

2020 Richland Creek Fish Kill

St Clair County, IL

Ben Lubinski and Eric Ratcliff

IDNR - Fisheries

-An overview and a
site revisit 1 year later-



2020 Richland Creek Fish Kill

St Clair County, IL

#1 Fish kill in Illinois in 2020

2.3 miles long – urban Belleville, IL

Estimated 11,216 fish killed

67.4 % game fish

32.60 % non-game

Total value \$24,922.32

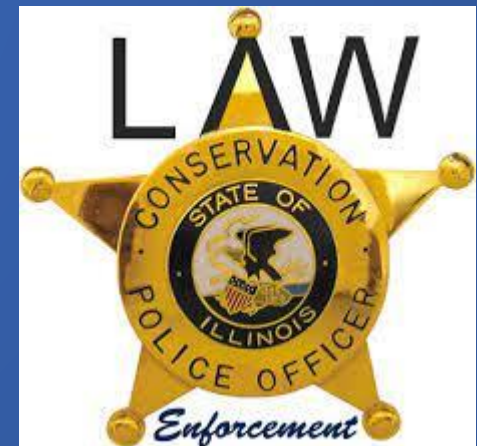
Richland Creek Fish Kill 2020

- Outline for this presentation -

- Background information of Richland Creek
- Short summary of IDNR and IEPA stream monitoring surveys
- 2020 Fish Kill
- 2021 Site revisit

Acknowledgements

- IDNR Fisheries
 - Eric Ratcliff and Fred Cronin – on site
 - Trent Thomas and Dave Glover – protocols and procedures
- IEPA
 - Michelle Cozadd – on site investigation
 - Kent Johnson – Background info and old reports
 - Jodi Vandermyde – watershed maps
- Law enforcement
 - CPO David Ray



Acknowledgements

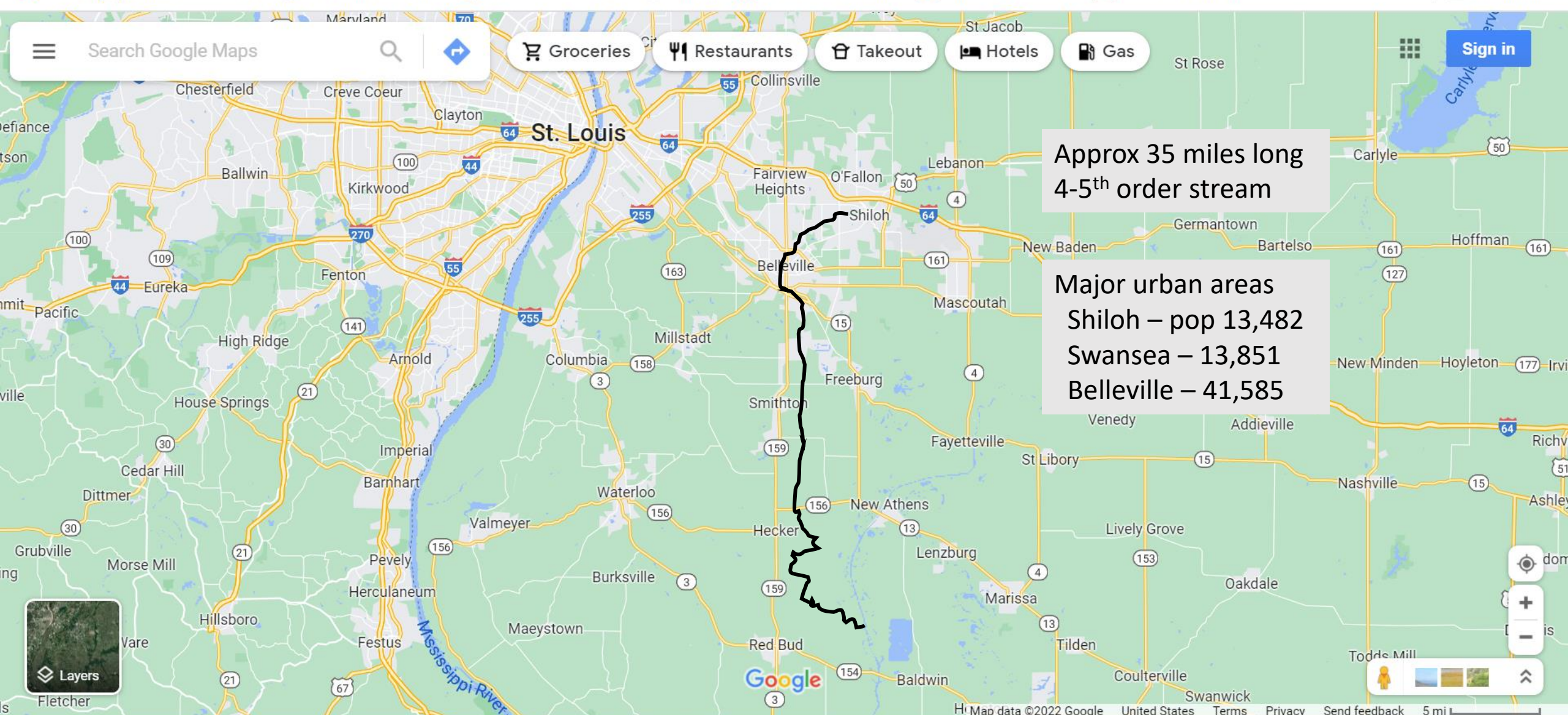
-Site Revisit-

- IDNR Fisheries staff
- McKendree University
 - Dr Michael Louison's undergrad class
- Mike Quirin – Richland Creek Improvement Association - Facebook page



