Hinkson Creek

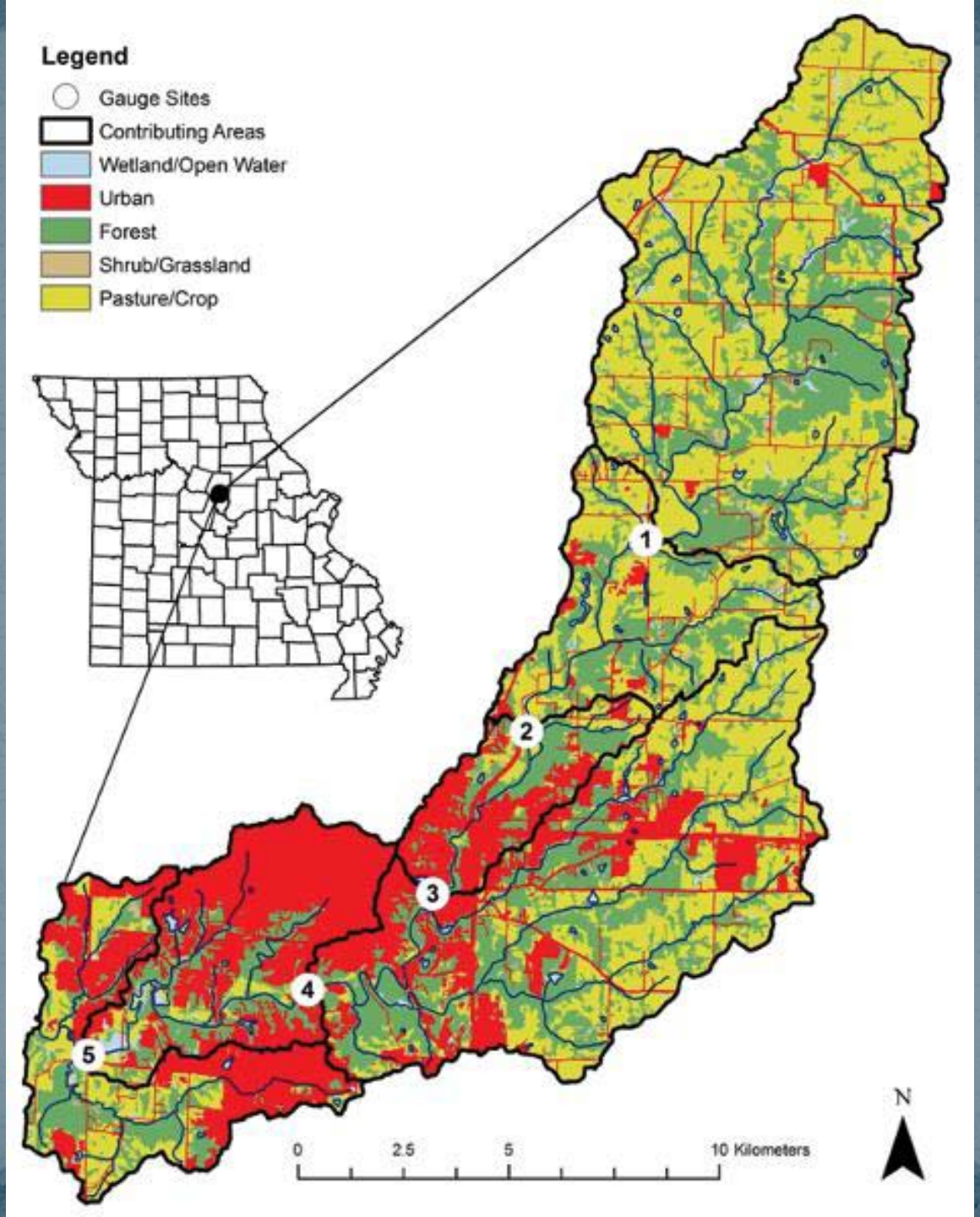
Virtual Tour

Hinkson Creek Facts

- 90 mi^2 watershed
- Upper region is 5% impervious
- Lower region is 20% impervious
- 90 K people live in the watershed
- Water quality problems include
  - Bacteria, Aquatic life impairment
  - Perceived problems: Chloride and Sediment

The Watershed

Grindstone Nature Area


Legend
Gauge Sites
Contributing Areas
Wetland/Open Water
Urban
Forest
Shrub/Grassland
Pasture/Crop
1
2
3
4
5
0
2.5
5
10 Kilometers
N

