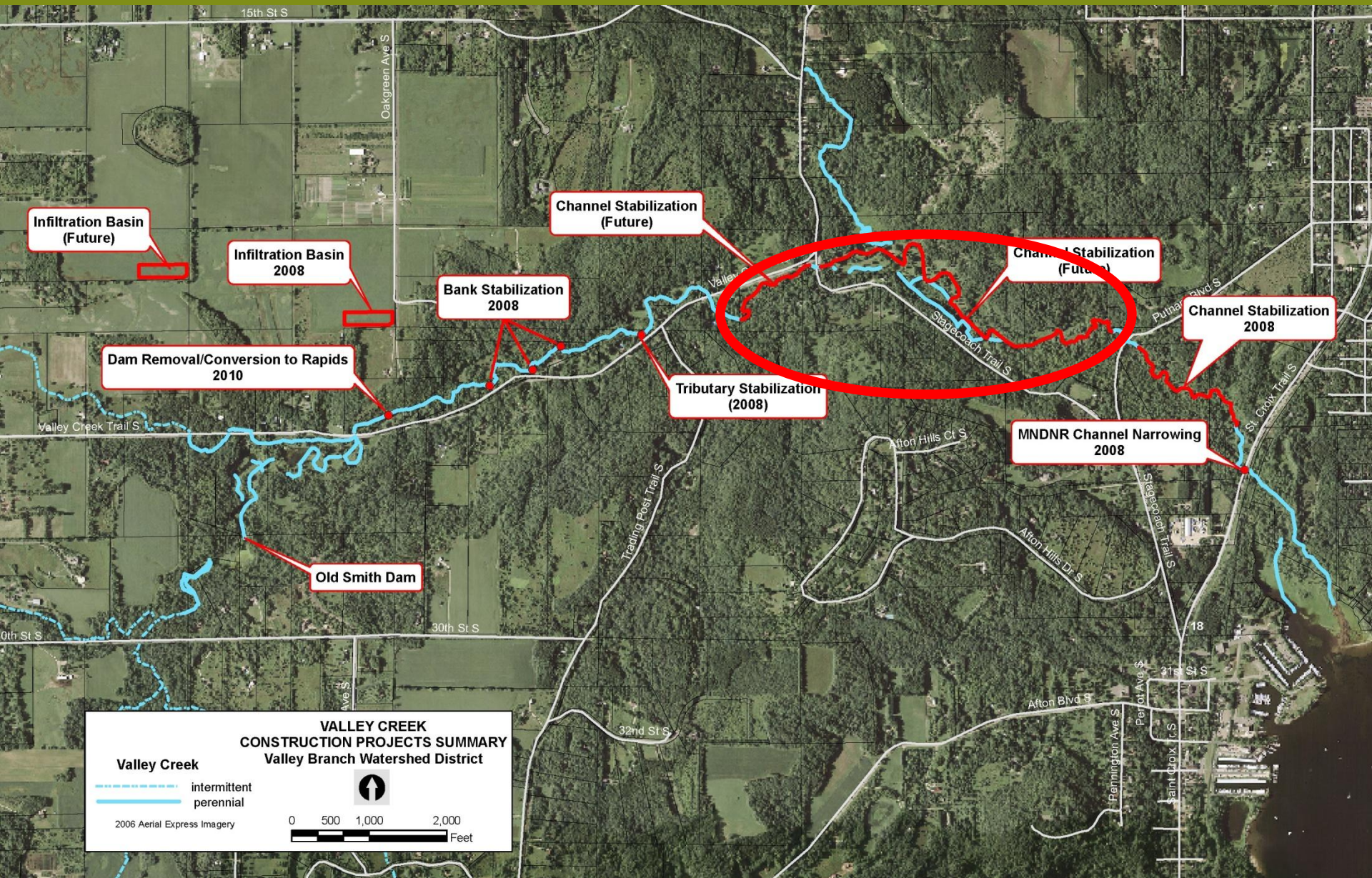


# Dam Conversion to Rapids – Blasko Property Summer 2010

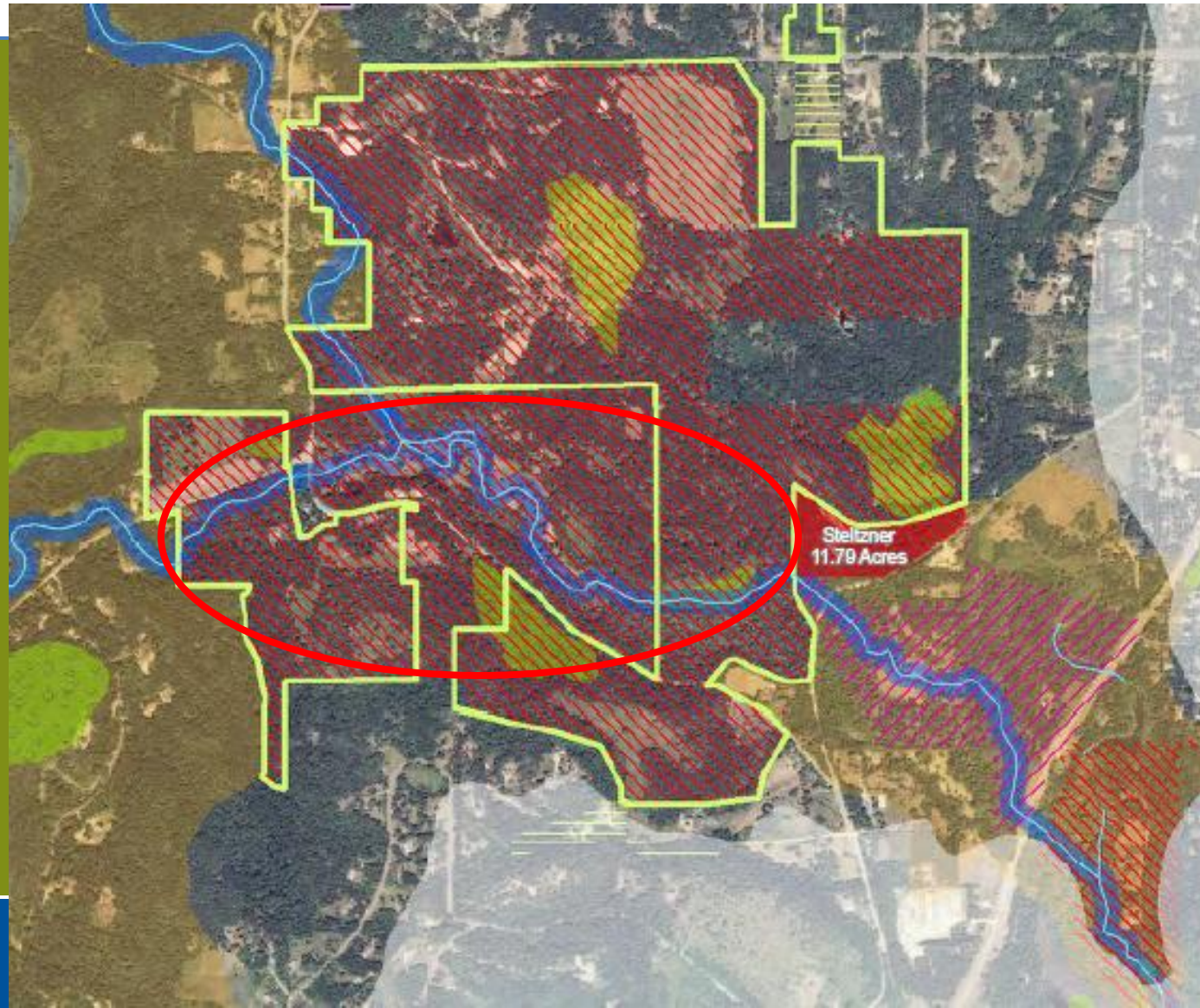










# Belwin Conservancy / Hartwell Family Feasibility Study - 2011



## Ownership & Easements

-  Belwin Conservancy Property
-  Belwin Conservancy Easements
-  Minnesota Land Trust Easements
-  Easements Under Negotiation



