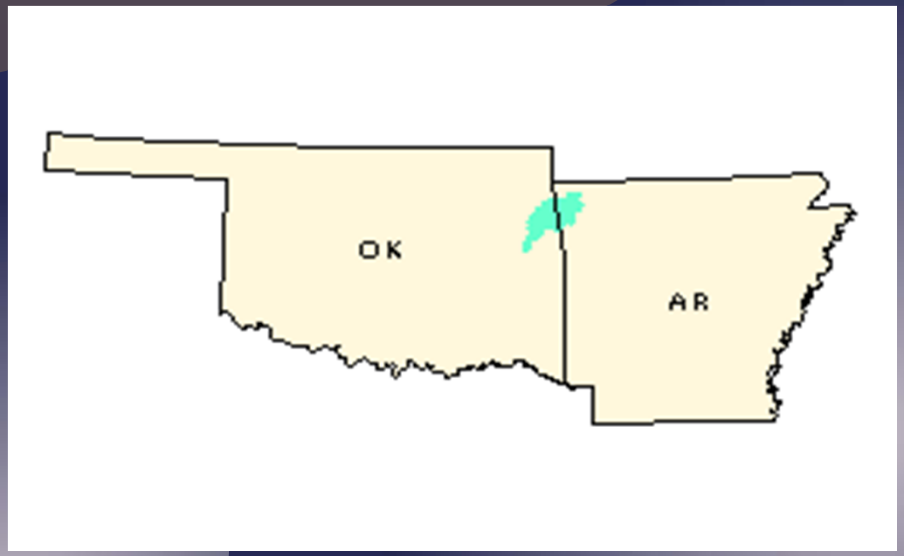
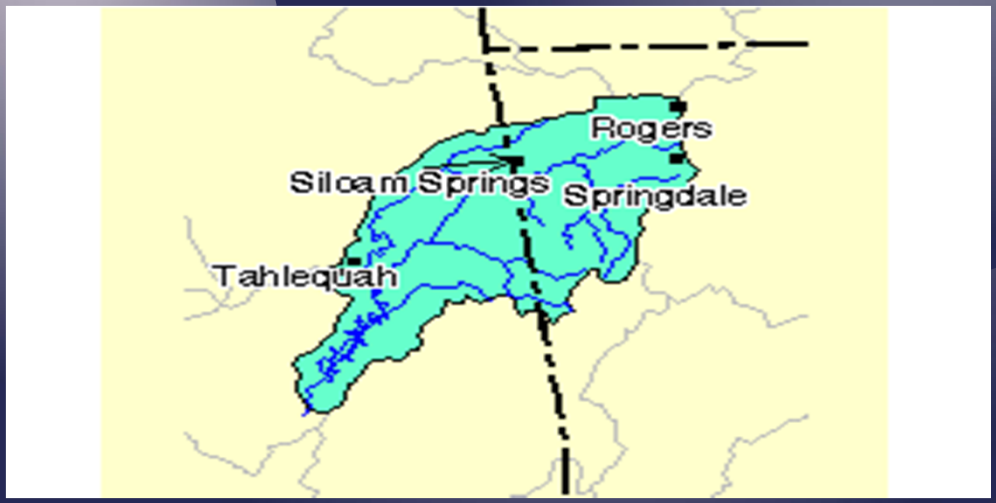

OCLWA Conference,
April 12-13, 2012
Flint Creek Blue Thumb Monitoring
Fidler's Bend
Delaware County
David Magee
Flint Creek
As known by a Blue Thumb Volunteer