St Clair County, IL
Richland Creek

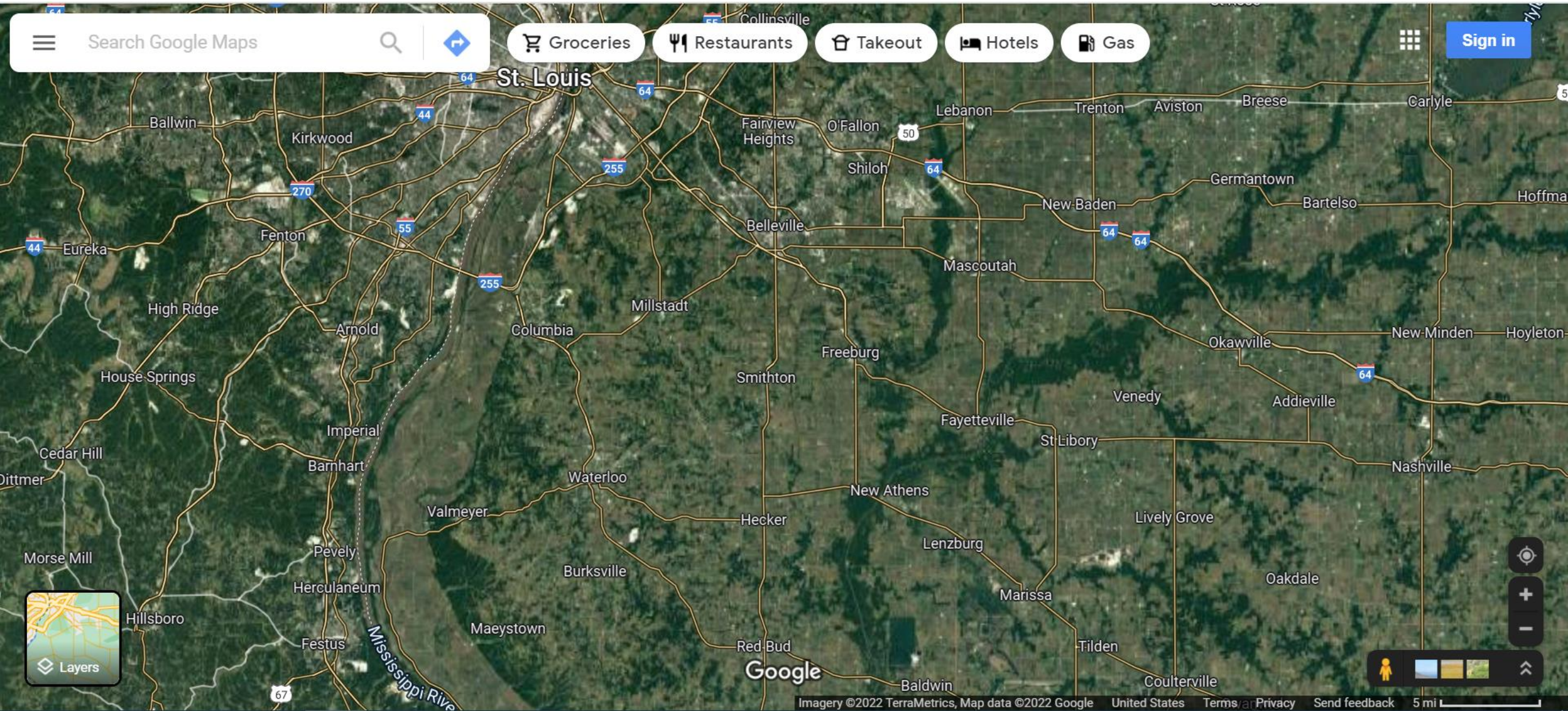




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Map navigation controls including a compass, zoom in (+) and zoom out (-) buttons, a street view pegman icon, and a vertical scroll bar.

IEPA and IDNR Stream Sampling

IL major watersheds and sampling rotation

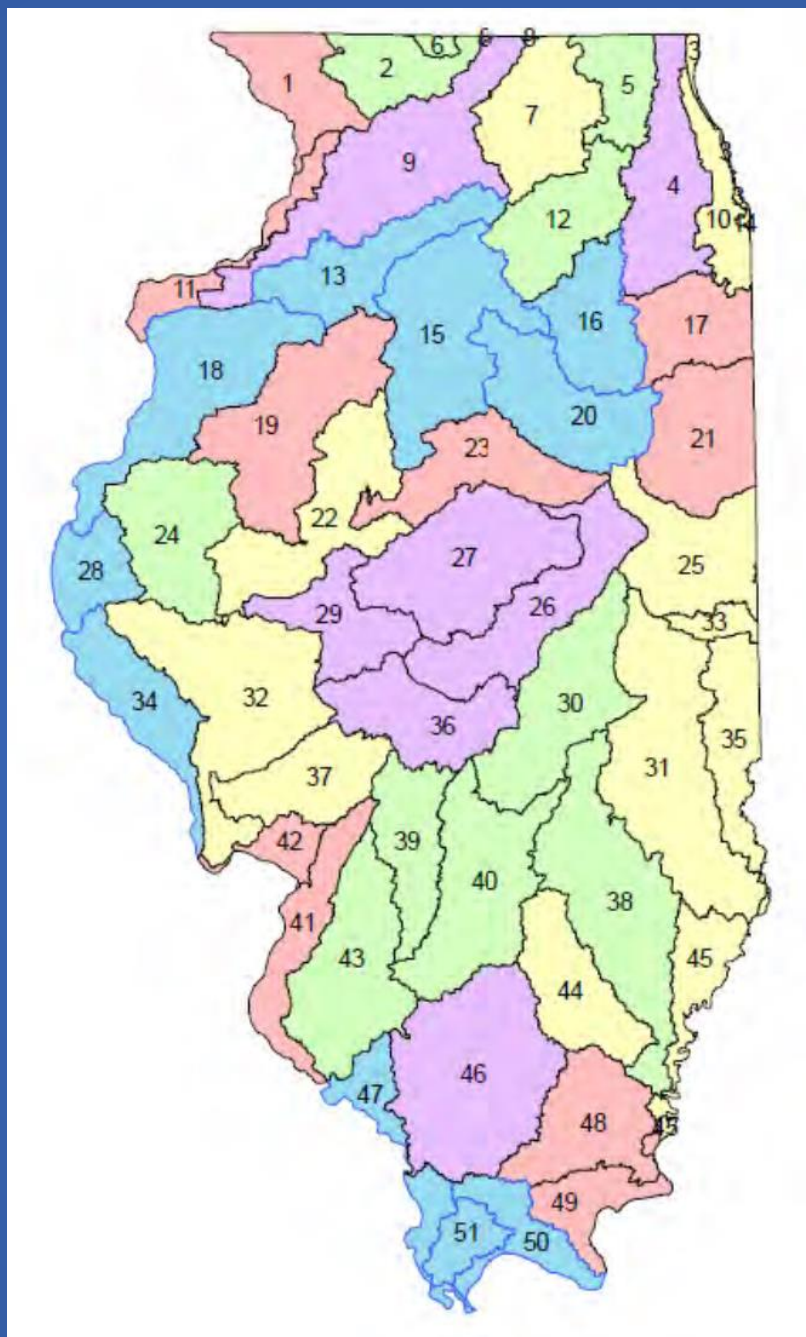
Watershed	Monitoring (by IEPA)	Priority for Planning	Priority for Implementation
	FFY	FFY	FFY
	2018	2017	2018
	2019	2018	2019
	2020	2019	2020
	2021	2020	2021
	2022	2021	2022