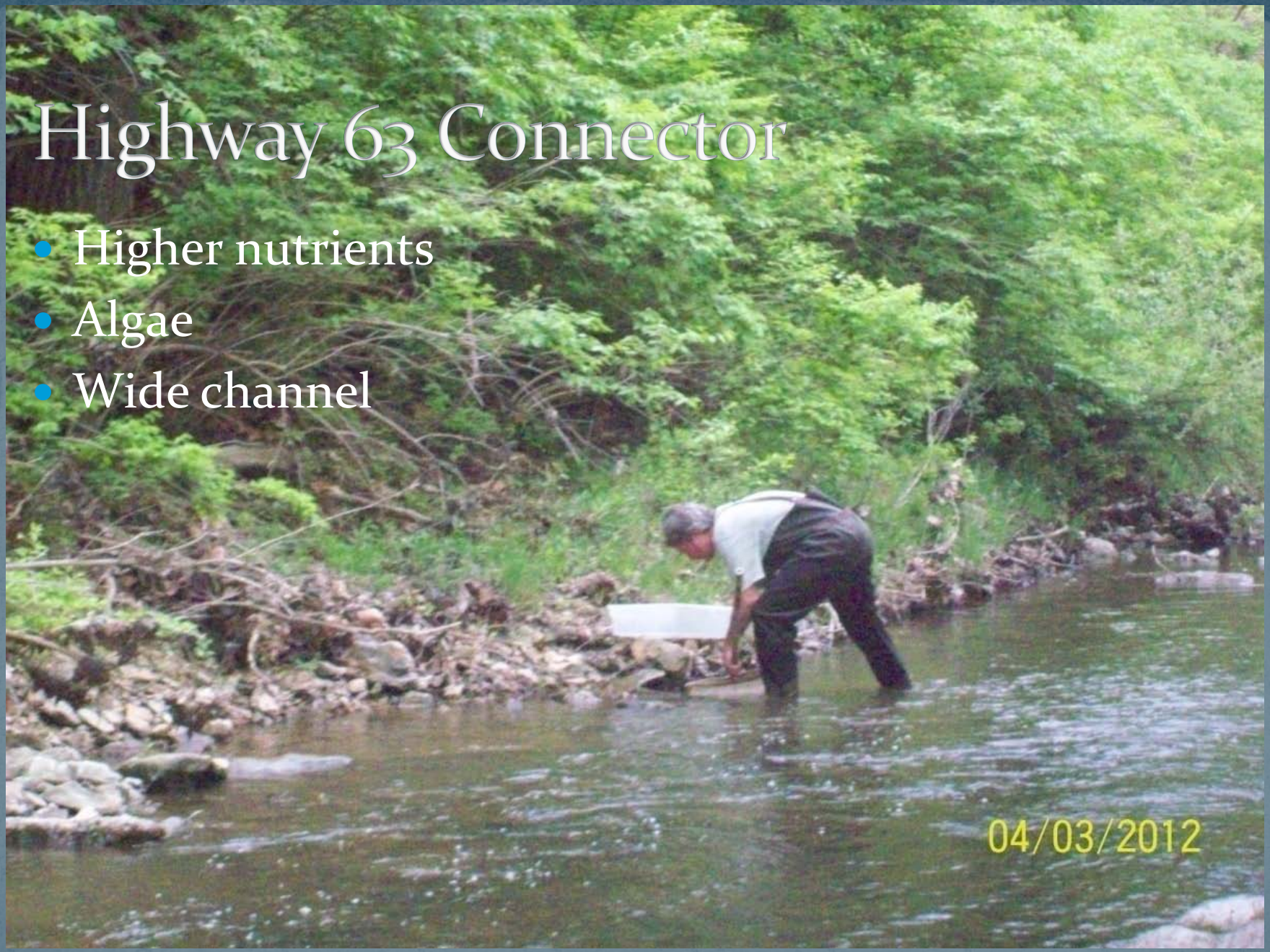

Rogers Rd

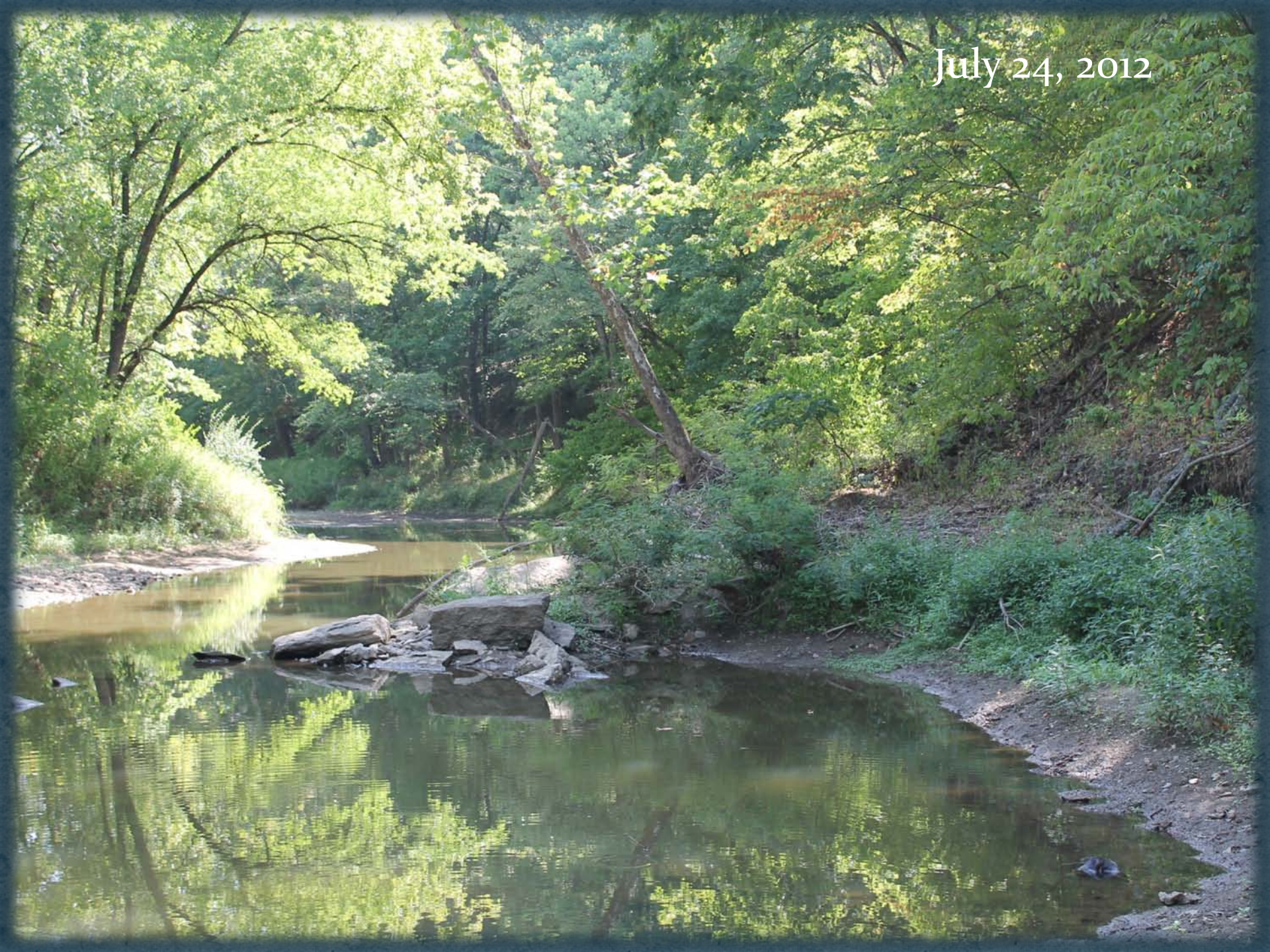
Above the Landfill

- Debris above the bridge
- Bedrock control
- Bed material = silt clay

Highway 63 Connector

- Higher nutrients
- Algae
- Wide channel



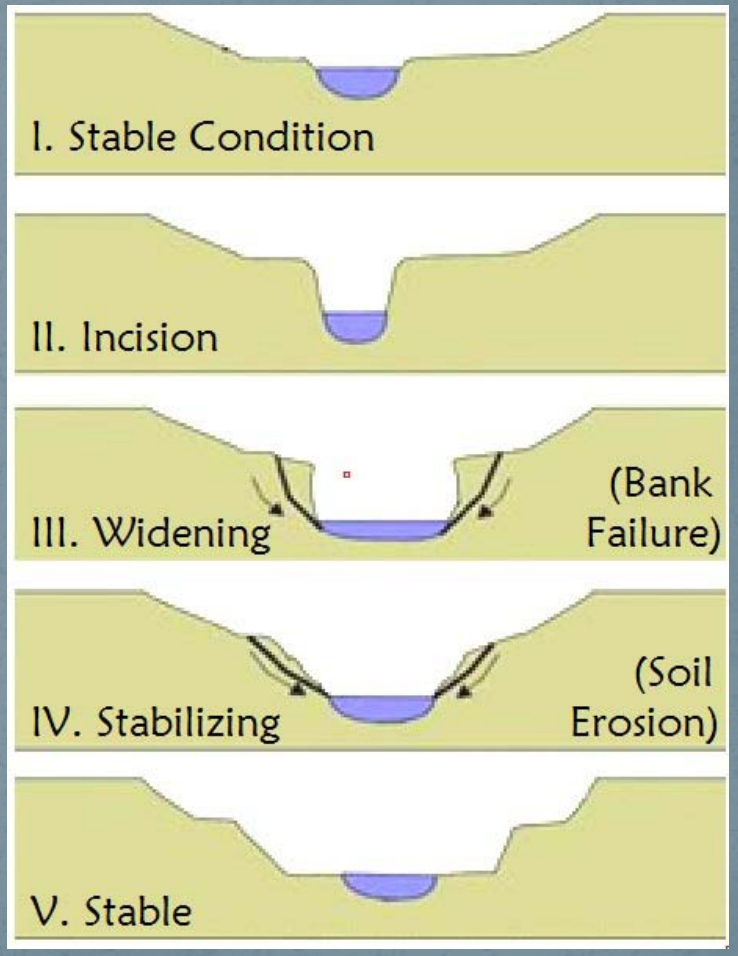

July 24, 2012

Highway 63 connector

Urban Stream Syndrome - higher volume and peak flow leads to stream bank incision and stream bank collapse. Stream is