

# Lake Creek Watershed Management Planning Meeting 4

March 29, 2018  
10:00 AM



# Agenda

- I. Welcome and Introductions
- II. Review of Planning Meetings
- III. Pollutant Load Reduction Targets
- IV. Element C: BMP for Load Reductions
- V. Element D: Technical and Financial Assistance
- VI. Element E: Education/ Outreach
- VII. Elements F-I: Implementation and Monitoring Strategy
- VIII. Projected Meeting Schedule

## II. Review of Planning Meetings

### Williamson County Farm Bureau: 2/7/2018

- **Review of Plan Elements**
- **Focus on proposing BMP**
- **Follow-up with individuals interested in proposing BMP**

## II. Review of Planning Meetings

### Johnston City Officials: 2/27/2018

- **Review of Plan Elements**
- **Focus on proposing BMP**
- **Main concern was drainage/flooding around Johnston City**
  - **Street Department labeling critical areas around town on map**
  - **Will use this to propose BMP in Johnston City**
  - **Took small tour of property east of Water Avenue (poor drainage)**

### III. Pollutant Load Reduction Targets

- Watershed-wide Pollutant Loading

| Source                  | N Load (lb/yr)   | Percent of Total Load | P Load (lb/yr)  | Percent of Total Load | Sediment Load (tons/yr) | Percent of Total Load |
|-------------------------|------------------|-----------------------|-----------------|-----------------------|-------------------------|-----------------------|
| Urban                   | 27505.85         | 16.70%                | 4251.89         | 15.25%                | 631.37                  | 4.01%                 |
| Cropland                | 25810.14         | 15.67%                | 7430.95         | 26.65%                | 4617.44                 | 29.36%                |
| Pastureland & Grassland | 75732.41         | 45.99%                | 9077.97         | 32.55%                | 3425.45                 | 21.78%                |
| Forest                  | 4323.70          | 2.63%                 | 2039.25         | 7.31%                 | 333.14                  | 2.12%                 |
| Groundwater             | 20554.50         | 12.48%                | 945.82          | 3.39%                 | 0.00                    | 0.00%                 |
| Streambank/Shoreline    | 10751.08         | 6.53%                 | 4139.16         | 14.84%                | 6719.42                 | 42.73%                |
| <b>Totals</b>           | <b>164677.68</b> |                       | <b>27885.06</b> |                       | <b>15726.82</b>         |                       |

### III. Pollutant Load Reduction Targets

- Subwatershed Loading

| Sub-watershed    | SMU ID | Size (acres) | N Percent of Total Load | P Percent of Total Load | Sediment Percent of Total Load |
|------------------|--------|--------------|-------------------------|-------------------------|--------------------------------|
| Upper Lake Creek | 1      | 1459.32      | 4.93%                   | 4.63%                   | 5.07%                          |
| City Lake        | 2      | 1817.87      | 7.70%                   | 6.67%                   | 6.34%                          |
| Corinth          | 3      | 1404.85      | 5.99%                   | 5.99%                   | 8.24%                          |
| Fowler School    | 4      | 992.40       | 2.61%                   | 2.80%                   | 2.92%                          |
| Heartland        | 5      | 2297.85      | 9.55%                   | 8.50%                   | 8.54%                          |
| Whiteash Branch  | 6      | 743.14       | 3.59%                   | 3.87%                   | 4.17%                          |
| Arrowhead        | 7      | 2109.54      | 8.00%                   | 7.21%                   | 5.61%                          |
| Whiteash         | 8      | 3211.59      | 15.00%                  | 13.36%                  | 11.35%                         |
| Beaver Creek     | 9      | 366.26       | 1.81%                   | 1.48%                   | 1.31%                          |
| Johnston City    | 10     | 1732.20      | 8.53%                   | 8.79%                   | 7.62%                          |
| Bear Creek       | 11     | 2760.84      | 12.25%                  | 11.35%                  | 11.24%                         |
| Champaign        | 12     | 833.81       | 5.46%                   | 6.38%                   | 6.61%                          |
| Collins          | 13     | 755.07       | 4.88%                   | 6.41%                   | 7.41%                          |
| Lower Lake Creek | 14     | 1298.19      | 9.69%                   | 12.56%                  | 13.59%                         |

# IL Nutrient Loss Reduction Strategy (NLRS)

- Collaborative effort between IEPA, IL Dept. of Agriculture, and the IL NLRS Policy Working Group and subcommittees
- Develop strategies and promote best management practices (BMP) for nutrient runoff
- Goals include: **25% reduction in phosphorus load (2025)**  
**15% reduction in nitrate-nitrogen load (2025)**  
**Eventual goal is 45% for both nutrients**