IDNR Fisheries

- CPUE, presence/absence
- IBI scores

IEPA

- WQ, habitat, inverts
- QHEI scores

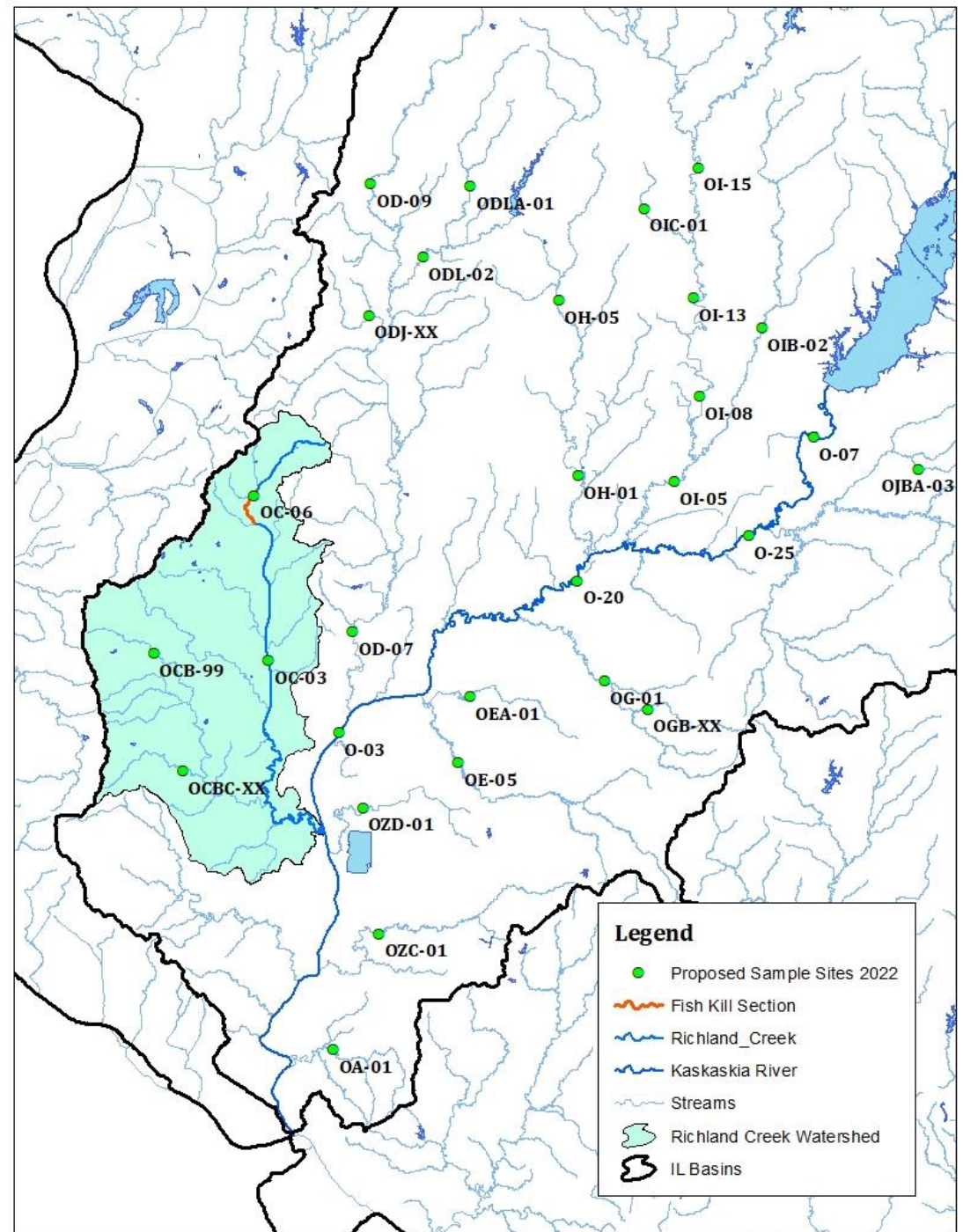


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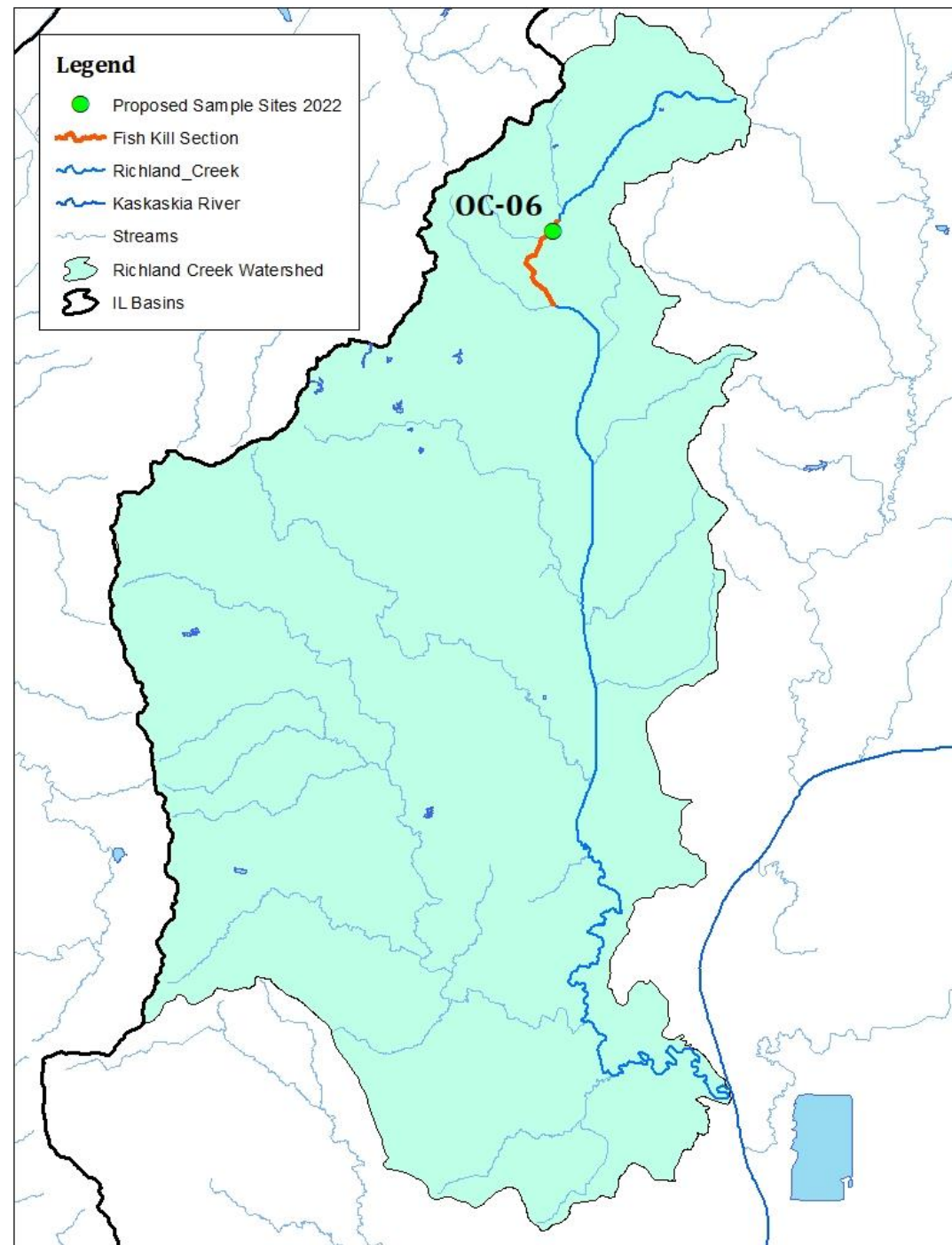
- 1 Apple River/Plum River 07060005
- 2 Pecatonica River 07090003
- 3 Lake Michigan Tributaries 04040002
- 4 Des Plaines River 07120004
- 5 Upper Fox River 07120006
- 6 Sugar River 07090004
- 7 Kishwaukee River 07090006
- 8 Upper Rock River 07090002
- 9 Lower Rock River 07090005
- 10 Chicago/Little Calumet 07120003
- 11 Mississippi North 07080101
- 12 Lower Fox River 07120007
- 13 Green River 07090007
- 14 Calumet River 04040001
- 15 Upper Illinois River (DS of Fox R.) 07130001
- 16 Upper Illinois R. (US of Fox R.) 07120005
- 17 Kankakee River 07120001
- 18 Mississippi North Central 07080104
- 19 Spoon River 07130005
- 20 Vermillion (Illinois River) 07130002
- 21 Iroquois River 07120002
- 22 Middle Illinois River 07130003