disconnected From the floodplain – continuing a positive reinforcement loop

Channel Stabilization

- Streams are dynamic systems reacting to:
  - stream flow,
  - slope or
  - velocity changes
- The new channel
  - Cut off from previous flood plain




Under I-70
11/18/2010

Walnut, north of bridge

Old reservoir

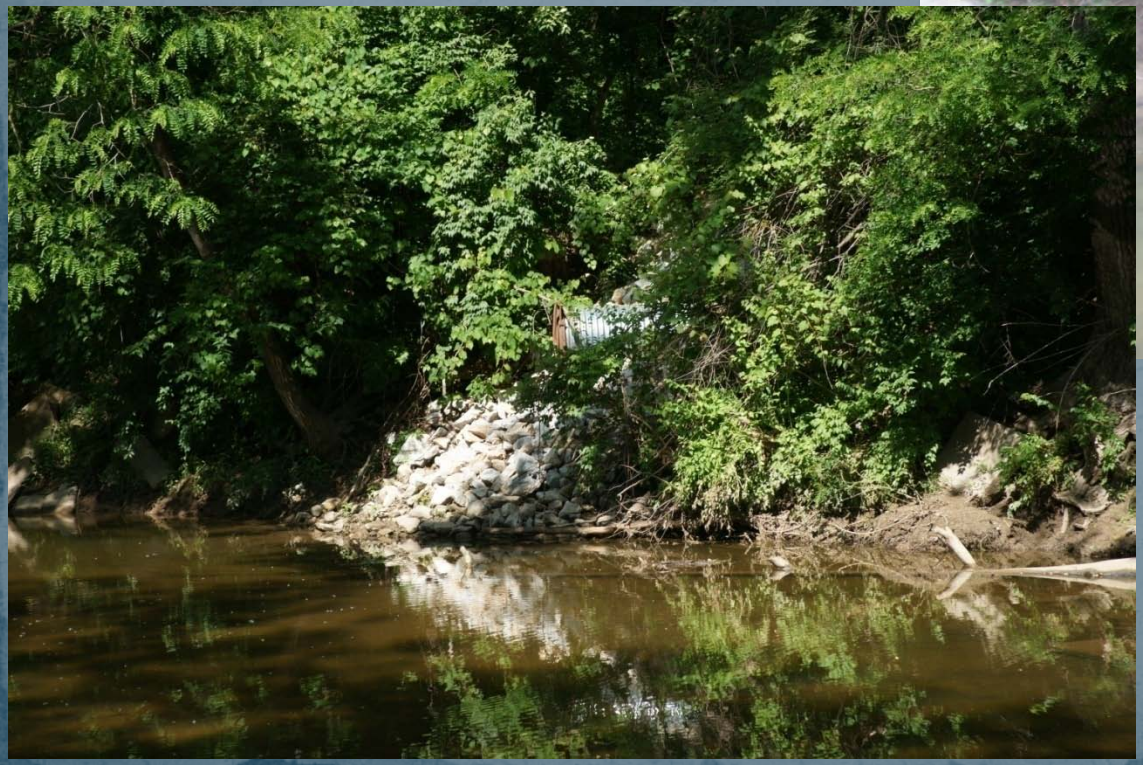
- Bedrock and boulders
- High algae, slippery
- Poor Riparian Corridor
- Black fly dominated