# Valley Creek Protection Partnership - Easements



**BELWIN  
CONSERVANCY**  
*Inspiring through Nature*



**MINNESOTA LAND TRUST**

**THE CONSERVATION FUND**  
*America's Partner in Conservation*

**VB Valley Branch  
Watershed District**

**DD DORIS DUKE  
CHARITABLE FOUNDATION**

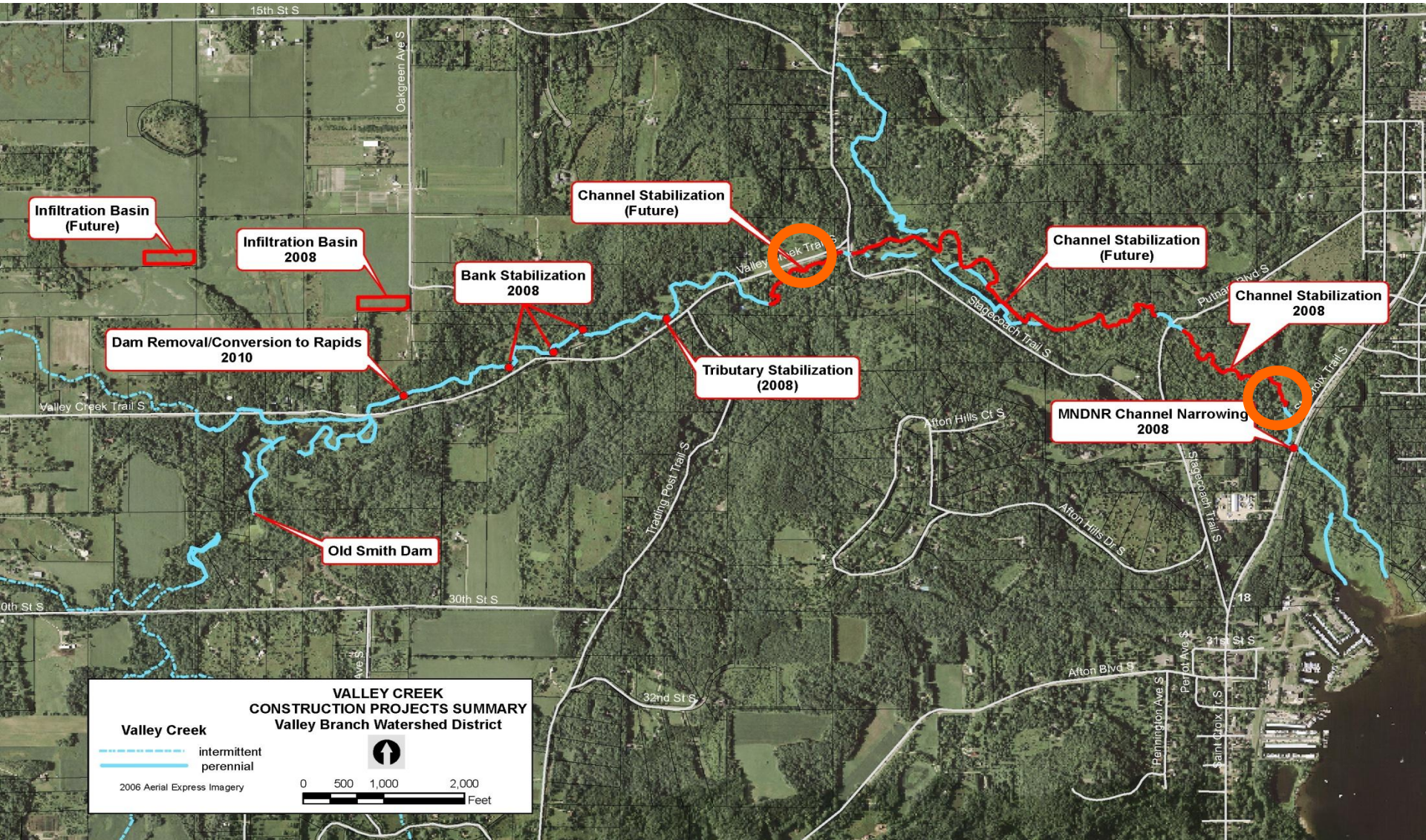