- 23 Mackinaw River 07130004
- 24 La Moine River 07130010
- 25 Vermillion (Wabash) 05120109
- 26 Upper Sangamon River 07130006
- 27 Salt Creek 07130009
- 28 Bear Creek 07110001
- 29 Lower Sangamon River 07130008
- 30 Upper Kaskaskia River 07140201
- 31 Embarras River 05120112
- 32 Lower Illinois River 07130011
- 33 Little Vermillion (Wabash) 05120108
- 34 Mississippi Central 07110004
- 35 Middle Wabash Tributaries 05120111
- 36 South Fork Sangamon R. 07130007
- 37 Macoupin Creek 07130012
- 38 Little Wabash 05120114
- 39 Shoal Creek 07140203
- 40 Middle Kaskaskia River 07140202
- 41 Mississippi South Central 07140101
- 42 Wood River/Piasa Creek 07110009
- 43 Lower Kaskaskia River 07140204
- 44 Skillet Fork 05120115
- 45 Lower Wabash 05120113
- 45 Lower Wabash 05140202
- 46 Big Muddy River 07140106
- 47 Mississippi South 07140105
- 48 Saline River 05140204
- 49 Ohio River Tributaries 05140203
- 50 Cache River - Ohio Drainage 05140206
- 51 Cache River - Miss. Drainage 07140108