- Kids playing in creek


Broadway


Broadway

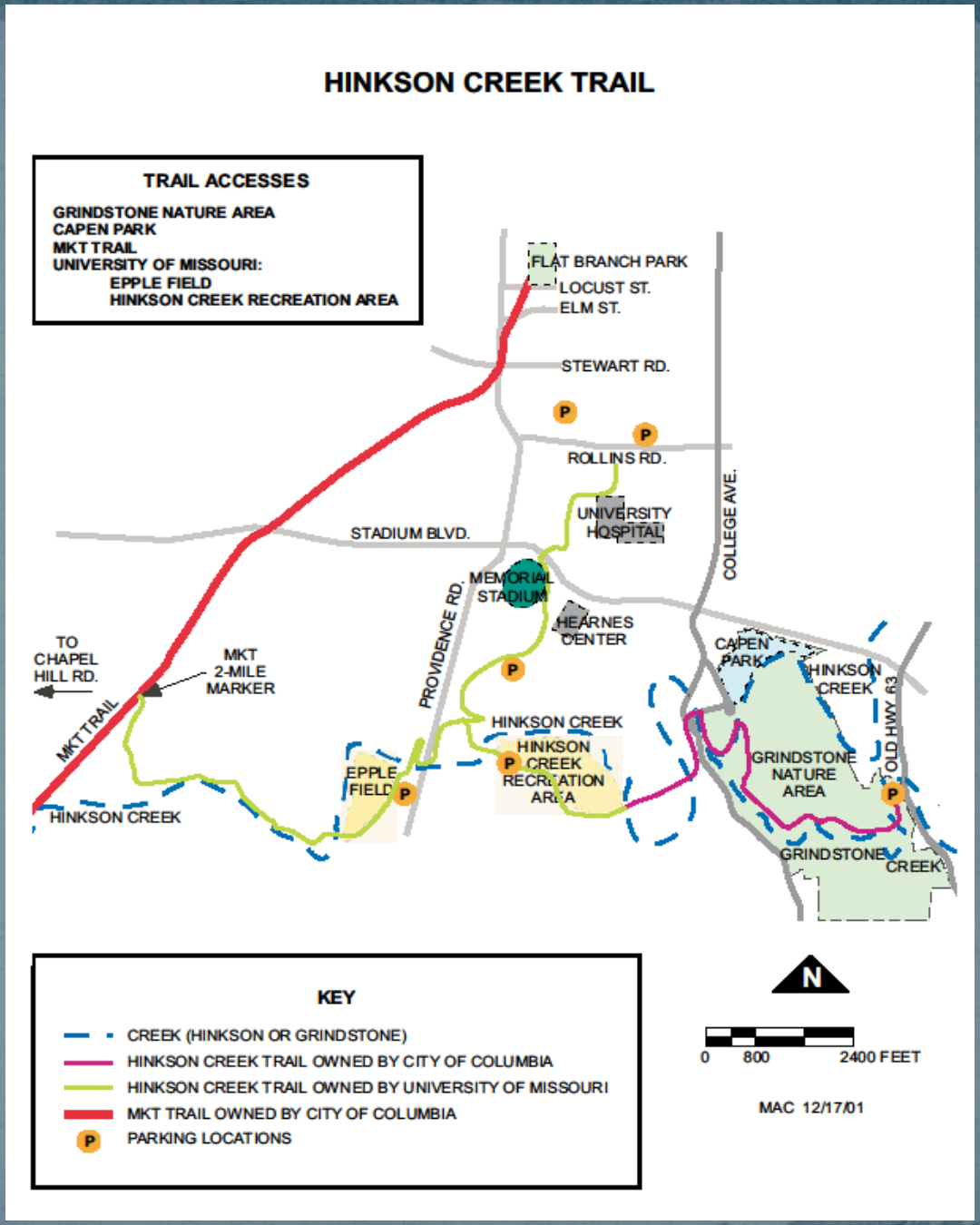
Pipes and discharges

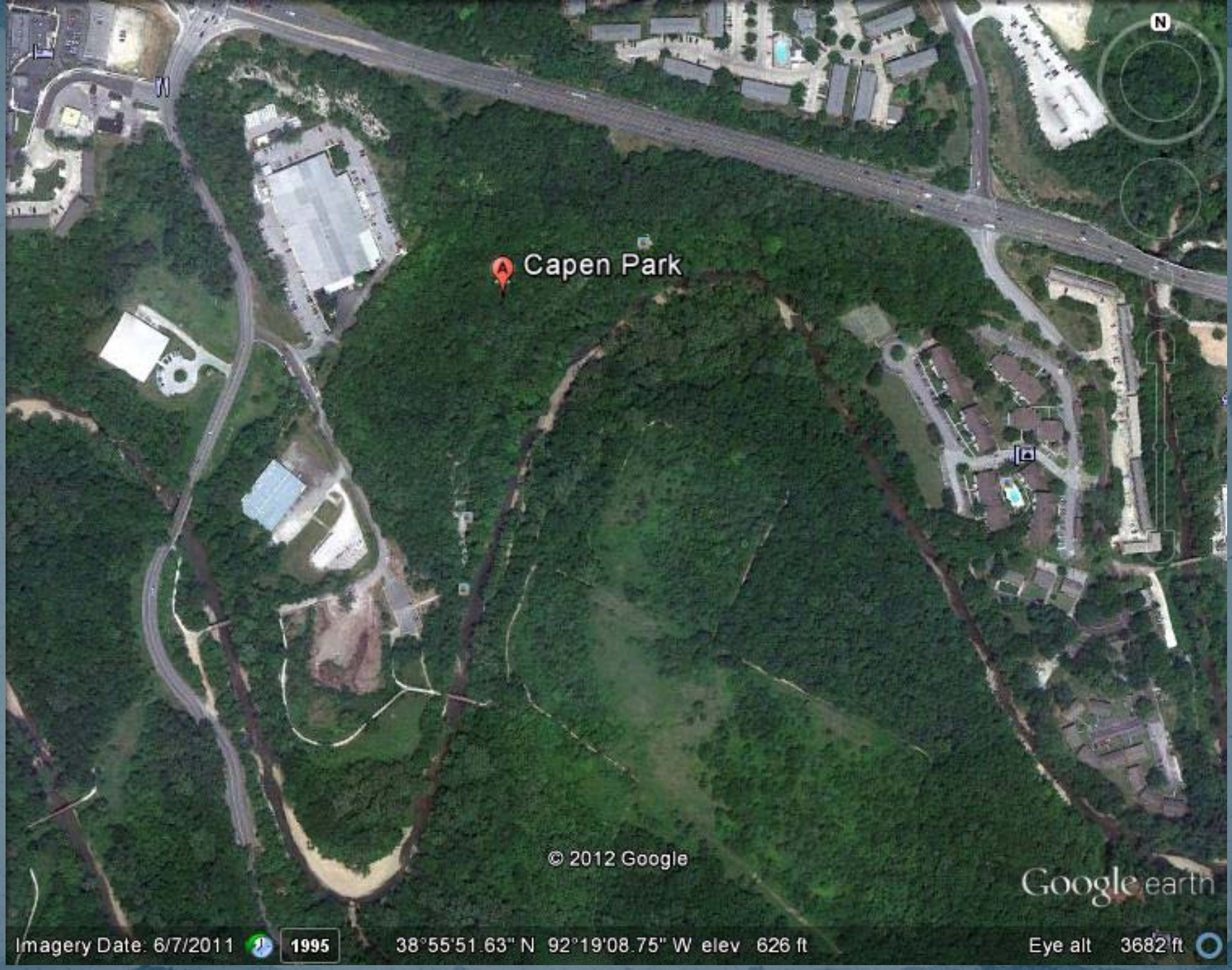


The Parks

- Capen
- Grindstone
- Recreation
- Epple Field

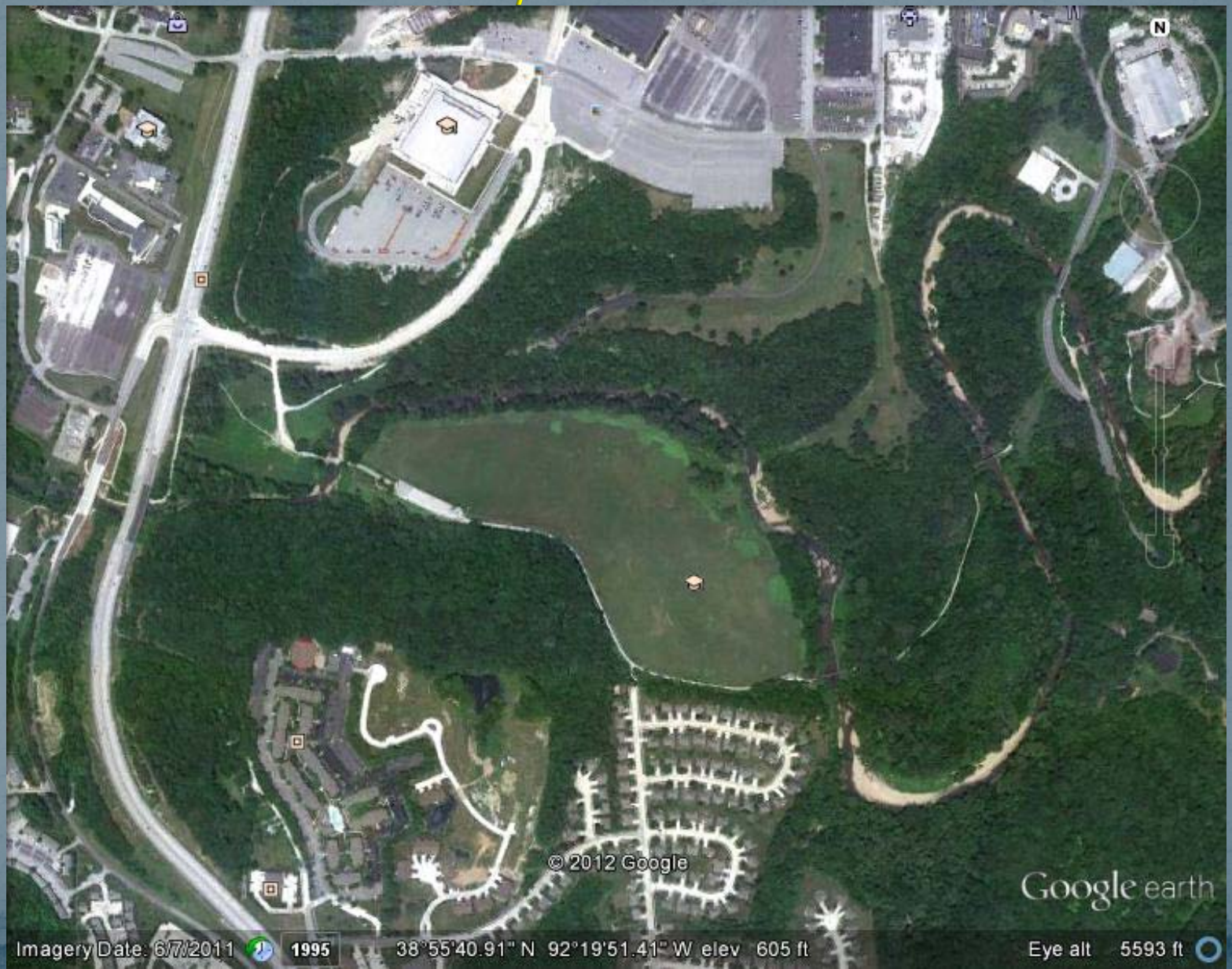
Grindstone to MKT.
4.25 miles

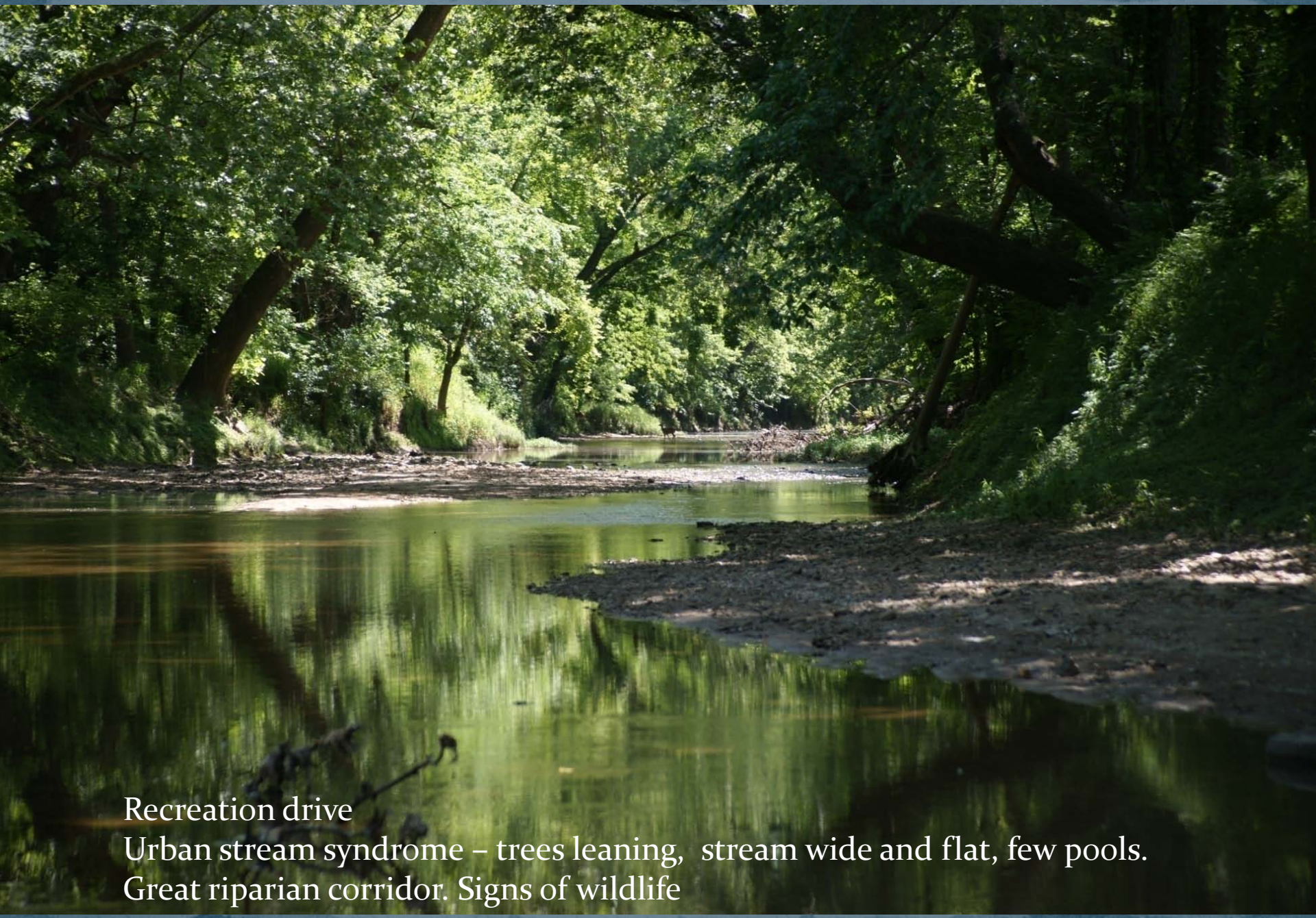



Capen Park
© 2012 Google
Google earth
Imagery Date: 6/7/2011
1995
38°55'51.63" N 92°19'08.75" W elev 626 ft
Eye alt 3682 ft


Capen, below Grindstone
04/03/2012

Recreation Drive/Hinkson Field





Recreation drive
Urban stream syndrome – trees leaning, stream wide and flat, few pools.
Great riparian corridor. Signs of wildlife