**Washington  
County**

# Fish and Aquatic Macroinvertebrate Monitoring

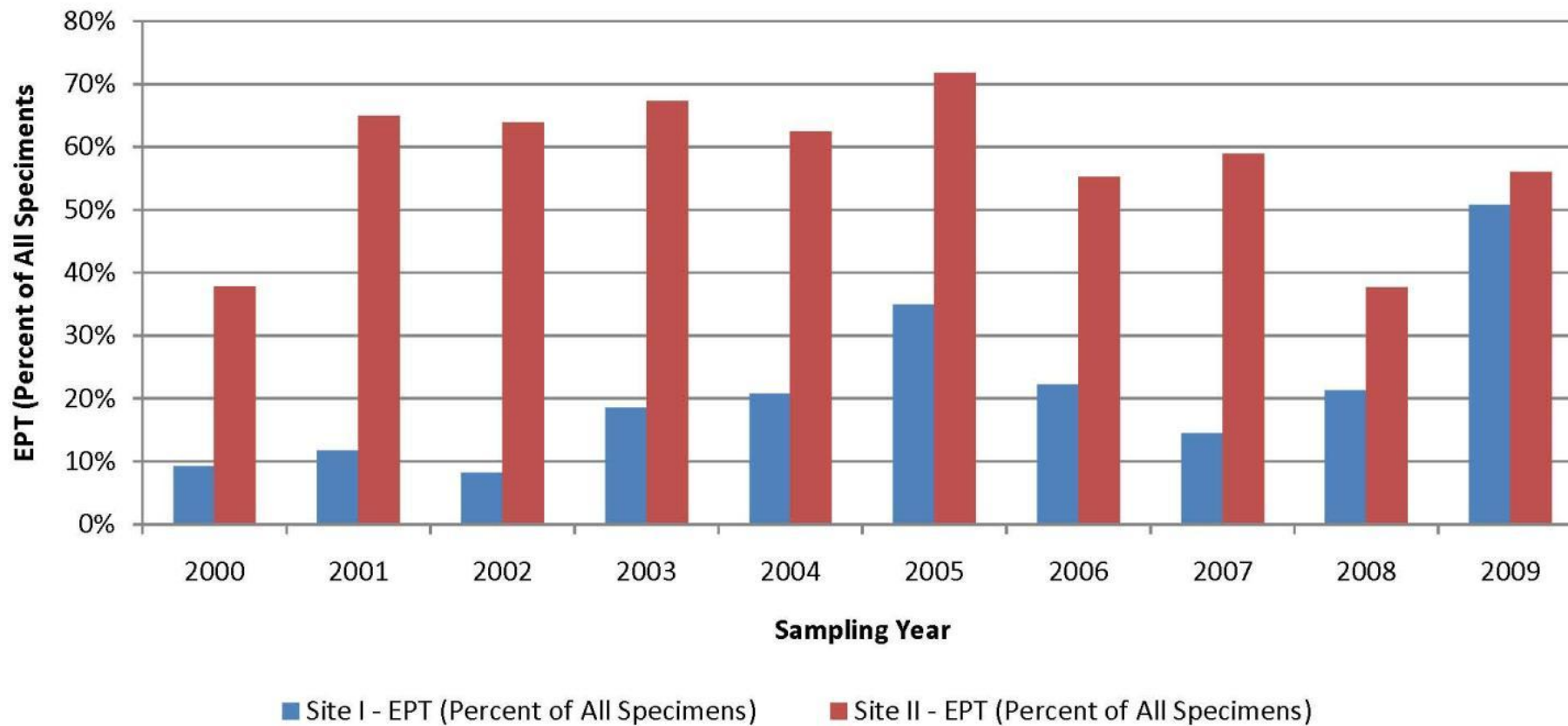


- Site I located upstream of CSAH 18 bridge, downstream of VBWD project
- Site II (control site) located upstream at Stagecoach Road
- Both sites also sampled by MNDNR in 2006