### III. Pollutant Load Reduction Targets

- Pollutant Load Reduction Targets

| Watershed                                   | Nitrogen Load Reduction Target (lbs) | Nitrogen (Percent Reduction) | Phosphorus Load Reduction Target (lbs) | Phosphorus (Percent Reduction) | Sediment Load Reduction Target (tons) | Sediment (Percent Reduction) |
|---|--------------------------------------|------------------------------|--|--------------------------------|---------------------------------------|------------------------------|
| <b>Lake Creek</b>                           | <b>24701.65</b>                      | <b>15.00%</b>                | <b>6971.26</b>                         | <b>25.00%</b>                  | <b>4718.04</b>                        | <b>30.00%</b>                |
| <b>Sub-watershed Load Reduction Targets</b> |                                      |                              |  |                                |                                       |                              |
| <b>SMU 1</b>                                | 1218.47                              | 4.93%                        | 322.60                                 | 4.63%                          | 239.13                                | 5.07%                        |
| <b>SMU 2</b>                                | 1902.02                              | 7.70%                        | 465.00                                 | 6.67%                          | 299.22                                | 6.34%                        |
| <b>SMU 3</b>                                | 1480.21                              | 5.99%                        | 417.86                                 | 5.99%                          | 388.58                                | 8.24%                        |
| <b>SMU 4</b>                                | 645.88                               | 2.61%                        | 194.88                                 | 2.80%                          | 137.85                                | 2.92%                        |
| <b>SMU 5</b>                                | 2359.57                              | 9.55%                        | 592.50                                 | 8.50%                          | 402.77                                | 8.54%                        |
| <b>SMU 6</b>                                | 887.44                               | 3.59%                        | 270.08                                 | 3.87%                          | 196.64                                | 4.17%                        |
| <b>SMU 7</b>                                | 1975.61                              | 8.00%                        | 502.37                                 | 7.21%                          | 264.70                                | 5.61%                        |
| <b>SMU 8</b>                                | 3705.19                              | 15.00%                       | 931.64                                 | 13.36%                         | 535.29                                | 11.35%                       |
| <b>SMU 9</b>                                | 446.67                               | 1.81%                        | 103.50                                 | 1.48%                          | 61.62                                 | 1.31%                        |
| <b>SMU 10</b>                               | 2108.26                              | 8.53%                        | 612.60                                 | 8.79%                          | 359.31                                | 7.62%                        |
| <b>SMU 11</b>                               | 3026.11                              | 12.25%                       | 791.25                                 | 11.35%                         | 530.08                                | 11.24%                       |
| <b>SMU 12</b>                               | 1347.55                              | 5.46%                        | 445.04                                 | 6.38%                          | 311.81                                | 6.61%                        |
| <b>SMU 13</b>                               | 1204.22                              | 4.88%                        | 446.63                                 | 6.41%                          | 349.76                                | 7.41%                        |
| <b>SMU 14</b>                               | 2394.45                              | 9.69%                        | 875.32                                 | 12.56%                         | 641.29                                | 13.59%                       |
| <b>TOTAL</b>                                | <b>24701.65</b>                      |                              | <b>6971.26</b>                         |                                | <b>4718.04</b>                        |                              |



## IV. Element C: Best Management Practices

**BMP in plan should address:**

- **Impairments to waterbodies through nonpoint sources**
- **Drainage/Flooding issues**
- **Possible recreation**
- **Site-specific areas and watershed-wide practices**

## IV. Element C: Best Management Practices

### Impairments:

- **Beaver Creek:** Manganese, Changes in stream depth, loss of instream cover
- **Lake Creek:** Dissolved Oxygen, Phosphorus, Changes in Stream depth
  
- **Arrowhead Lake:** Phosphorus
- **Johnston City Lake:** Aquatic Algae, Phosphorus, Total Suspended Solids

## IV. Element C: Best Management Practices

### BMP Suggestions for Specific Impaired Streams:

| Waterbody         | Causes of Impairment(s)                       | Sources of Impairment(s)                                  | BMP Suggestions   |
|-------------------|---|---|---|
| <b>Lake Creek</b> | Dissolved Oxygen                              | Municipal Point Source Discharges                         | Review NPDES Permits for discharges (Johnston City)<br>Inspect discharge locations  |
|                   | Phosphorus                                    | Crop production/ Agriculture<br>Urban Runoff/Storm Sewers | Agricultural Filters/buffers, conservation practices, enrollment in conservation programs, nutrient management, other BMP<br>Vegetative buffers/filters, permeable pavement, disconnects from storm sewers, other urban BMP |
|                   | Changes in Stream depth and Velocity Patterns | Unknown Sources   | Streambank Stabilization, other "Slow the flow" measures, others?   |