Recreation drive

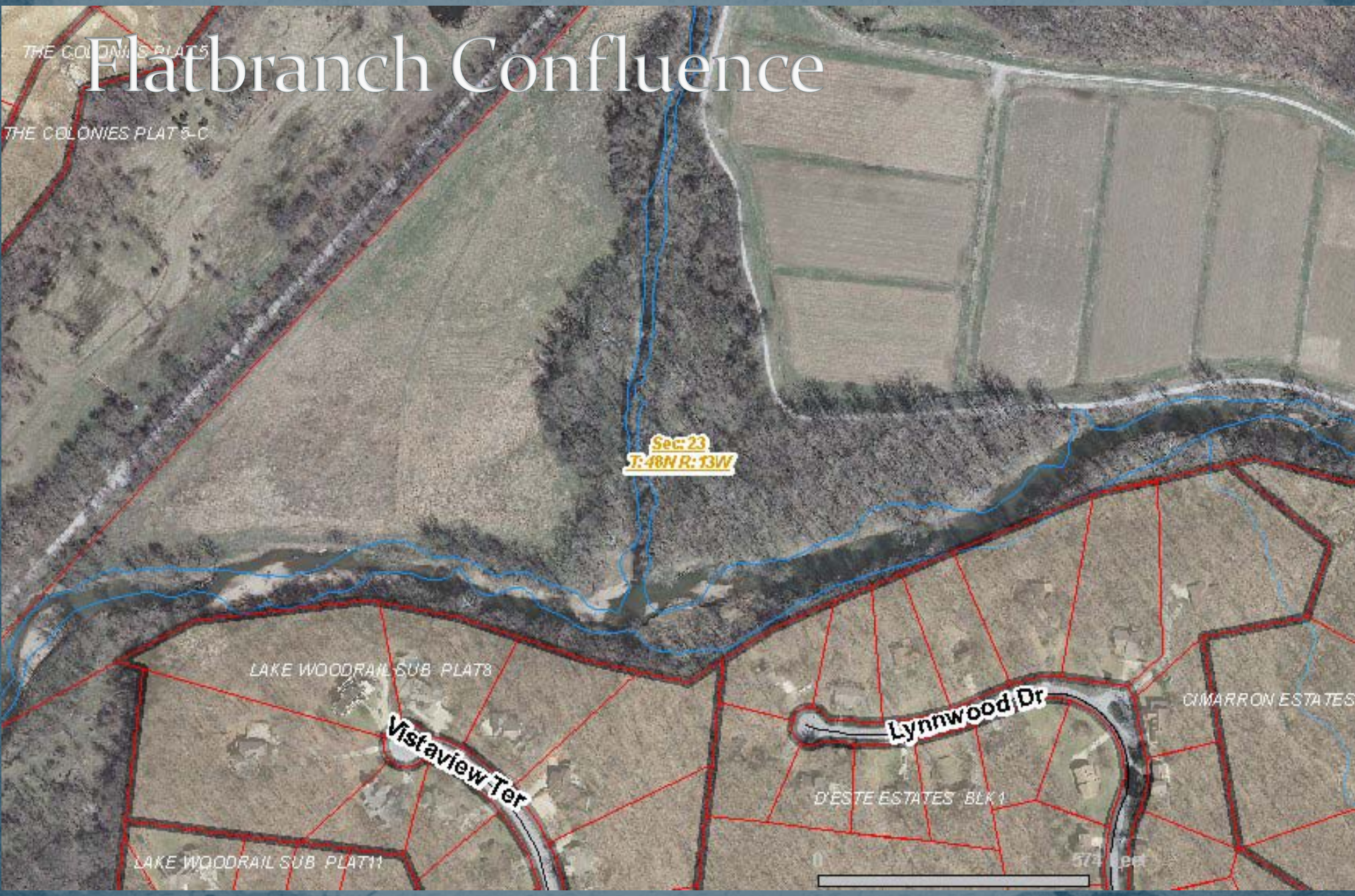
Cracked pipe

Old pipe crossing

Low Water Crossing

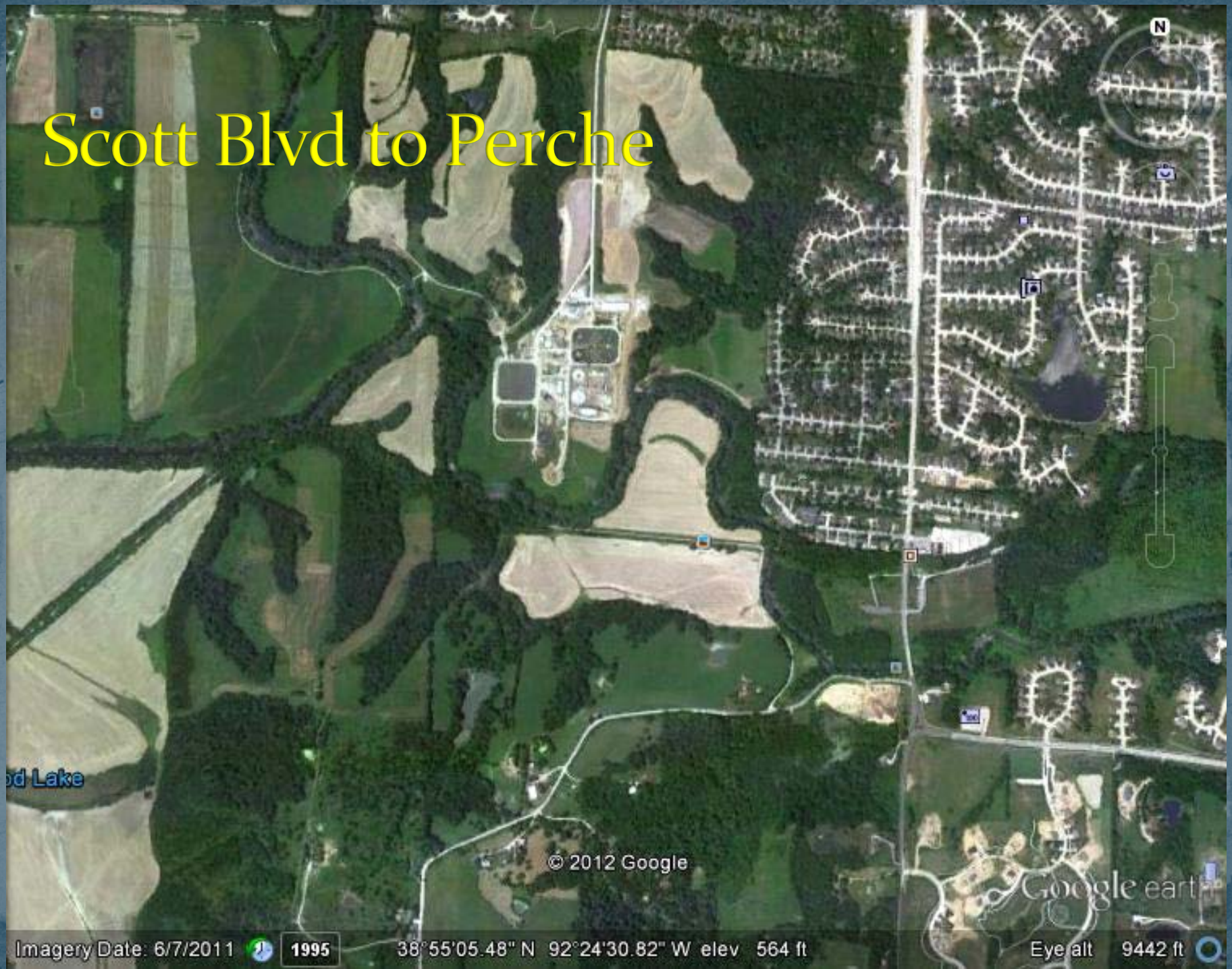

Flatbranch Confluence
N
© 2012 Google
Google earth
Imagery Date: 6/7/2011
1995
38°55'34.55" N 92°21'23.22" W elev 591 ft
Eye alt 6877 ft

