

Joint Rock Lake Committee Special Meeting Agenda-Amended

For: Thursday, August 31, 2023, at 5:15 pm.

Location: Lake Mills City Hall Bldg. / 200 Water St. / Community Room

1) Call to Order

Notice posted at Town Hall and the Town of Lake Mills website.

2) Adopt the agenda.

3) There will be no formal public comment.

4) AMENDMENT: Presentation by City Manager, Drake Daily regarding the evaluation of the dam on Rock Lake.

5) Old Business

- a. Discuss/Decide on changes to the draft recommendations/options as voted on August 10th
- b. Discuss/Decide the draft Kevin L. prepared for us.
- c. Discuss/Decide the date we will present our recommendation/options to the City Council

6) Adjourn

Next meeting September 14th at 6:00

Town Board and Plan Commission and City Council members may attend for informational purposes. Anything added to the agenda will be posted in the Town by the Friday before the meeting date or by the required time per state statute.

Wendy Catalani-Davies, Joint Rock Lake Committee Chairperson

Amended August 30, 2023 12:00pm



WORK ORDER/SERVICE REPORT

EMPLOYEE NAME: **Luke Grubbs**

SERVICE REQUESTED BY:
<i>Eric Schreiner</i> <i>City of Lake Mills</i>

SERVICE LOCATION:
Lake Mills Dam 129 S Main St. Lake Mills, WI 53551

DATE SERVICE REQUESTED:
7/27/2023

DATE(S) SERVICE PERFORMED:
8/15/2023

PURPOSE AND NATURE OF SERVICE REQUEST:

Customer requested on-site service by IPS to evaluate the performance of the control system operating the Lake Mills dam.

FINDINGS

- Panel heater (used for anti-condensation in panel during cold season) was checked and determined to be in good working condition.
- PLC system clock (date/time) was checked and found to be the correct date and within 10 minutes of current time. Correct date/time is important so that the system transitions between seasonal lake level setpoints on the correct dates/times. System was in its summer mode as expected.
- Submersible level transducer was pulled from stilling well and checked at atmospheric pressure (net zero pressure condition) and found to have correct zero reading.
- Submersible level transducer was placed back into stilling well and lake level reading in PLC was checked against lake level as measured via surveying equipment. PLC reading was found to be about a tenth of a foot higher than actual lake level. This is believed to be due to transducer measurement drift. See REMEDIAL ACTIONS below.
- Gate min and max position readings were checked in the PLC against measurements taken using surveying equipment and no meaningful measurement drift was found in the gate position feedback.

REMEDIAL ACTIONS

- Submersible level transducer scaling in PLC was adjusted by a tenth of a foot to bring control system measurement in line with surveying measurement.
- PLC program was adjusted to evaluate and adjust gate position more frequently (checks and adjusts at 30-minute intervals versus hourly intervals previously). This will make system more responsive to changes in lake level.

RECOMMENDATIONS

- Replace desiccant for submersible level transducer equalization line annually. Replacement desiccant was placed on order and shipped to Eric Schreiner for installation.
- Evaluate system annually to check for and correct for any measurement drift associated with the submersible level transducer and/or gate position feedback.
- Consider an alternative technology for monitoring lake level if submersible level transducer fails or if drift between evaluation intervals becomes severe.

