

Allegan County Water Study Workgroup

Meeting Minutes

Wednesday, April 17, 2024 2:00 pm

Member Name	Group	Attendance	Notes
Dean Kapenga	County Commission	Present	
Chad Kraai	Well Driller	Absent	
Brian Talsma	Conservation District	Absent	
Doug Sweeris	Municipal Water Supply	Present	
Ruth Kline	MSU Extension	Online	
Brad Lubbers	Agriculture	Present	
John "Ric" Curtis	Community	Present	
Liz Binoniemi-Smith	Tribal	Absent	
Jaclyn Hulst	Community	Present	
Tom Kunetz	Community	Present	
Zachary Curtis	Consultant	Online	

Guests and staff: In Person: Randy Rapp, Jill Dunham, Carol Doring
Zoom: John Yellich, Coco Soodek, Kathy Dwyer, Abby G, Emily W, Bridget B, Ashley F, Evangelina MGS, Kevin Kellow Allegan Resident, Nathan Erber, Paul Elzinga resident, Tanya DeOliveria W&W

Next meeting: May 1

I. Approval of Agenda

- A. Agenda approved

II. Action Items from previous meeting

- A. For any Red Zones not covered, Randy to check with MGS if they intend to install any of these wells in 2024, or the County needs to proceed the advertise for bids for wells on County property, and coordinate with LGUs to have well drilled on their property. Yellich is still compiling the list of wells they will drill in 2024. – **DONE**
- B. Zach will update the target Monitoring well map based on groundwater demand projection and provide to Randy to give to John Yellich. **DONE**
- C. Randy will contact John Yellich - **DONE**
 1. Confirm the well monitoring equipment installation plan.
 2. Confirm which locations will be done by MGS, once Randy supplies the updated monitoring well target locations.

- D. Workgroup members to send feedback on the draft to Tom Kunetz. **DONE**
- E. Tom Kunetz will provide input for an Executive Summary for the presentation. **DONE**
- F. Jill will send the RSVP link to the GWS workgroup members for their RSVP. **DONE**
- G. Jill will call each LGU to follow up on the cards and capture RSVP info. **IN PROCESS**
- H. Jill will schedule a meeting with Rob, Randy, Tom, Valdis and John Yellich meeting to review Monitoring Wells. **DONE**

III. Discussion

- A. **Groundwater Protection Strategy Workshop Update (Kunetz/Tanya/Dunham)**
 - 1. Tanya reviewed the April 23rd draft presentation - see attached
 - 2. Tom will provide Maleah with the speakers for Opening Remarks. Chairman Jim Storey would like to speak.
 - 3. 11 municipalities have RSVP.
- B. **Calkins Bridge Dam Area Groundwater Availability Presentation (Z. Curtis)**
 - 1. Presentation by Zach - see attached presentation
 - 2. Questions from several members of the public.
- C. **Monitoring Wells Update (Rapp)**
 - 1. Meeting on Friday to review MGS and AC well locations to finalize list with John Yellich.
- D. **Private Well Assistance Program (Rapp)**
 - 1. Randy has reviewed the latest ACCF proposal with Rob. Jill will schedule a meeting with ACCF to review the feedback.

IV. New Action Items

- A. Jill will schedule a meeting with ACCF/CAAC to provide feedback on the current proposal.
- B. Tom will provide Maleah with speakers for Opening Remarks.

Meeting adjourned 3:30 p.m.

GROUNDWATER WORKSHOP #1

For municipal leaders of Allegan County

HOSTED BY
ALLEGAN
COUNTY



PRESENTED BY:
williams&works





**Thank
you all for
joining.**



4:15

Welcome & Overview of the Process

4:30

The ABC's of Groundwater

5:00

Areas of Concern and Water Quality Risk

5:20

Groundwater Use and Future Demand

5:45

Break / Dinner Served

6:15

Alleghen County Groundwater Research Q&A Panel

7:00

Small Group Brainstorming

7:25

Next Steps

Acknowledgements

We appreciate
your continued
support.



Board of Commissioners:

- Jim Storey, Chair
- Dean Kapenga, Vice-Chair
- Bob Genetski, County Clerk-Register
- Robert J. Sarro, County Administrator

Groundwater Work Study Group:

- Tom Kunetz, Chair, Community Representative
- Elizabeth Binoniemi-Smith, Tribal Representative
- John Curtis, Community Representative
- Zachary Curtis, Consultant
- Jaclyn Hulst, Community Representative
- Dean Kapenga, County Commissioner Representative
- Ruth Kline-Robach, Academic Representative
- Chad Kraai, Well Driller
- Brad Lubbers, Agricultural Representative
- Brian Talsma, Conservation District Representative
- Doug Sweeris, Municipal Water Supply Representative

Meet our Speakers

Randy Rapp, RS,
Allegan County Health
Department
HEALTH SERVICES
MANAGER



Dan Whalen, PE,
Williams & Works
HYDROGEOLOGICAL
ENGINEER



Maleah Rakestraw, PLA,
Williams & Works
MEETING FACILITATOR



Jill Dunham, Allegan
County Health
Department
PROJECT MANAGER



Zachary Curtis, Ph.D.,
Hydrosimulatics Inc.
HYDROGEOLOGIST



2019

2020

2021

Allegan County hosts an informational groundwater meeting to share the results of the Ottawa County Groundwater Study.

The Phase 1 Groundwater Study is initiated to assess the general health of the groundwater resource.

The Phase 1 Study is completed and findings are presented to the Allegan County Health Department and Board of Commissioners.



2022

2023

2024

The Ad-Hoc Groundwater Study Workgroup is established.