Flatbranch Confluence



Lower Hinkson

Forum to Scott


Scott Blvd to Perche
od Lake
© 2012 Google
Google earth
Imagery Date: 6/7/2011
1995
38°55'05.48" N 92°24'30.82" W elev 564 ft
Eye alt 9442 ft

Scott Road

Channelized
Poor riparian corridor
Underground utilities

Kingfisher


Bellview Apartments
Imagery Date: 6/7/2011
1995
38°55'01.79" N 92°24'14.25" W elev 562 ft
Eye alt 1512 ft

Bellview Apartments


Land Use
08/02/2010

Housing

- Housing Starts - County
- 2011 = 85
- 2012 = 101
- Apartments
- Subdivisions

Roads and infrastructure

Large developments

Grindstone Plaza Wal-Mart

Copper Beech

Old Hawthorne

Flooding

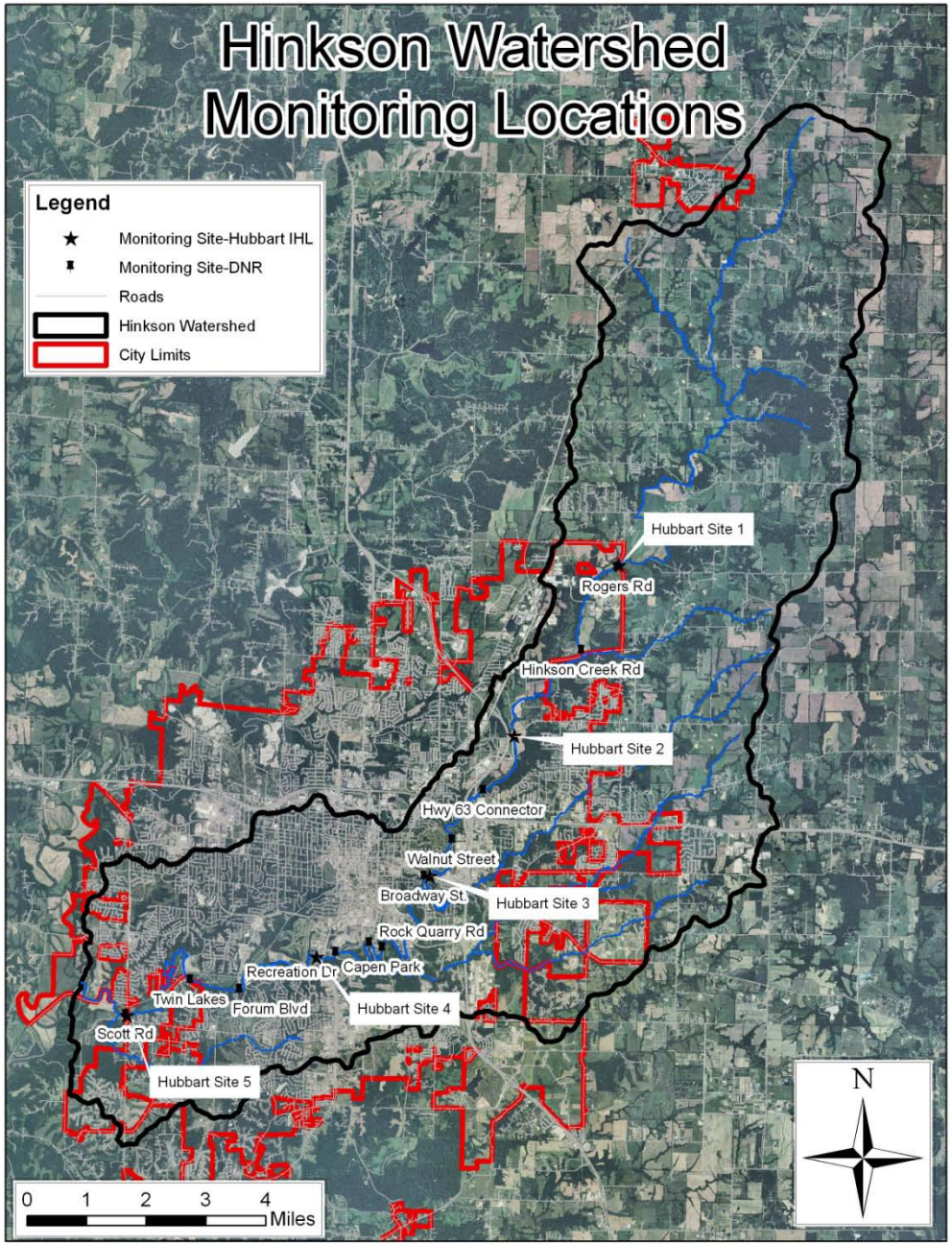
Flooding

- Typically occurs October through April
- Stalled weather system that dumps several inches over a period of 1-2 weeks
- Saturated soils
- Winter/Spring events prior to leaf out
  - Little canopy to capture rainfall
  - low transpiration to remove water from soils
- Rain on Snow events
  - December 2010, February 2011