Lower Kaskaskia Basin 2022

Average 20-30 sites

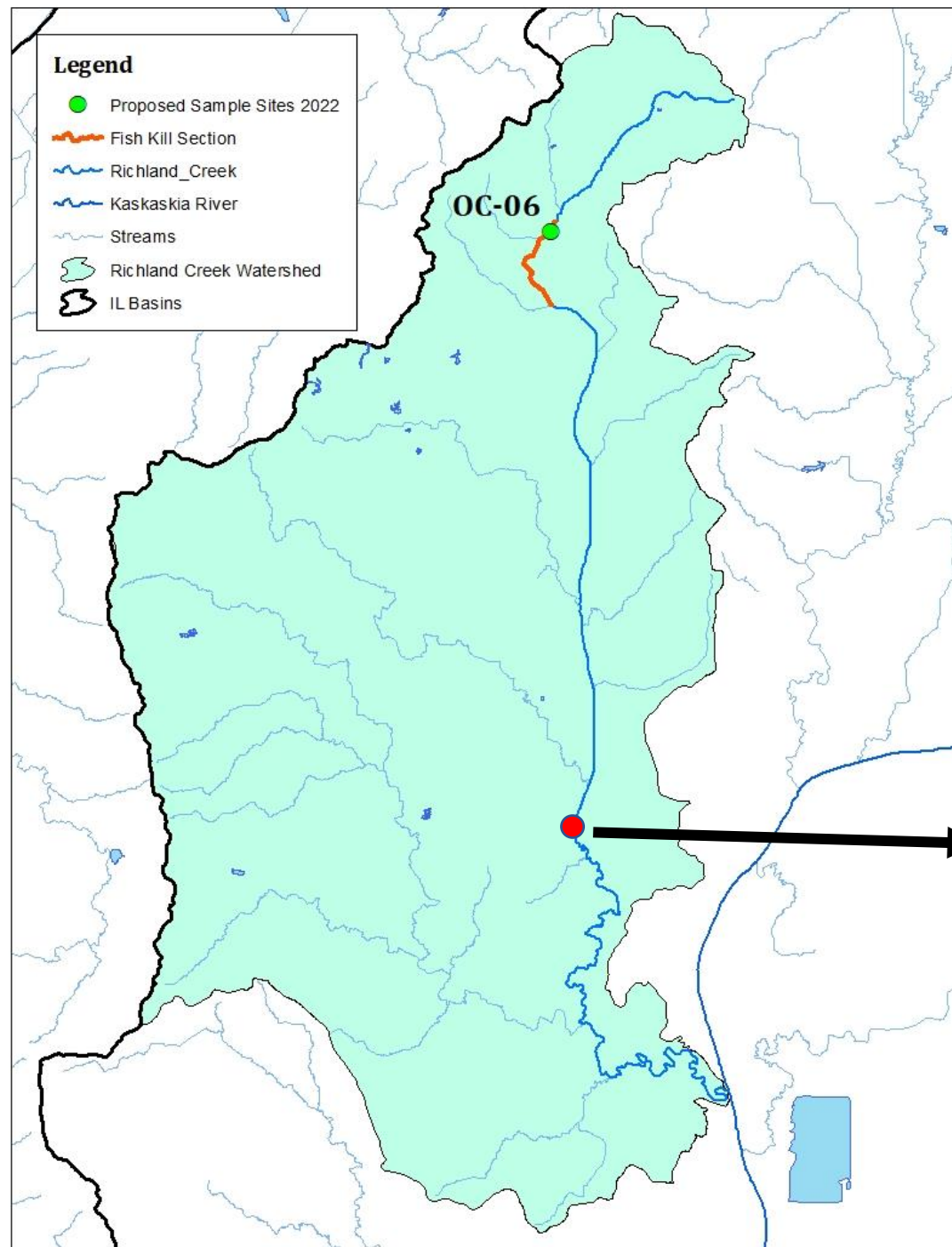


Richland Creek Watershed



Richland Creek

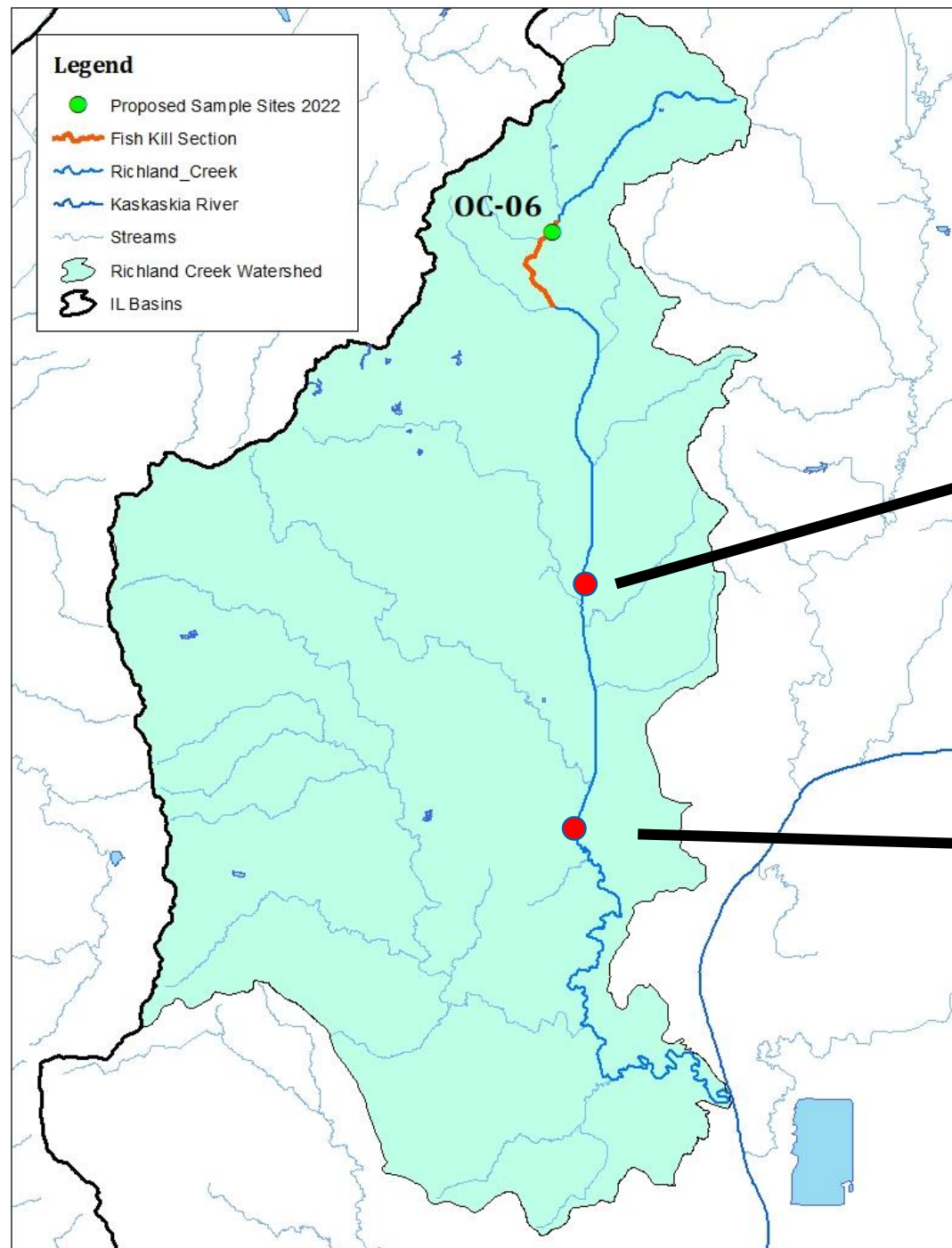
-Past data-



OC-04

Year	1996	2002	2007	2012
# species	10	13	10	16
IBI (AVG)	17	28 (40.6)	21 (41.1)	44 (40)
QHEI (AVG)	X	X	48.5 (57.3)	53.5 (56)

Richland Creek -Past data-



OC-90

Year	2017
# species	11
IBI (AVG)	31 (35.5)
QHEI (AVG)	53.5 (47.8)

OC-04

Year	1996	2002	2007	2012
# species	10	13	10	16
IBI (AVG)	17	28 (40.6)	21 (41.1)	44 (40)
QHEI (AVG)	X	X	48.5 (57.3)	53.5 (56)

Overall not a high quality stream

- no listed species or conservation status collected in Richland Creek

Richland Creek Fish Kill 2020

What happens? What role?

- **IDNR Fisheries**

- Role – Estimate the number and sizes of various fish species killed and their monetary value

- **IEPA**

- Role – Conduct water quality investigation by taking water samples for suspected pollutants to determine the causative pollutant and potential source of responsible party. IEPA refers investigation to the Attorney General Office for potential enforcement action to recoup the value of fish killed. Additional penalties maybe be levied.

**Southwick, R. I., and A. J. Loftus, editors. 2017. Investigation and monetary values of fish and freshwater mollusk kills. American Fisheries Society, Special Publication 35, Bethesda, Maryland.

Richland Creek Fish Kill – Sept 2, 2020 Kill Extent and Sampling Stations



Email from citizen Sept 1
- dead fish at North End Park























Richland Creek Fish Kill 2020 - Results-

Number of fish killed at each station					Est. Total No. Killed	Value Per Fish	Total Value	
Station No.	1	2	3	4				
Length of Station yards or (area)	100 YDS	100 YDS	100 YDS	100 YDS				
Species	Size Group	GAME FISH						