| Waterbody           | Causes of Impairment(s)                       | Sources of Impairment(s)                                    | BMP Suggestions   |
|---------------------|---|---|---|
| <b>Beaver Creek</b> | Manganese                                     | Loss of Riparian Habitat, Municipal Point Source Discharges | Review NPDES Permits for discharges (Johnston City)<br>Inspect discharge locations<br>Riparian Corridor, Riparian buffer  |
|                     | Changes in Stream depth and velocity patterns | Crop production/ Agriculture<br>Urban Runoff/Storm Sewers   | Agricultural Filters/buffers, conservation practices, enrollment in conservation programs, streambank stabilization, nutrient management, other BMP<br>Vegetative buffers/filters, permeable pavement, disconnects from storm sewers, other urban BMP |
|                     | Loss of instream cover                        | Runoff from Forest/Grassland/Parkland                       | Slow the flow measures, others?   |

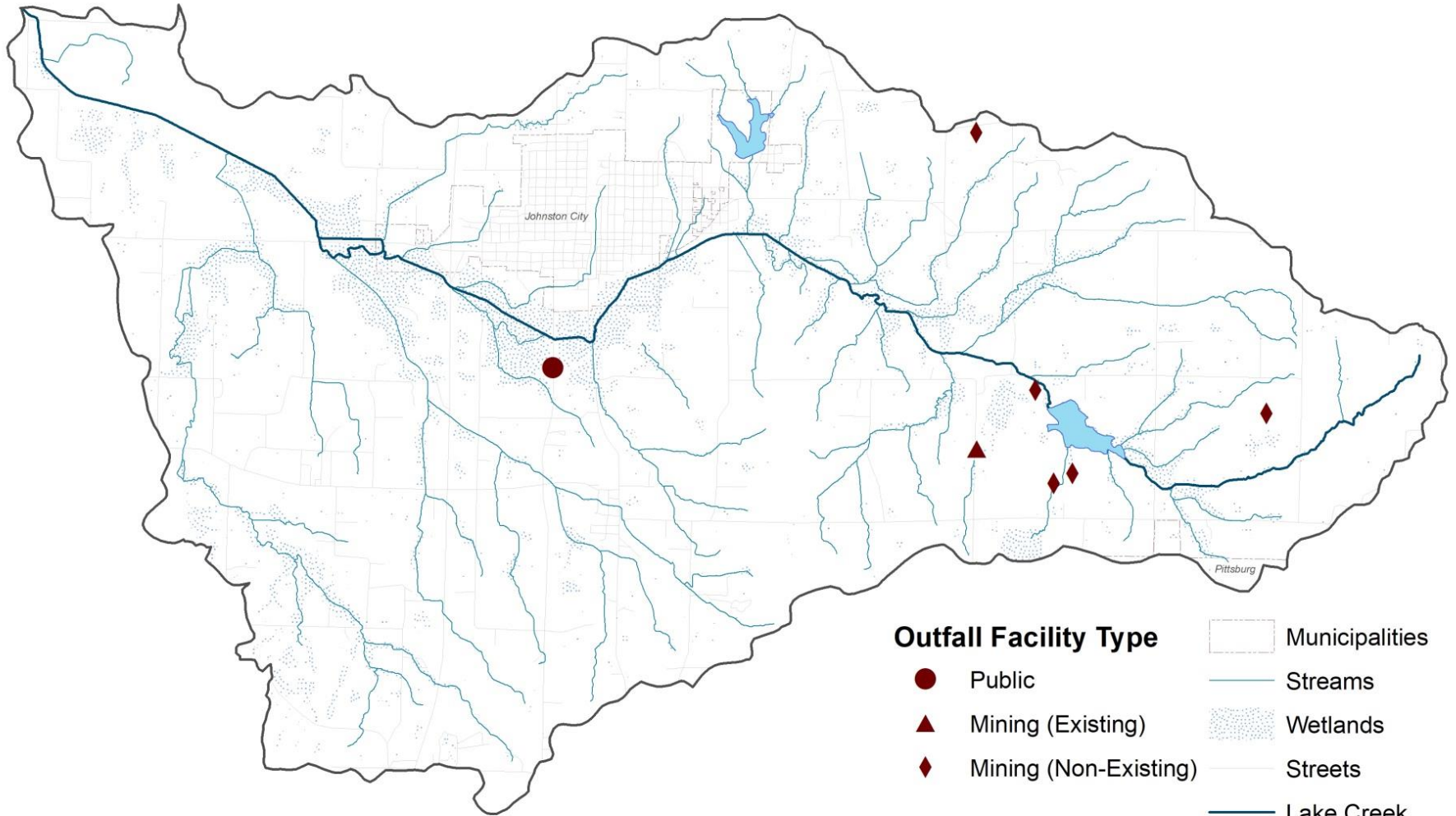
## IV. Element C: Best Management Practices