City of Lake Mills Dam Evaluation

8-29-23

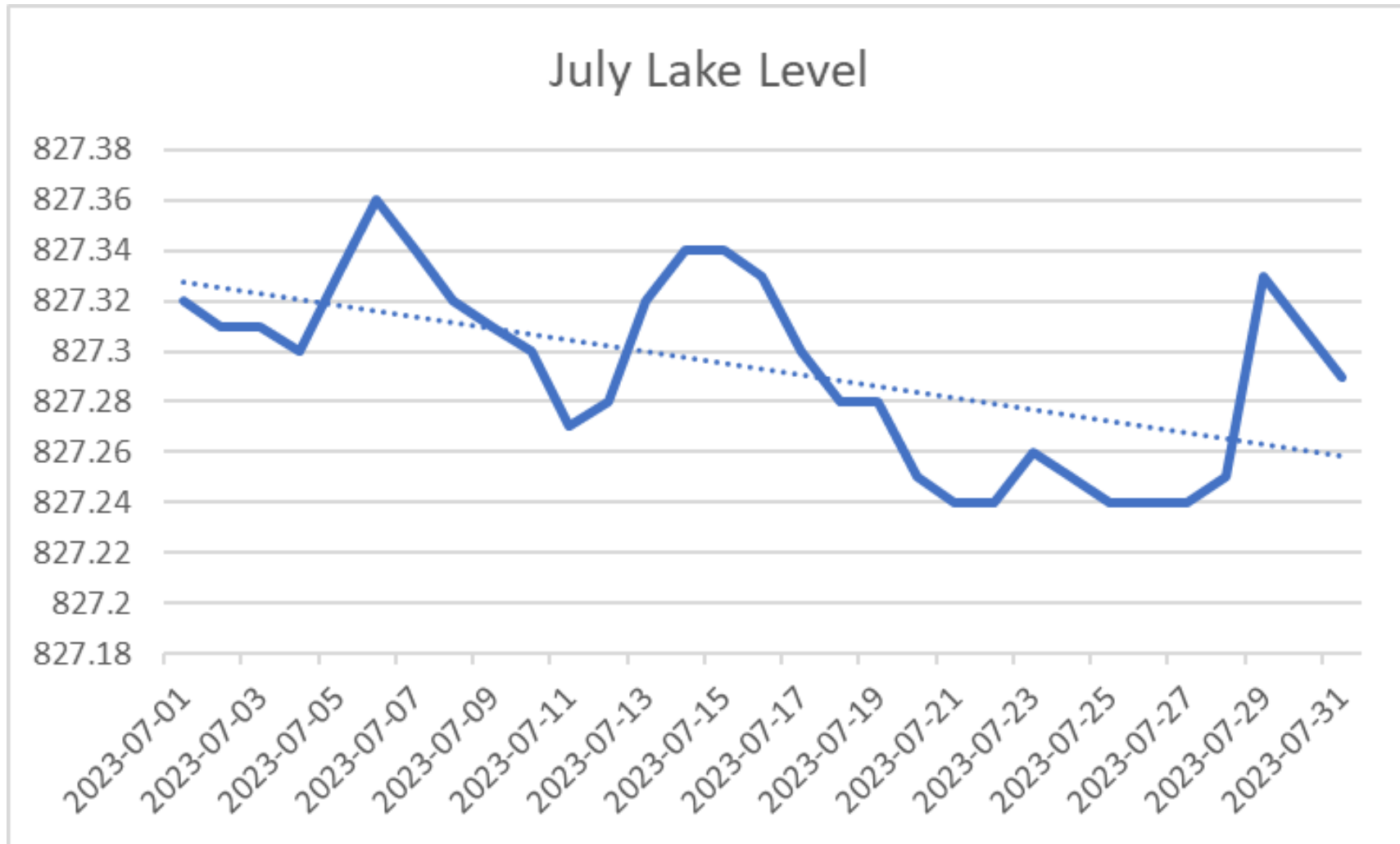
Current Conditions (as of 8-28-23)

- City's Goal: Compliance with DNR Order
- Dam Has Operated in Manual Mode Since 8/1/23
 - Top Weir set approximately 6 inches above current lake level
 - Required Minimum Discharge provided below bottom weir
- Current Lake Level (8/28/23): 827.14
- Wastewater Treatment Plant NOAA Rain Gauge
 - April – July Precipitation: 9.37 inches (lowest since pre-2010)
 - Average Daily Flow at the Plant is only 0.55 MGD for the month of August
 - Significant Drought Conditions