Largemouth bass	3-4"	1	2	1		42	\$ 1.30	\$54.60
	4-5"	2	7			94	\$ 2.16	\$203.04
	5-6"		7			73	\$ 2.68	\$195.64
	6-7"		2			21	\$ 3.52	\$73.92
	8-9"	1			2	32	\$ 5.63	\$180.16
	9-10"	2				21	\$ 6.59	\$138.39
	10-12"	3		5	2	105	\$ 7.55	\$792.75
	12-13"	1	6		2	94	\$ 8.10	\$761.40
	13-14"		3	1	1	53	\$ 8.13	\$430.89
	14-15"				1	11	\$ 14.00	\$154.00
	15-16"		2		1	32	\$ 15.00	\$480.00
>16"/lb *				2/7lbs	21	\$6.64/lb	\$484.69	
Crappie	7-8"			1		11	\$ 4.11	\$45.21
	8-11"			1		11	\$ 4.50	\$49.50
Sunfish	2-3"	3	66	13	4	897	\$ 0.56	\$502.32
	3-4"	30	100	22	6	1648	\$ 0.89	\$1,466.72
	4-5"	23	96	17	12	1544	\$ 1.34	\$2,068.96
	5-6"	10	48	13	15	897	\$ 1.94	\$1,740.18
	6-7"	4		6	6	167	\$ 3.06	\$511.02
	7-8"	2				21	\$ 3.16	\$66.36
Catfish	3-4"		1			11	\$ 0.61	\$6.71
	6-7"			1		11	\$ 1.00	\$11.00
	10-11"	2		1		32	\$ 1.61	\$51.52
	11-12"			1		11	\$ 1.81	\$19.91
	12-14"	1		1	1	32	\$ 2.52	\$80.64
	18-19"	1				11	\$ 10.00	\$110.00
	22-23"	2				21	\$ 19.00	\$399.00
23-24"				2	21	\$ 20.00	\$420.00	
24-25"	1				11	\$ 25.00	\$275.00	

Est. Totals

**LMB – 599
\$3,949.48**

**SUN – 5,174
\$6,355.56**

**CCF – 161
\$1,373.78**

Richland Creek Fish Kill 2020 - Results-

Number of fish killed at each station					Est. Total No. Killed	Value Per Fish	Total Value	
Station No.	1	2	3	4				
Length of Station yards or (area)	100 YDS	100 YDS	100 YDS	100 YDS				
Species	Size Group	GAME FISH						
Bullheads / Madtoms	2-3"	1	23			251	\$ 0.66	\$165.66
	3-6"	2	26	12	1	428	\$ 0.50	\$214.00
	6-7"	2	17			199	\$ 2.16	\$429.84
	7-8"		3	2	1	63	\$ 2.39	\$150.57
	8-9"	2	5	2	4	136	\$ 3.05	\$414.80
	9-10"		6	2	4	126	\$ 3.98	\$501.48
	>10"	7	11	3	8	303	\$ 3.98	\$1,205.94
Freshwater drum	6-8"		1	3		42	\$ 0.42	\$17.64
	11-12"			2		21	\$ 0.82	\$17.22
	>12"/lb *				1/3lbs	11	\$1.09/lb	\$34.10
Sauger	12-15"				2	21	\$ 15.00	\$315.00