### BMP Suggestions for Specific Impaired Lakes:

| Waterbody             | Causes of Impairment(s) | Sources of Impairment(s)              | BMP Suggestions   |
|-----------------------|-------------------------|---------------------------------------|---|
| <b>Arrowhead Lake</b> | Phosphorus              | Runoff from Forest/Grassland/Parkland | Conservation buffers/filters, permeable pavement, shoreline stabilization |

| Waterbody                 | Causes of Impairment(s) | Sources of Impairment(s)              | BMP Suggestions   |
|---------------------------|-------------------------|---------------------------------------|---|
| <b>Johnston City Lake</b> | Aquatic Algae           | Runoff from Forest/Grassland/Parkland | Conservation buffers/filters, permeable pavement, shoreline stabilization |
|                           | Phosphorus              |                                       |   |
|                           | Total Suspended Solids  | Littoral/ Shore Area Modifications    | Return old dock to natural state, shoreline stabilization                 |

# Lake Creek Watershed- NPDES Outfall Locations



## Outfall Facility Type

- Public
- ▲ Mining (Existing)
- ◆ Mining (Non-Existing)

- ▭ Municipalities
- Streams
- ▨ Wetlands
- Streets
- Lake Creek
- Lakes

N



## IV. Element C: Best Management Practices

### Greater Egypt BMP Recommendations

- Agricultural Filters/ Buffers
- Debris Removal
- Grassed Waterways
- Riparian Buffer
- Streambank/Shoreline Stabilization
- Urban Filter Strips/Buffers

## IV. Element C: Best Management Practices

### Agricultural Filters/Buffers Criteria



- Adjacent to waterbody
- No existing buffer
- High Priority- <25 ft
- Mid Priority- <50 ft
- Low Priority- >50 ft
- Nutrient runoff reduction

## IV. Element C: Best Management Practices

### Debris Removal Criteria



- Limiting flow
- Areas with existing drainage issues
- Organic vs. Synthetic
- Other considerations





## IV. Element C: Best Management Practices Grassed Waterways Criteria



- Proximity to waterbody
- Level of erosion
- Soils
- Priority given to areas exceeding five years of observed erosion
- Reduction of sediment
- Possible reduction of nutrient runoff

## IV. Element C: Best Management Practices

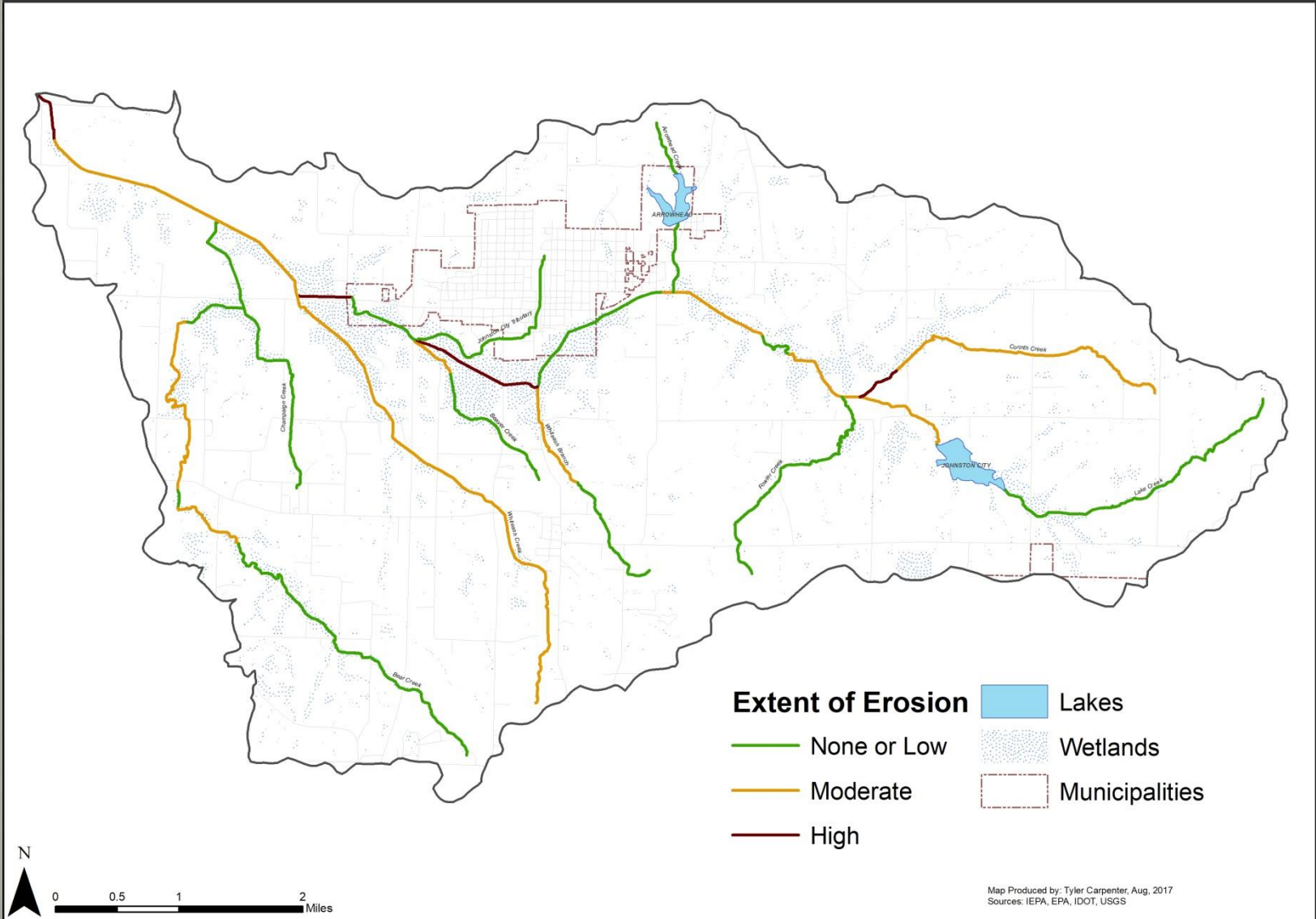
### Streambank/Shoreline Stabilization Criteria