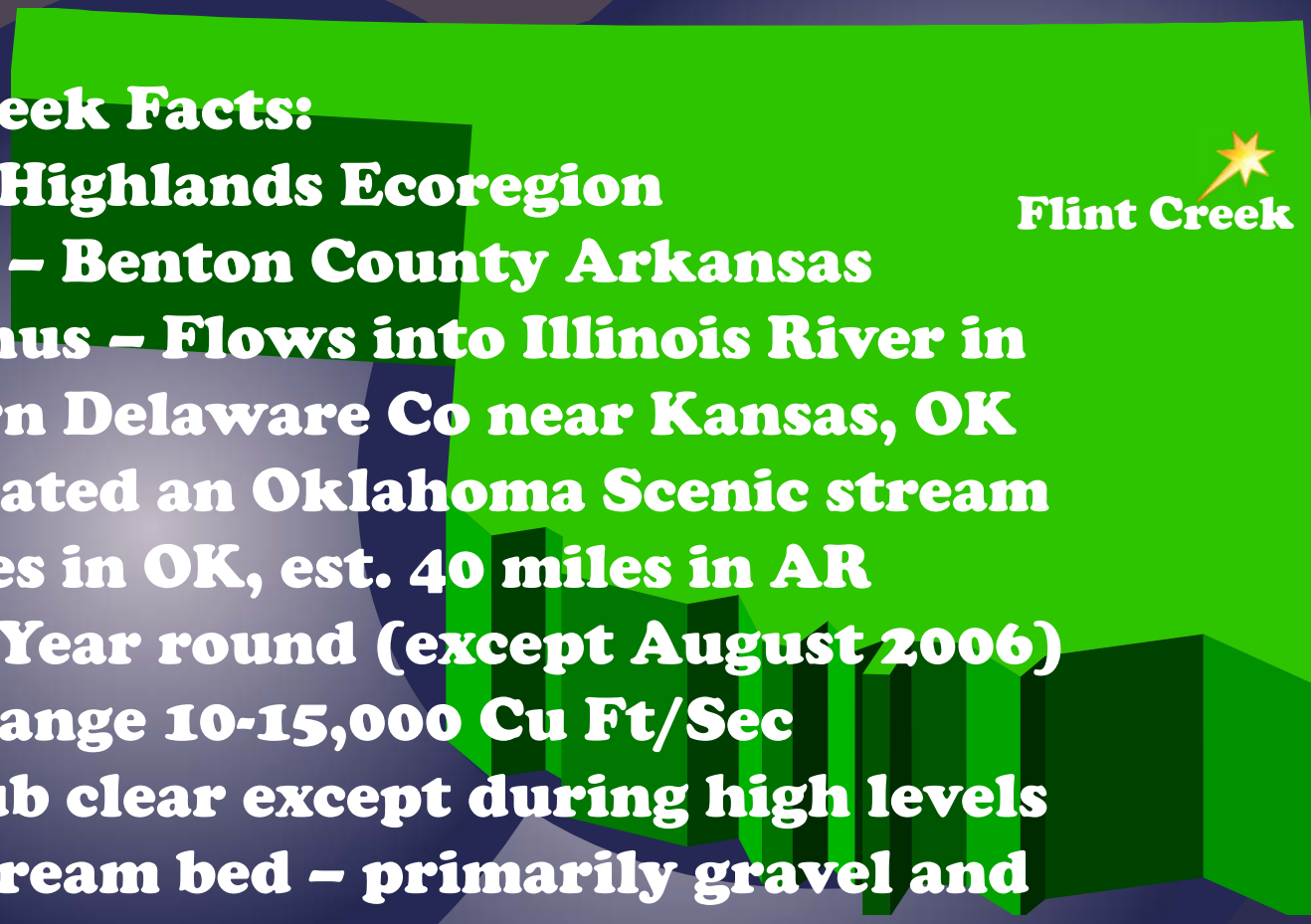


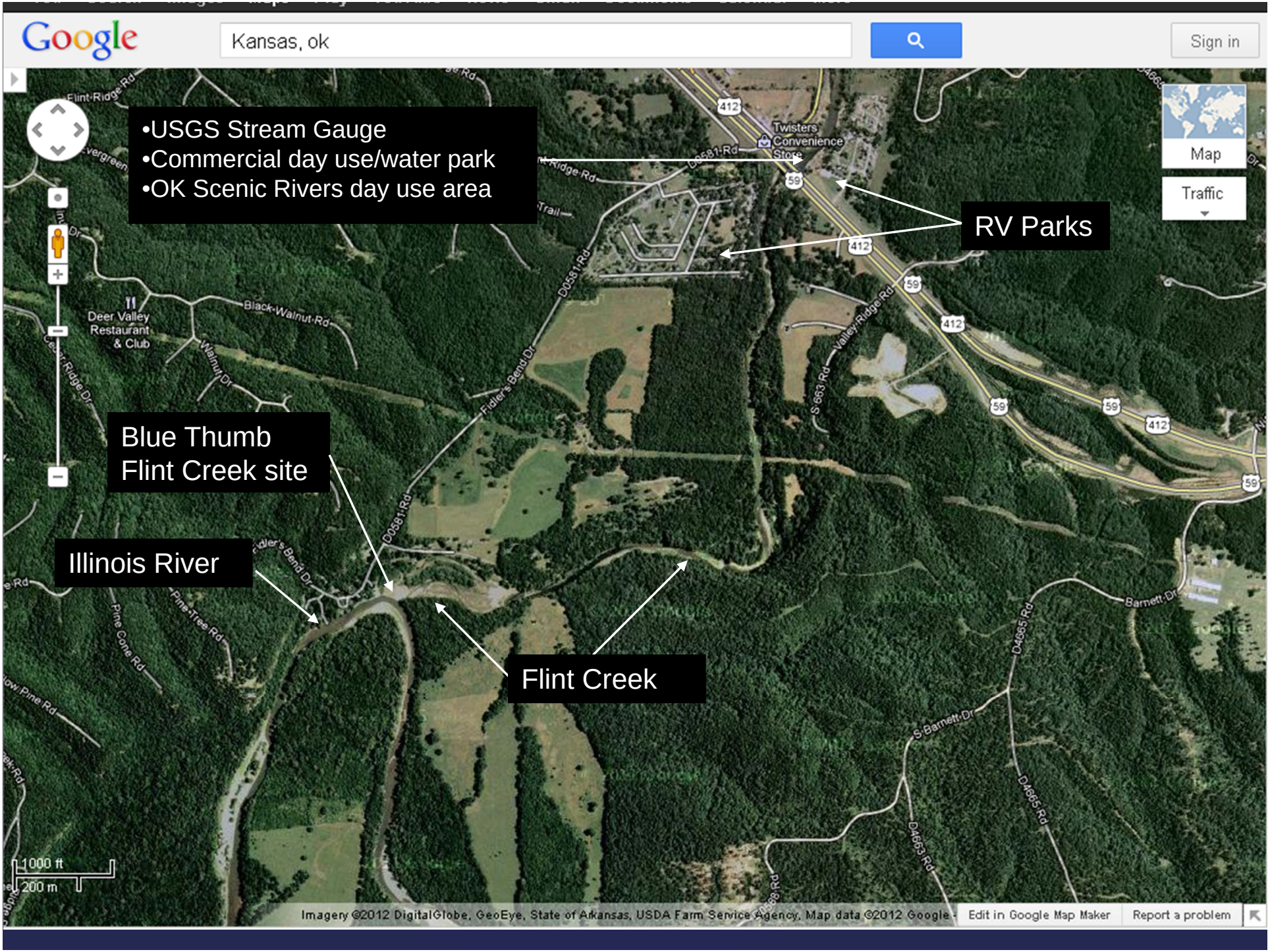


Illinois River/Flint Creek Watershed

Flint Creek Facts:

- **Ozark Highlands Ecoregion**
- **Origin – Benton County Arkansas**
- **Terminus – Flows into Illinois River in Southern Delaware Co near Kansas, OK**
- **Designated an Oklahoma Scenic stream**
- **12 miles in OK, est. 40 miles in AR**
- **Flows Year round (except August 2006)**
- **Flow range 10-15,000 Cu Ft/Sec**
- **Bathtub clear except during high levels**
- **Site Stream bed – primarily gravel and cobbles**




Google
Kansas, ok
Sign in
•USGS Stream Gauge
•Commercial day use/water park
•OK Scenic Rivers day use area
RV Parks
Blue Thumb
Flint Creek site
Illinois River
Flint Creek
Twisters Convenience Store
Deer Valley Restaurant & Club
Map
Traffic
1000 ft
200 m
Imagery ©2012 DigitalGlobe, GeoEye, State of Arkansas, USDA Farm Service Agency, Map data ©2012 Google
Edit in Google Map Maker
Report a problem

The Confluence – Flint Creek on the right, Illinois River on the left

Periphyton on large cobbles and boulders, small cobbles and gravel scoured clean (March 2012)

Flint Creek Upstream Features:

- USGS Stream Flow Gauge at Hwy 412, 1.5 mi.
- RV Parks, Water Park, Public day use area at Hwy 412
- Coal-fired Power Plant and Cooling Reservoir discharging into Little Flint Creek near Gentry, AR
- Siloam Springs, AR Wastewater treatment plant outflow to Flint Creek tributary Sager Creek

Flint Creek Monthly Chemistry Monitoring and Stream Observations – June 2006 to present