Est. Totals

Bullheads/Madtoms

- 1,506

\$3,082.29

FRD - 74

\$68.96

Richland Creek Fish Kill 2020 - Results-

Number of fish killed at each station					Est. Total No. Killed	Value Per Fish	Total Value	
Station No.	1	2	3	4				
Length of Station yards or (area)	100 YDS	100 YDS	100 YDS	100 YDS				
Species	Size Group	NON GAME FISH						
Darters	2-3"	4		2		63	\$ 0.77	\$48.51
	3-4"	33		8	3	459	\$ 1.24	\$569.16
	4-5"	18	1	2	5	272	\$ 1.67	\$454.24
	6-7"		1			11	\$ 2.85	\$31.35
Minnows	ALL		18	5		240	\$ 0.12	\$28.80
Suckers	2-3"	6				63	\$ 0.70	\$44.10
	6-7"	0	6	1		73	\$ 2.88	\$210.24
	>7"	21	43	29	35	1335	\$ 3.75	\$5,006.25
Gizzard shad	ALL		2	1	1	42	\$ 0.35	\$14.70
Species	Size Group	COMMERCIAL FISH						
Common carp	6-8"	1				11	\$ 0.24	\$2.64
	10-11"	1			1	21	\$ 0.42	\$8.82
	>11"/lb *	42/228lbs	2/13lbs	1/1lb	39/142lbs	876	\$0.52/lb	\$2,082.26
Buffalo	6-9"	1				11	\$ 0.48	\$5.28
	10-11"				1	11	\$ 0.76	\$8.36
	11-12"				1	11	\$ 0.93	\$10.23
	>12"/lb *				3/6lbs	32	\$0.9/lb	\$56.31
Carp suckers	7-8"		1			11	\$ 0.20	\$2.20
Grass carp	11-12"				1	11	\$9.51	\$104.61
	14-15"				1	11	\$10.50	\$115.50
	16-17"				2	21	\$12.67	\$266.07
	>21"/lb *	1/15lbs				11	\$3.87/lb	\$605.35
Silver Carp	ALL				6	63	\$0.12	\$7.56

Est. Totals

**Darters – 805
\$1,103.26**

**Suckers – 1,471
\$5,260.59**

**Common Carp – 908
\$2,093.72**

**BUF – 65
\$80.18**

**GRC – 54
\$1,091.53**

Richland Creek Fish Kill 2020

- Results -

Interesting findings -

- Lots of fish in this urban stream
- Lots of big fish in this urban stream
- Lots of game fish in this urban stream
 - 67% game vs 33% non-game
- Glass half full – common carp removal??

Richland Creek

- Site Revisit 2021 -

- IDNR Fisheries Biologists
- McKendree University students
- Mike Quirin – Richland Creek Improvement Association
- Standard ES sample at North End Park (OC-06)







McKendree University students







Slenderhead darter



Richland Creek

- Site Revisit 2021 Results -



<u>Species</u>	<u># collected</u>
Creek Chub	24
Central Stoneroller	1
Suckermouth Minnow	1
Redfin Shiner	16
Red Shiner	2
Bluntnose Minnow	143
White Sucker	19
Largemouth Bass	6
Green Sunfish	1
Bluegill	15
Longear Sunfish	1
Slenderhead Darter	1
Johnny Darter	3
Total	233
# species	13
IBI	34

Richland Creek

- Site Revisit 2021 Results -



	<u>2021 OC-06</u>	<u>1996 OC-07</u>
<u>Common name</u>	<u>Total fish</u>	<u>Total fish</u>
Creek Chub	24	19
Central Stoneroller	1	2
Suckermouth Minnow	1	3
Redfin Shiner	16	
Red Shiner	2	6
Golden Shiner		36
Bluntnose Minnow	143	36
White Sucker	19	10
Creek Chubsucker		1
Yellow bullhead		4
Blackstripe topminnow		1
Largemouth Bass	6	18
Green Sunfish	1	103
Bluegill	15	11
Hybrid sunfish		20
Longear Sunfish	1	
Slenderhead Darter	1	
Johnny Darter	3	
Total individuals	233	270
No. native species	13	13
IBI	34	32

Richland Creek

-Future Work-

- 2022 Complete basin survey site at fish kill location (OC-06)
 - IEPA WQ, habitat, inverts, QHEI
- Continue fish monitoring at fish kill site for next few years
- Possible involvement/collaboration with Richland Creek Improvement Association