- Based on assessment
- High Priority- High Level
- Mid Priority- Medium Level
- Low Priority- None or Low
- Ease of operation
- Sediment reduction

# Assessment

## Lake Creek Watershed - Extent of Erosion



## IV. Element C: Best Management Practices

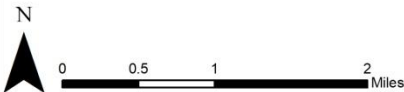
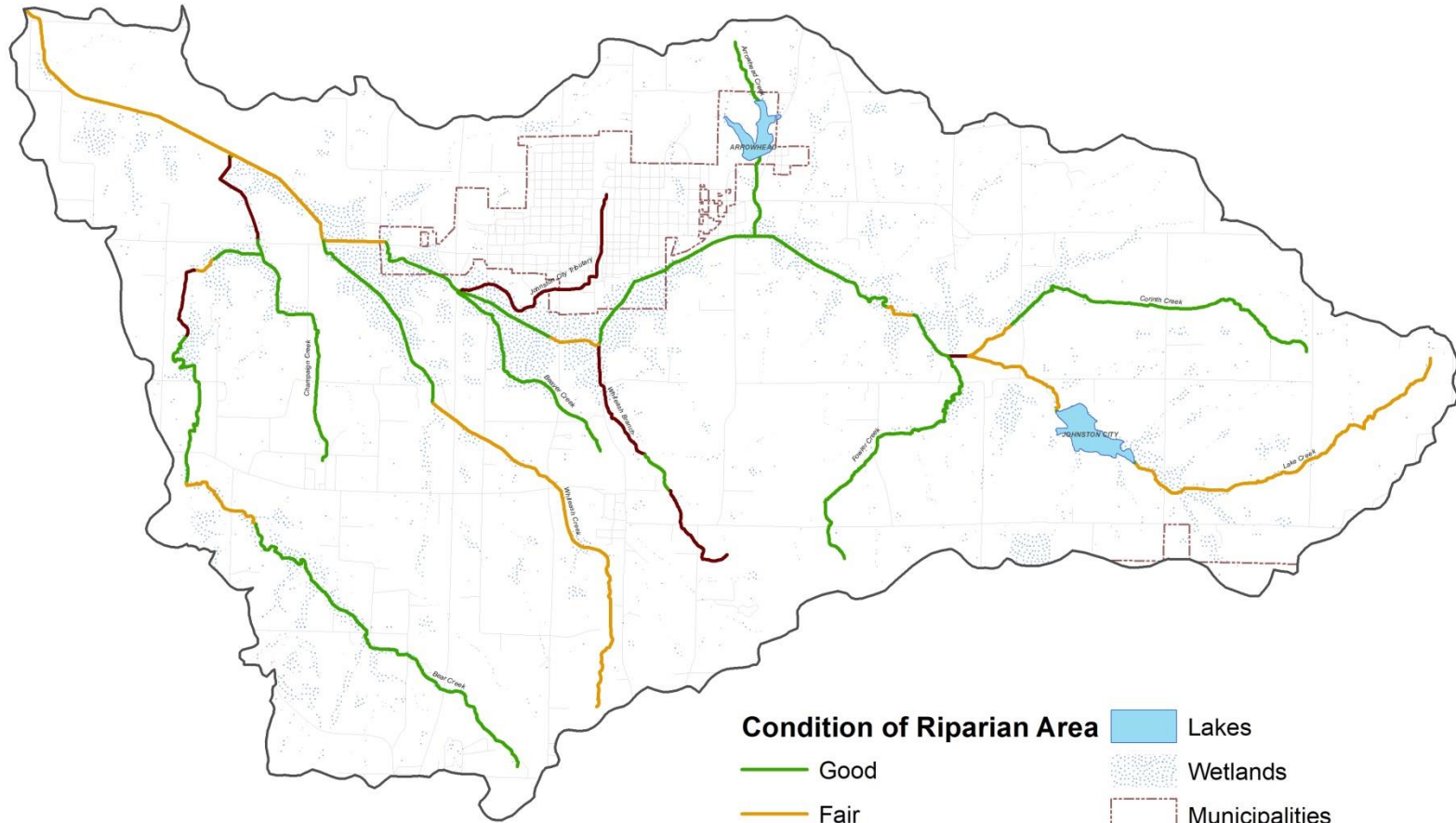
### Riparian Buffer Criteria