Flint Creek Blue Thumb Water Chemistry – 2004-2012

Yearly Averages	% Oxygen sat.	pH	Nitrate mg/l	Nitrite mg/l	Ammonia Nitrogen mg/l	Orthophosphate mg/l (OSR limit .037)	Chloride mg/l
2004	112	7.6	1.91	NA	BDL*	0.165	23
2005	96	7.6	2.46	BDL	0.3	0.132	23
2006	108	7.7	2.23	BDL	0.1	0.153	33
2007	106	7.7	1.78	BDL	BDL	0.153	25
2008	108	7.5	3.56	BDL	BDL	0.120	22
2009	110	7.5	2.73	BDL	BDL	0.132	20
2010	110	7.5	2.42	BDL	BDL	0.148	20
2011	102	7.6	2.00	BDL	BDL	0.114	23
2012	103	7.7	2.63	BDL	BDL	0.106	22
2004-2012 Summary							
Average	106	7.6	2.42	BDL	BDL	0.138	24
Max Value	145	8.0	11	1.00	0.70	0.246	40
Min Value	45	7.0	BDL	BDL	BDL	0.000	10.00

*BDL – Below Detectable Limit

Flint Creek Habitat Assessment Aug 2008

Flint Creek Habitat Assessment August 2008

Habitat Component	Score/Rating
Instream Cover	19.1
Pool Bottom Substrate	0.4
Pool Variability	0
Canopy Cover Shading	10.3
Presence of Rocky Runs or Riffles	16.2
Flow	51.36
Channel Alteration	0.4
Channel Sinuosity	NA
Bank Stability	7.4
Bank Vegetation Stability	3.7
Streamside Cover	9.7
Total Score	118.56
Ozark Highlands Reference Stream Score	122.4

Fish Collections Volunteers, August 2008

Species Collected – August, 2008	% of Collection	Species Water/Habitat Tolerance	Food
Cardinal Shiner	77.9	Intolerant	Insectivore
Central Stoneroller	7.2	Intermediate	Herbivore
Smallmouth Bass	3.6	Intolerant	Piscivore
Slender Madtom	3.4	Intolerant	Insectivore
Wedgespot Shiner	3.0	Intolerant	Insectivore
Largemouth Bass	1.0	Tolerant	Piscivore
Redhorse Sucker	0.8	Intolerant	Insectivore
Longear Sunfish	0.6	Tolerant	Insectivore
Banded Sculpin	0.6	Intolerant	Insectivore
Bigeyeshiner	0.4	Intolerant	Insectivore
Redspot Chub	0.2	Intolerant	Insectivore
Bigeye Chub	0.2	Intolerant	Insectivore
Northern hog sucker	0.2	Intolerant	Insectivore
Bluegill sunfish	0.2	Tolerant	Insectivore
Orangethroat Darter	0.2	Intermediate	Insectivore
Banded Darter	0.2	Intolerant	Insectivore
Creek Chub	0.2	Intermediate	Generalist

Flint Creek Fish Collections 2008 Results:

"A" Rating when compared to Ozark Highlands reference stream data

"Comparable to pristine conditions, an exceptional species assemblage"

Flint Creek Benthic Macrovertebrate collections – August 2004 – Jan 2008

Flint Creek Blue Thumb Benthic Macrovertebrate Collections – 2004-2008
Comparison Scores to Ozark Highlands Reference Streams

Season/Year	2004	2005	2006	2007	2008
Summer	A	A	A	A	A
Winter	NA*	B	C	C	C

*Before Blue Thumb monitoring initiated

Score Meanings:

A — Comparable to the best situation expected within the ecoregion. Balanced trophic and community structure for stream size.

B — Community structure less than expected. Species richness is less than expected due to loss of some intolerant forms. Percent contribution of tolerant forms is increased.

C — Fewer species due to the loss of the most intolerant forms. Reduction EPT index.

Flint Creek – Bacteria Monitoring
May thru Sept 2010

- E. Coli – none detected
- Total Coliforms – none detected

Flint Creek Blue Thumb Summary

Water Chemistry	Orthophosphate persistently high, approx 4 times OSC limit of 0.037 mg/l Dissolved Oxygen – consistently high, above 100% Saturation
Habitat	Very good, comparable to Ozark Highlands Reference Stream
Fish Collections	Excellent, equivalent to Ozark Highlands Reference Stream
Benthic Macroinvertebrates	Mixed: Summer excellent, comparable to Ozark Highlands Reference Stream; Winter, less than Ozark Highlands Reference Stream
Bacteria	No E. Coli or Total Coliform bacteria detected May-Sept 2010