

Memorandum

To: City of Mitchell
From: FYRA Engineering
Re: Lake Mitchell Update
Date: 3 February 2017

1 UPDATE ON PROJECT TASKS

A. INVENTORY OF WATERSHED CHARACTERISTICS

FYRA has created a GIS database (shapefiles) for the following characteristics:

- LiDAR/DEMs
- Soil Types
- Land Use Categories
- Registered Feedlots
- Wetlands
- Slope
- Soil Erodibility (K Factor)

B. HISTORIC LAKE WATER QUALITY REVIEW

- Historic lake water quality data has been reviewed.
- Summary tables of key parameters (nutrients, chlorophyll, clarity) have been created.
- Graphs showing water trends have been created.
- Power Points slides of summary tables and graphs have been created for use in upcoming TAT/WAC presentations.

C. DEVELOPMENT OF LAKE WATER BUDGET

- FYRA has continued the review and a cursory analysis of the past data sent by the City and has continued identifying gaps in data.
- We have also continued to develop the water budget model, exploring the various variables and their interactions, and working toward a usable model that accurately reflects the watershed.
- We are currently adding a variable to the model that will account for the approximately 175,000 gallons of water withdrawal from Lake Mitchell, as well as the timing of that annual withdrawal.



- Thus far, we have identified lake elevation as a data gap. We will present a specific approach for the City to collect this data at the upcoming TAT/WAC meetings.
- As this month progresses, we will identify other potential data gaps and continue building the model.

D. REVIEW OF THE CITY'S DRAFT ALGAL TOXIN ALERT CRITERIA

- FYRA reviewed and supports the City's draft Harmful Algal Bloom Guidelines.
- The draft guidelines are reasonable and consistent with guidelines in other states.
- Some states have adopted similar guidelines with "watch, warning and closure" criteria. Other states have adopted only "open" and "closed" criteria to avoid public interpretation and confusion.
- If watch/warning/closure guidelines are adopted, significantly public education is recommended to avoid confusion. Opportunities to educate and increase awareness are increased benefits of a multiple alert approach.
- A threshold Microcystin concentration of 20 ug/L is recommended and supported criteria for closing the lake.
- The City correctly notes that EPA has proposed lower algal toxin criteria and those criteria are currently under review and open for public comment. It is unclear if the proposed criteria will be changed or even adopted, but it is something the City should continue to monitor.

E. COMMUNITY BASED PLANNING

- FYRA has reviewed and commented on the City's TAT/WAC members. It is our understanding that the member lists are final.
- Two presentations (one each for the TAT and WAC) are under development that will provide current project tasks, historic and current lake and watershed conditions, a definition of committee member roles and will gather input from committee members on problem definition and project goals.
- FYRA suggests that both committee meetings be scheduled for the same day, with the WAC in the afternoon and the TAT in the evening.
- Proposed meeting date: March 7, 2017

F. NEXT MONTH'S PROJECT TASKS

- Finish presentations for TAT and WAC meetings.
- Conduct TAT and WAC meetings.
- Incorporate committee feedback into project tasks.

- Continue data gap analysis.
- Continue water budget/nutrient mass balance construction.
- Continue watershed inventory with focus on septic systems, farm ponds, conservation practices, unregistered feedlots.
- Begin assessing and quantifying pollutant loads to Lake Mitchell.