- Based on assessment
- No tree cover
- Linked to other areas with canopy
- Higher concentrations of dissolved oxygen
- Stream crossings?
- Intercepts nutrients
- Natural bank stabilization

# Assessment

## Lake Creek Watershed - Condition of Riparian Area



Map Produced by: Tyler Carpenter, Aug, 2017  
Sources: IEPA, EPA, IDOT, USGS

## IV. Element C: Best Management Practices

### Greater Egypt BMP Recommendations

- Recommendations to be broken into site-specific and watershed-wide categories
- Site-specific areas will address the BMP previously mentioned
- Watershed-wide practices can be more general (examples)
  - Eight acres of permeable pavement
  - 400 acres of farmland to implement cover crops
  - Recommendations of ordinances pertaining to water quality, stormwater
  - Educational BMP

## IV. Element C: Best Management Practices

### Next Steps for Greater Egypt BMP Recommendations

- Finalize list of BMP and create priority list
- Create nutrient load reduction models for each BMP (EPA Region 5 Model)
- Look in to other BMP: stream crossings (animal, mechanical), urban BMP from drainage map of Johnston City (from City officials)

# IV. Element C: Best Management Practices Recommendations from Council

| Area Type                                   | BMP Suggestions from Council | Outcome |
|---|------------------------------|---------|
| <b>Agricultural (Cropland, Pasture/Hay)</b> |                              |         |
|   |                              |         |
|   |                              |         |
|   |                              |         |
| <b>Urban (Municipal, Roads)</b>             |                              |         |
|   |                              |         |
|   |                              |         |
|   |                              |         |
| <b>Forested</b>                             |                              |         |
|   |                              |         |
|   |                              |         |
|   |                              |         |
| <b>Other</b>                                |                              |         |
|   |                              |         |
|   |                              |         |
|   |                              |         |



## V. Technical and Financial Assistance

### **BMP funding and technical assistance**

- BMP Funding sources
  - EPA 319 Grants
  - USDA- CRP, CREP, EQIP
  - DOT
  - Landowners, Municipalities
- BMP technical assistance
  - Contractors
  - Public Works
  - Landowners
  - Volunteers

## VI. Outreach/ Public Involvement

### Outreach/Public Involvement current list of measures includes:

- Establish a Lake Creek Watershed Action Committee
  - Will oversee plan implementation and monitoring
- Hold public meetings
  - Keep the public informed throughout plan implementation
- Distribute flyers or brochures regarding watershed management efforts
- Enlist volunteers for litter cleanup days
  - Could be conservation groups, 4H, Boy/Girl Scouts or other local groups
- Hold workshops for watershed activities
  - Stormwater management
  - Agricultural workshops

# VI. Outreach/ Public Involvement

## Informational Pamphlets

### What is a Watershed-based Plan?

A watershed-based plan is a collaborative effort that addresses nonpoint source pollution to improve water quality. These plans are prepared to: assess existing conditions, identify pollutants, develop best management practices (BMPs) to address pollutants, determine costs, and develop implementation and evaluation indicators.