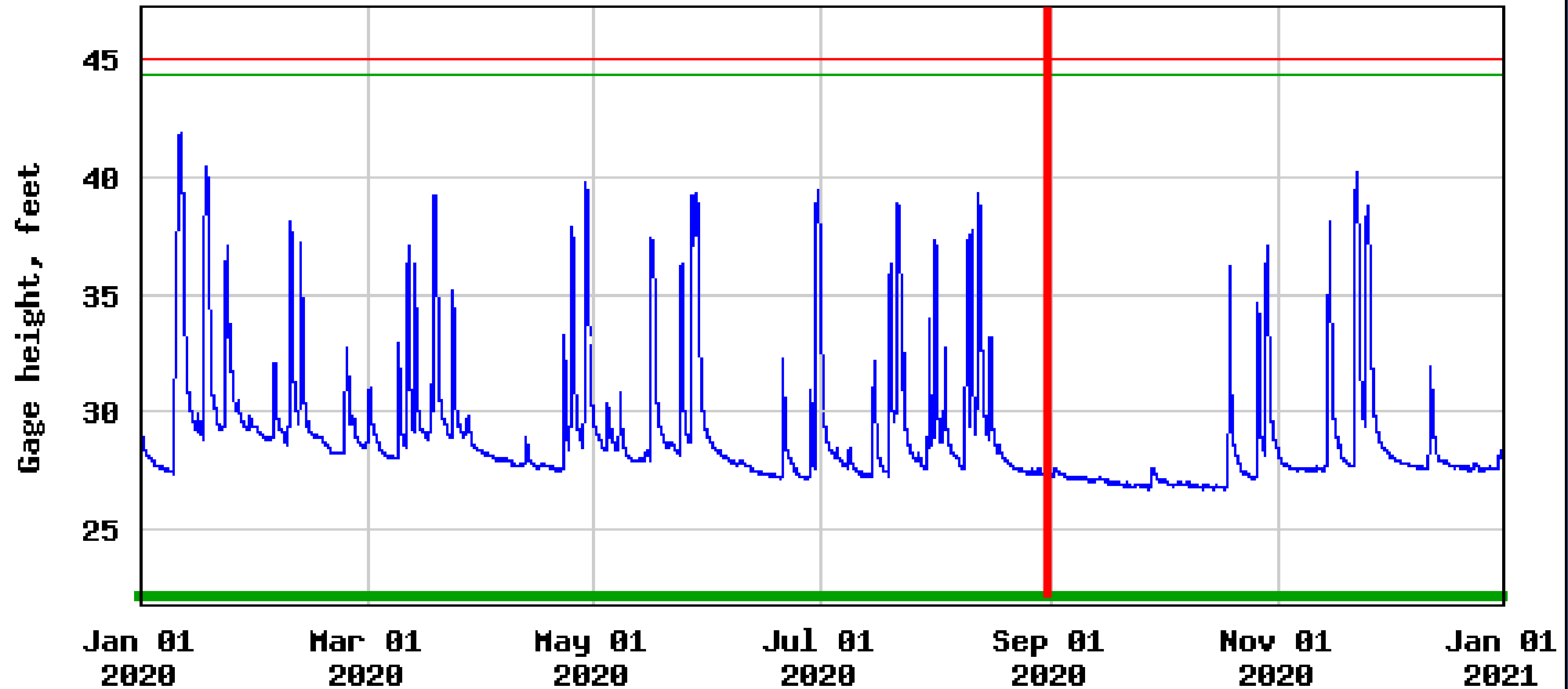
Thank you

Questions?

Benjamin.Lubinski@illinois.gov

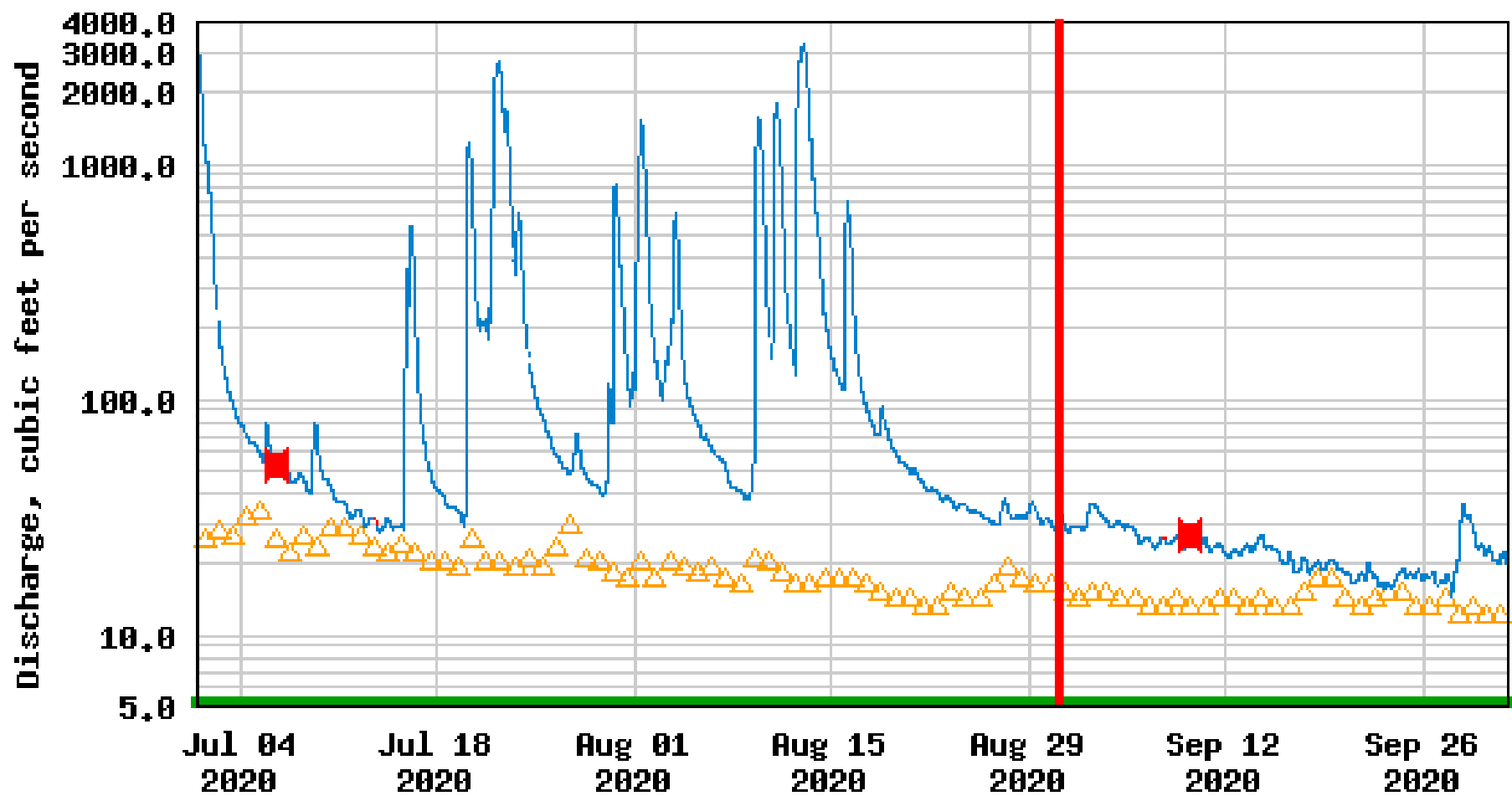


USGS 05595200 RICHLAND CREEK NEAR HECKER, IL



- Gage height
- Period of approved data
- Operational limit (maximum)
- Peak Stage, 44.40 ft, Apr. 29, 1996.

USGS 05595200 RICHLAND CREEK NEAR HECKER, IL



- △ Median daily statistic (52 years)
- Discharge
- Estimated discharge
- Period of approved data
- Measured discharge

Thank you

Questions?

Benjamin.Lubinski@illinois.gov