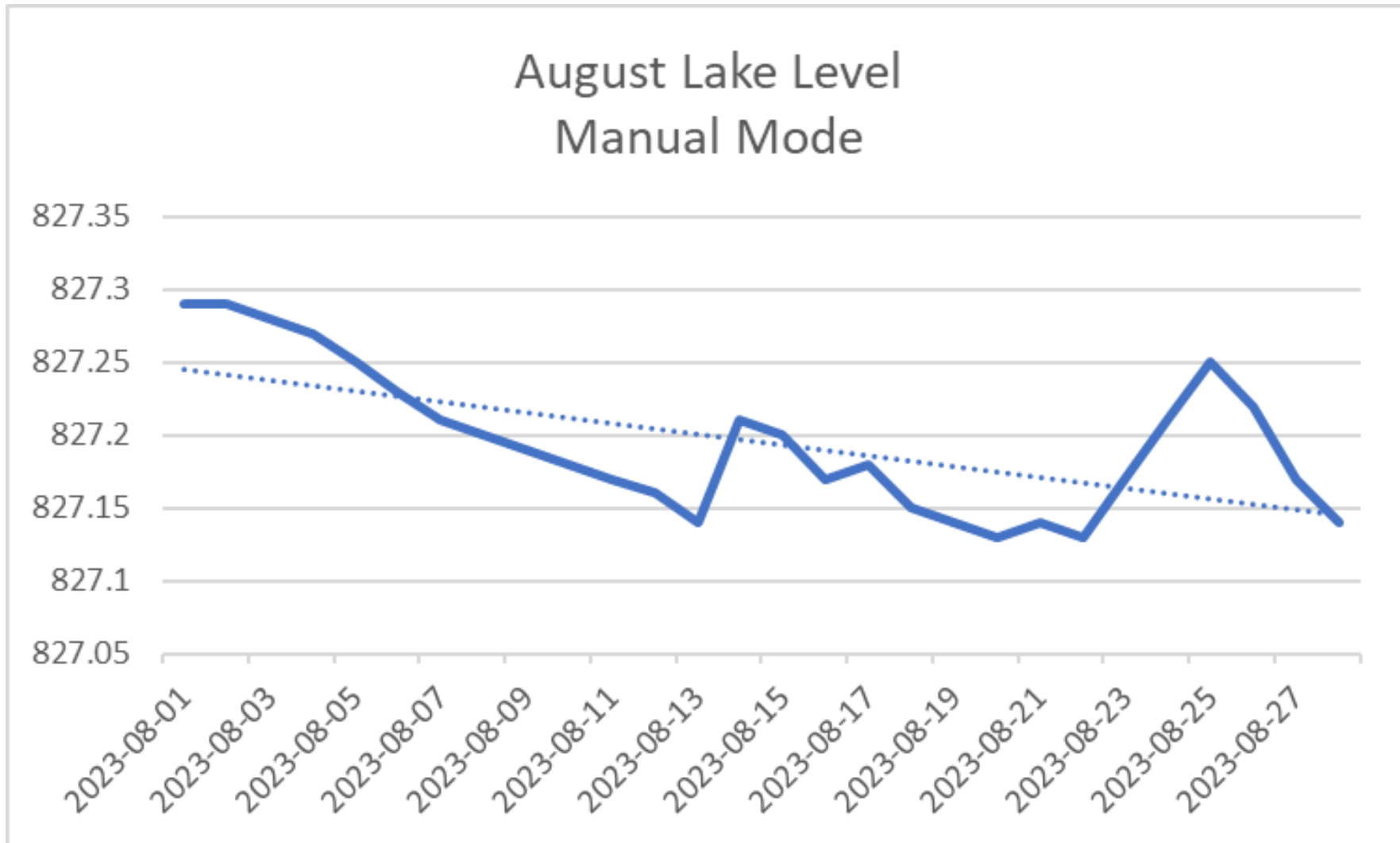
IPS Dam Inspection

- PLC System Clock was Evaluated
 - The date was correct, and the time was within 10 minutes of actual
- Submersible Level Transducer was Pulled from Stilling Well and Evaluated for atmospheric pressure
 - Produced a correct zero reading
- Submersible Level Transducer was Placed Into Stilling Well
 - Instrument Drift Detected: PLC Reading was approximately 1/10 of a foot higher than actual
 - Issue was resolved
- PLC Program was Adjusted to Evaluate and Adjust Gate Position More Frequently (30-minute intervals vs 60-minute intervals)
 - This results in quicker response time and weir adjustment for rainfall

July Lake Levels (Automatic Mode)



August Lake Levels (Manual Mode, bottom discharge only)



Case Study: Late August Rain Event

- On August 25th at 7 am, the lake level reached 827.28' following a rainfall
 - Highest Level Since August 5th and 0.04' off monthly high
- The Dam was in Manual Mode
 - No Water Was Passing Over the Dam. Sustained minimum DNR discharge requirement passing under bottom weir
- By August 28th at 1:30 am, the lake level fell to 827.14', a 0.14' (1.7'') drop.
- For the Dam to have been responsible for this reduction, 35 (cfs) cubic feet of water per second would have needed to pass through the dam for 66 consecutive hours
 - The discharge 6'x4' box culvert pipe downstream of the dam would have had water approximately a foot deep and traveling at a velocity of 6.5 feet per second for 66 hours

Conclusions

- The Dam is Operating as intended
- Minor Instrument Drift Has Been Remedied
- IPS will conduct inspections on transducer and PLC's in the future
- Gate Adjustment Frequency has Been Increased
- The End of August shows that passage through the dam cannot explain the drop in water levels
- Lake Levels Continue to Decrease Whether Dam Operates in Automatic or Manual Mode
 - Why? Potential Explanation: Due to drought conditions, the hydrology may have shifted – The Lake is feeding Groundwater rather than Groundwater sustaining the Lake levels.