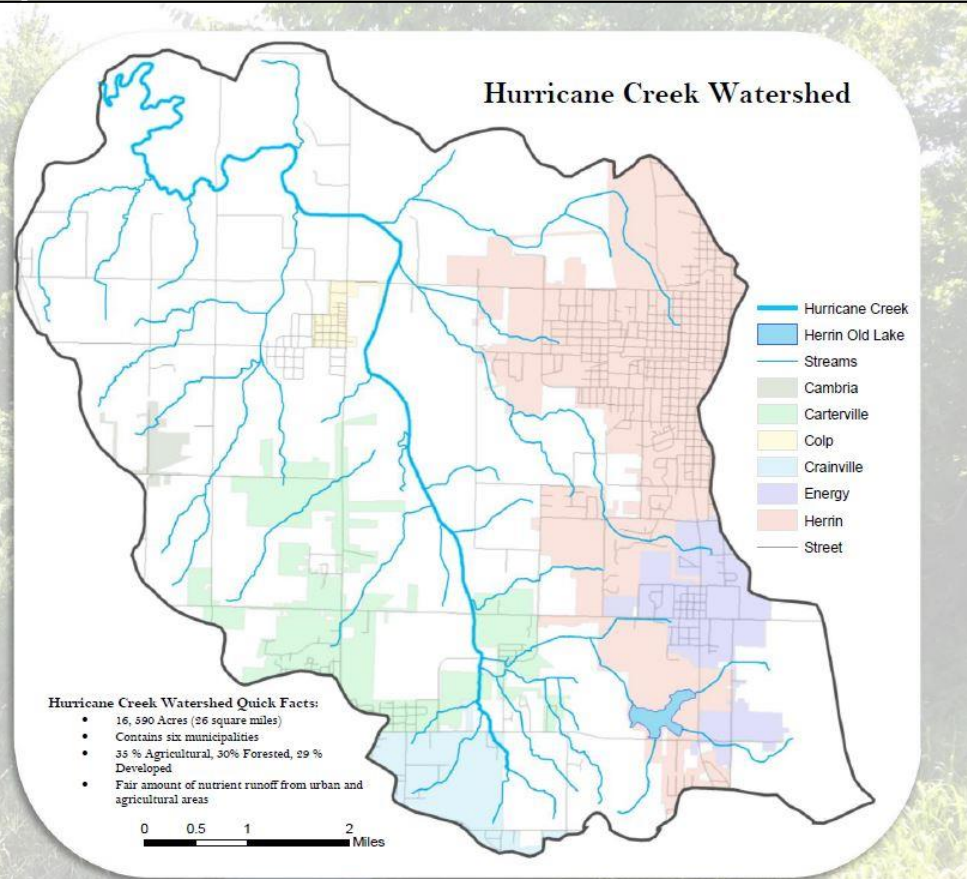
### Hurricane Creek Watershed-based Plan

Planning efforts began in 2015 with the development of a watershed inventory. This characterized the watershed by defining many components such as: geography, soils, demographics, land use, streambank and lake assessment, and water quality assessment.

An initial stakeholders meeting was held to raise awareness of planning efforts and to garner membership of the Hurricane Creek Watershed Council. The Council provided guidance throughout the planning phase including recommending BMPs to address water quality impairments.

Two waterbodies in the watershed have been placed on the EPA's 303d list of Impaired Waters. Hurricane Creek has been placed on the list because of problems with sedimentation and siltation. Herrin Old Lake exhibits many other impairments including: mercury, PCBs, total suspended solids, phosphorus, and algae. These impairments are largely due to agricultural practices and urban runoff.

To improve water quality in the waterbodies and the watershed, BMPs were suggested. Some of the proposed BMPs include: streambank and shoreline stabilization, filter strips, and grassed waterways. BMP implementation is dependent on Section 319(h) funding under the Clean Water Act.



### Applying for CWA Section 319(h) Funding:

Applications for grants that address nonpoint source pollution can be awarded through Section 319(h) of the Clean Water Act. Section 319(h) grants generally have a 60/40 match. This means that the EPA can cover up to 60 percent of the grant costs while the applicant is responsible for the remaining 40 percent.

If you are interested in plan implementation, CWA Section 319(h) funding, or would like more information, please contact Tyler Carpenter at the Greater Egypt Regional Planning and Development Commission. Contact information can be found on the back of this document.