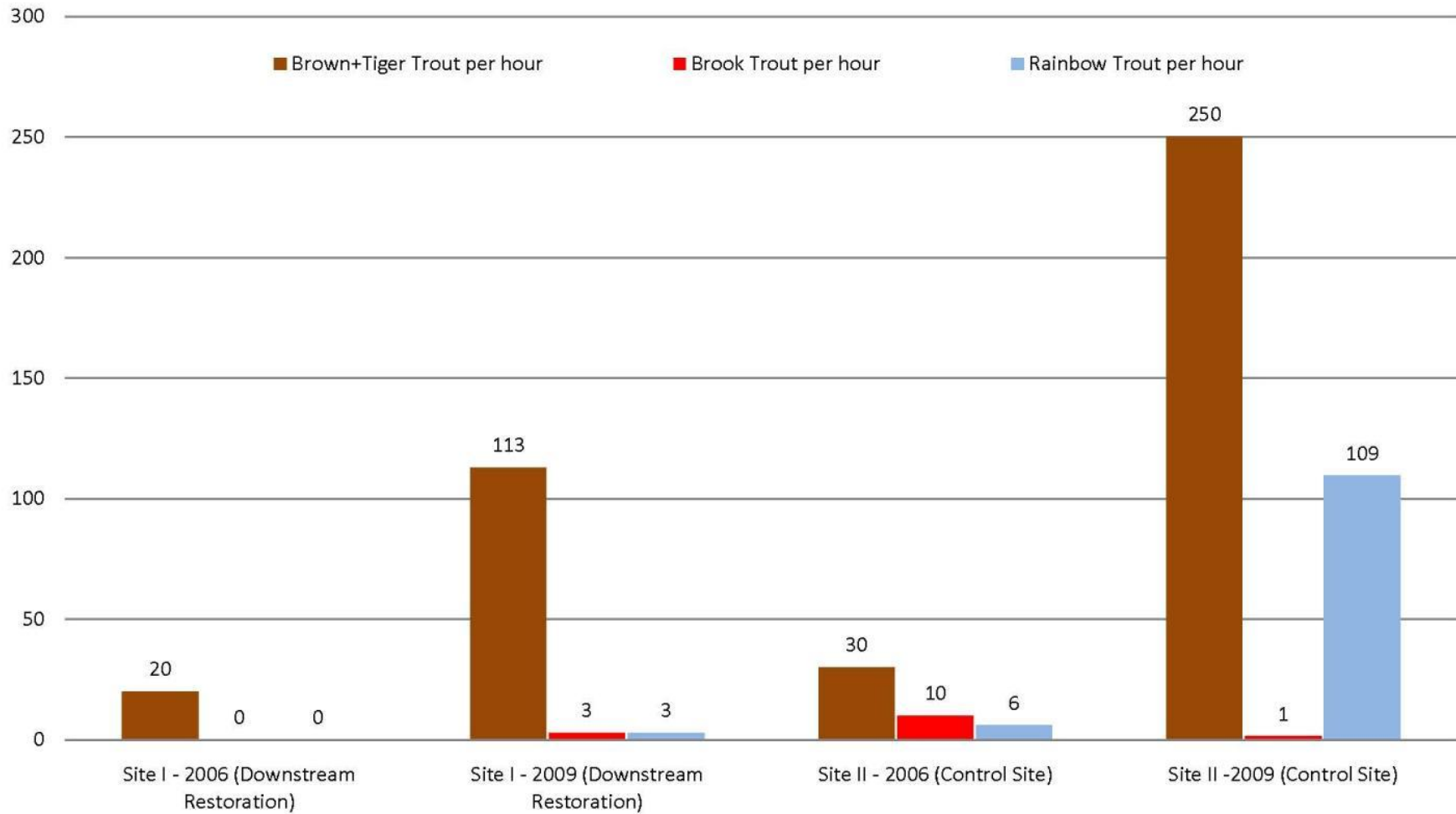
# Monitoring Station Locations



## Valley Creek Aquatic Macroinvertebrate - Percent EPT



### Trout Collected per Hour of Sampling Valley Creek 2006 and 2009





# Lessons Learned:

- **Artificial structures poor substitute for large woody debris (hopefully temporary)**
- **Projects on private property risky**
  - **Manage expectations of client & owner**
  - **Obtain landowner agreement early**
  - **Manage expectations continuously**
  - **Long-term easements critical**
- **Monitoring critical to evaluate project**

# Questions?