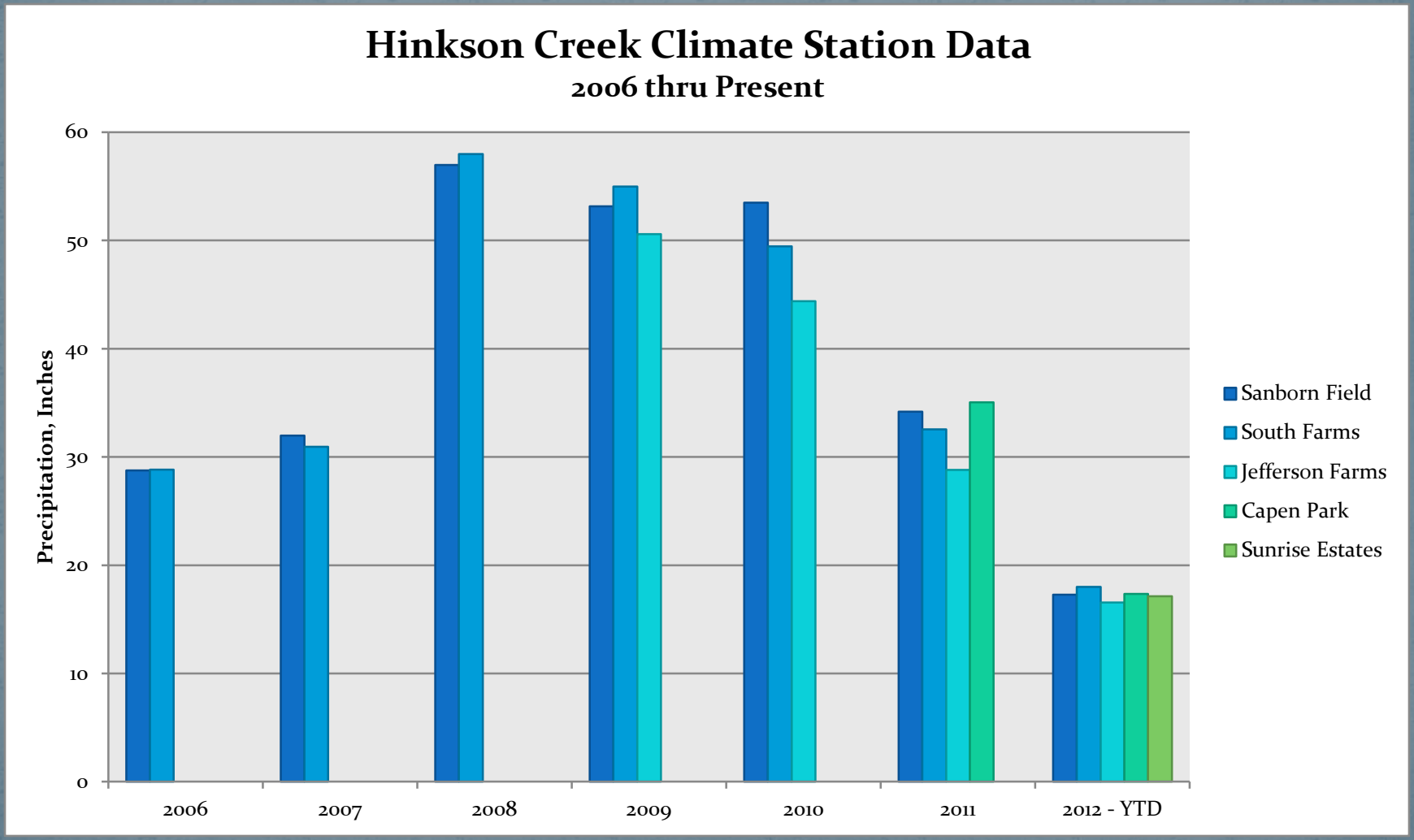
Monitoring

Current studies

- Hydrology
- Invertebrate
- Water Quality



Network of Precipitation Guages



Hydrology

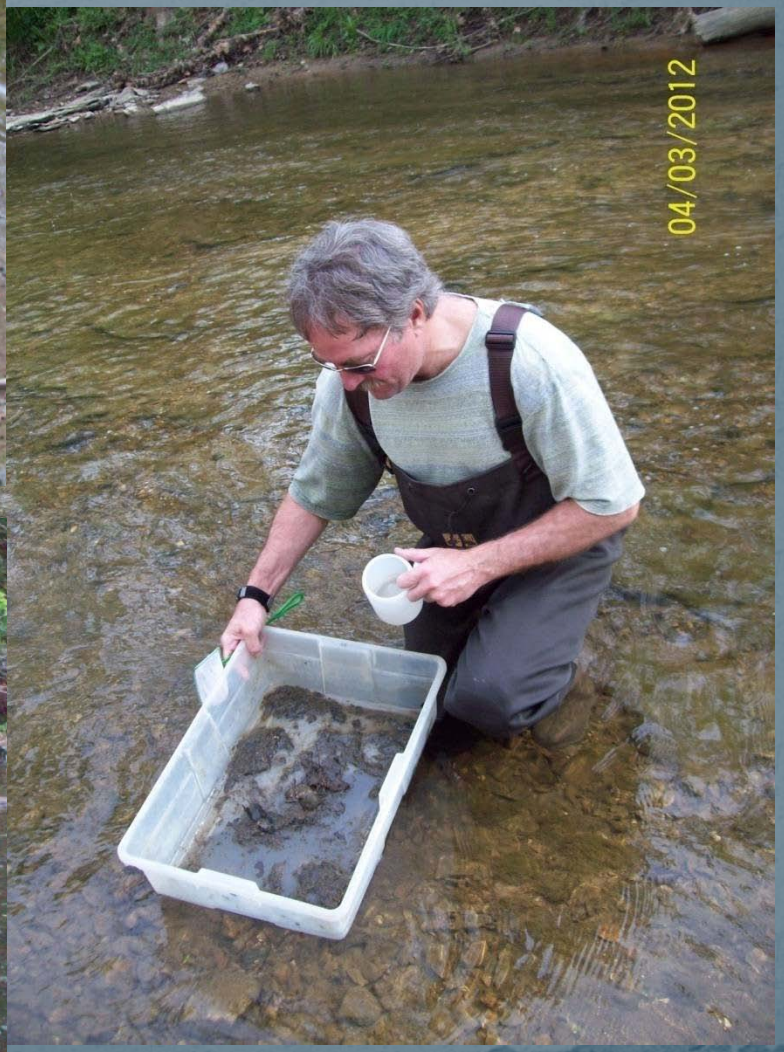
- Base flow has not significantly changed in 30 years.
  - Removal of considerable sewer/lagoon flows
- Flood frequency and peak flow may have changed
  - the time from peak rainfall to peak flow may be decreased by as much as 13% in urban settings
  - accompanied by higher peak flows
  - 15-20% greater flow volume.

Hubbart, J.A., 2009. Urban Ecosystems: Alterations to Peak flow…

Sediment and Bank Stability

- Sediment movement and particle size
  - Help identify source, focus BMPs
  - Embedded, habitat, foraging ability, nutrients
- Riparian corridor and stream bank stability,
  - Vegetation, temperature, sediment, fish habitat, reproductive success

Invertebrate Monitoring



Invertebrate Monitoring

Water Quality - Snapshot

		Recreation Drive	Broadway	63 Connector	Hinkson Ck Rd	WQS
Temperature		19.5 C	19.5	19.7	19.7	
Dissolved O2		7.75	7.32	7.9	8.36	5 ppm
Sp. conductance		544	494	477	416	
pH		7.75	7.84	7.9	7.94	
Total Suspended Sediment (TSS)		<5	<5	<5	<5	
Chloride		40.1	33.9	29.8	20.6	
Total Nitrogen		350	380	470	440	
Total Phosphorus		25	54	480	170	
Flow (cfs)		12.9	8.3	5.5	2.2	

Conclusion

- Urban stream concerns
  - Salt, fires, trash, pipes, impervious areas
  - Development shifting to Grindstone
- Flooding and drought
- Several positive items
  - trails, parks and greenways
  - Mature buffers, riparian Corridor
  - monitoring network,
  - bedrock control
  - Single landowner in main stem (MU)