## VII. Elements F-I of the Watershed-based Plan

### **Remaining elements of the plan:**

- Element F- Implementation schedule of BMP
- Element G- Interim measurable milestones
- Element H- Benchmarks for load reduction targets
- Element I- Monitoring strategy

## VII. Elements F-I of the Watershed-based Plan

### Element F: Implementation Schedule

- Should reflect BMP, educational component, and general goals of plan

| Target   | Phase I           |   | Phase II          |   |   |   | Phase III           |   |   |    |
|--|-------------------|---|-------------------|---|---|---|---------------------|---|---|----|
|  | Short-term (2 yr) |   | Mid-term (3-6 yr) |   |   |   | Long-term (7-10 yr) |   |   |    |
|  | 1                 | 2 | 3                 | 4 | 5 | 6 | 7                   | 8 | 9 | 10 |
| Establish watershed action committee                             | X                 |   |                   |   |   |   |                     |   |   |    |
| Hold public meetings to gain input                               | X                 | X | X                 | X | X | X |                     |   |   |    |
| Post watersheds sign for public awareness and BMP implementation | X                 | X | X                 | X | X | X | X                   | X | X | X  |
| Create a website for watershed activities and key dates          |                   | X |                   |   |   |   |                     |   |   |    |
| Enlist volunteers for litter cleanup days                        | X                 | X | X                 | X | X | X | X                   | X | X | X  |
| Distribute flyers for stormwater management and similar topics   | X                 |   | X                 |   | X |   | X                   |   | X |    |
| Hold workshops to inform public on stormwater management         |                   | X |                   | X |   | X |                     | X |   |    |
| Continue researching funding and technical assistance            | X                 | X | X                 |   |   |   |                     |   |   |    |
| Select site-specific BMPs for preliminary design                 | X                 | X | X                 |   |   |   |                     |   |   |    |

## VII. Elements F-I of the Watershed-based Plan

### Element G: Interim Measurable Milestones

| Interim Measurable Milestones   |   |                |            |              |
|---------------------------------|---|----------------|------------|--------------|
| Goal                            | Indicator                                       | Short (2-year) | Mid (6-yr) | Long (10-yr) |
| <b>Outreach and Education</b>   | Educational Brochures for Fertilizer Use        | 500            | 1000       | 1500         |
|                                 | Educational Brochures for Stormwater Management | 500            | 1000       | 1500         |
|                                 | Lakes in Volunteer Lake Monitoring Program      | 1              | 3          | -            |
|                                 | Number of Litter Cleanup Days                   | 3              | 6          | 9            |
|                                 | Public Meetings Held                            | 4              | 10         | 14           |
|                                 | Stormwater Management Workshops Held            | 1              | 3          | 5            |
| <b>Reduce/Mitigate Flooding</b> | Detention Basins Installed                      | -              | 1          | 2            |
|                                 | Linear Feet of Stream Channel Debris Removal    | 150            | 300        | 600          |

## VII. Elements F-I of the Watershed-based Plan

### Element H: Benchmarks for load reduction targets

- Targets can be broken down into phases

| Benchmark Period    | Benchmark Reduction Target |                    |                      |                     |                    |                    |
|---------------------|----------------------------|--------------------|----------------------|---------------------|--------------------|--------------------|
|                     | Nitrogen (percent)         | Nitrogen (lbs/ yr) | Phosphorus (percent) | Phosphorus (lbs/yr) | Sediment (percent) | Sediment (tons/yr) |
| 2 Year (Phase I)    | -                          | -                  | -                    | -                   | -                  | -                  |
| 6 Year (Phase II)   | 6                          | 8897               | 20                   | 5497                | 20                 | 3159               |
| 10 Year (Phase III) | 15                         | 22241              | 40                   | 10995               | 45                 | 7108               |

## VII. Elements F-I of the Watershed-based Plan

### Element I: Monitoring strategy

- How successful are BMP?
- Should use existing federal, state, and regional programs
- Can collect data from other agencies

| Monitoring Component              | Phase I |   | Phase II |   |   |   | Phase III |   |   |    |
|-----------------------------------|---------|---|----------|---|---|---|-----------|---|---|----|
|                                   | 1       | 2 | 3        | 4 | 5 | 6 | 7         | 8 | 9 | 10 |
| Ambient Lakes Monitoring Program  | X       |   |          |   |   | X |           |   |   |    |
| Sediment Monitoring               | X       |   | X        |   | X |   | X         |   | X |    |
| Volunteer Lake Monitoring Program | X       | X | X        | X | X | X | X         | X | X | X  |
| Watershed Basin Surveys           |         | X |          |   |   |   | X         |   |   |    |



## VIII. Projected Meeting Schedule & Important Dates

- **Quarterly meeting in June**
- **September 1, 2018: Draft Due**
  - Will likely have final meeting before or after draft submission
- **October 1, 2018: Final Draft**
- **Approval process**

# Questions/Comments

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