The Phase 2 Study is completed and results are presented to the Workgroup and Board of Commissioners.

A Groundwater Assessment Report (GAR) is drafted as part of the County's Groundwater Strategic Plan process.

The Phase 2 Groundwater Study is initiated to identify sites of contamination.

Efforts to conduct a Groundwater Strategic Plan kick-off.



The GAR

GROUNDWATER ASSESSMENT REPORT

Filled knowledge gaps from the Phase 1 & Phase 2 Studies:

- Expanded the Groundwater Protection Area Delineation
- Identified the types of contamination for the previously identified sites of concern
- Assigned values for site risks to drinking water



The GAR

GROUNDWATER ASSESSMENT REPORT

Provided new research:

- Developed a county-wide Groundwater Risk Map
- Projected groundwater demand & future use

All GAR information is presented in a digestible and user-friendly report.



Calkins Bridge Dam Removal – Implications for Nearby Groundwater Wells and a Screening-Level Review of Available Data

Prepared by
Hydrosimulatics Inc.

On behalf of:
Lake Allegan Association, Inc.

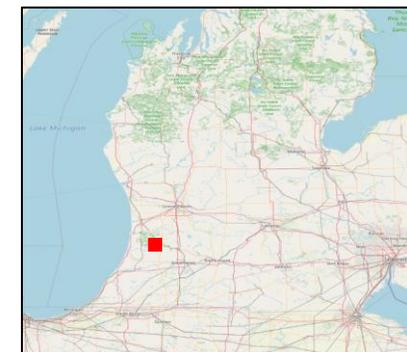
Allegan County Work Group Meeting
April 17, 2024



Background

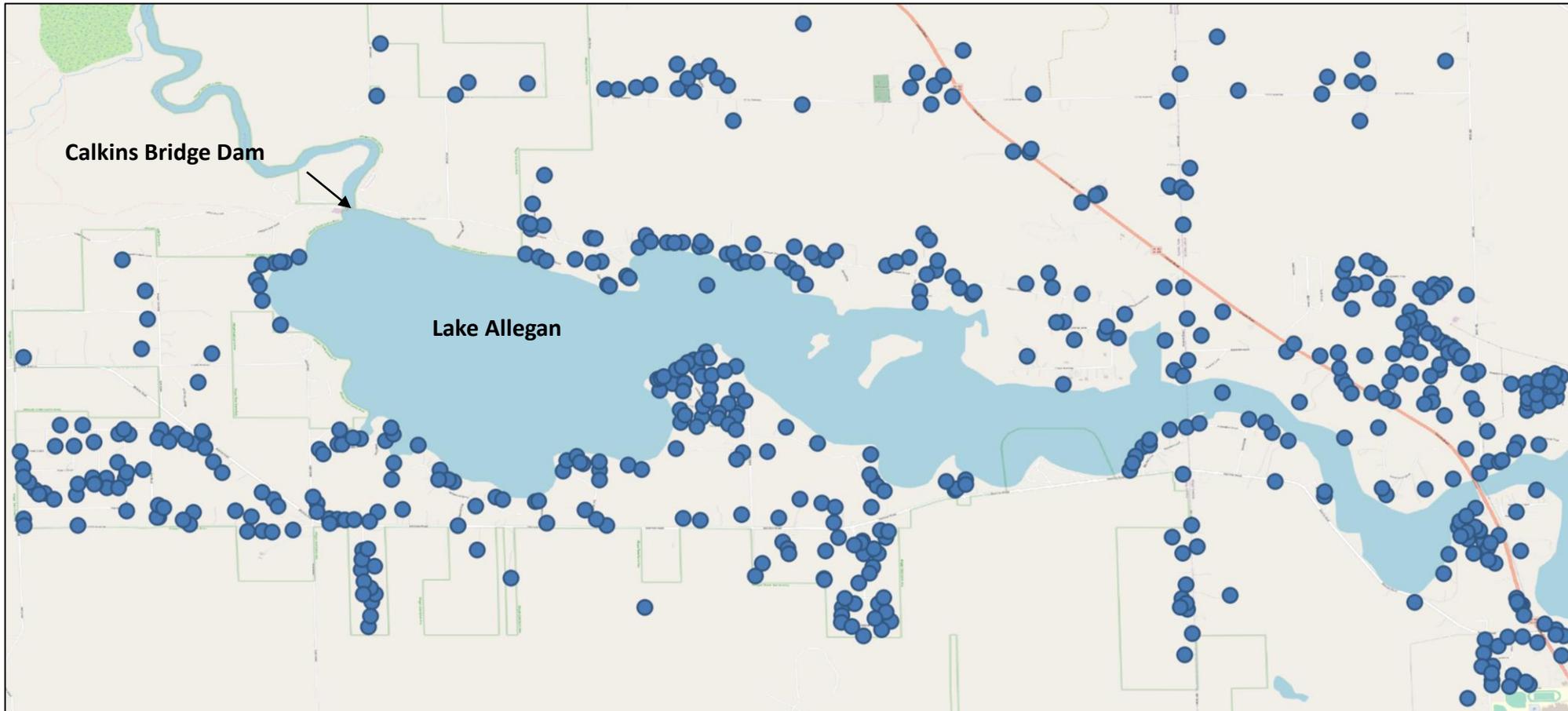


Removal of Calkins
Bridge Dam under
consideration



Satellite imagery and statewide roadmap layer from: OpenStreetMap ©
*Unless otherwise noted, these layers are the ones used hereafter

Background



Impact on the lakeside water wells?

● Water Wells (Welogic)

*567 wells pulled Dec. 2023

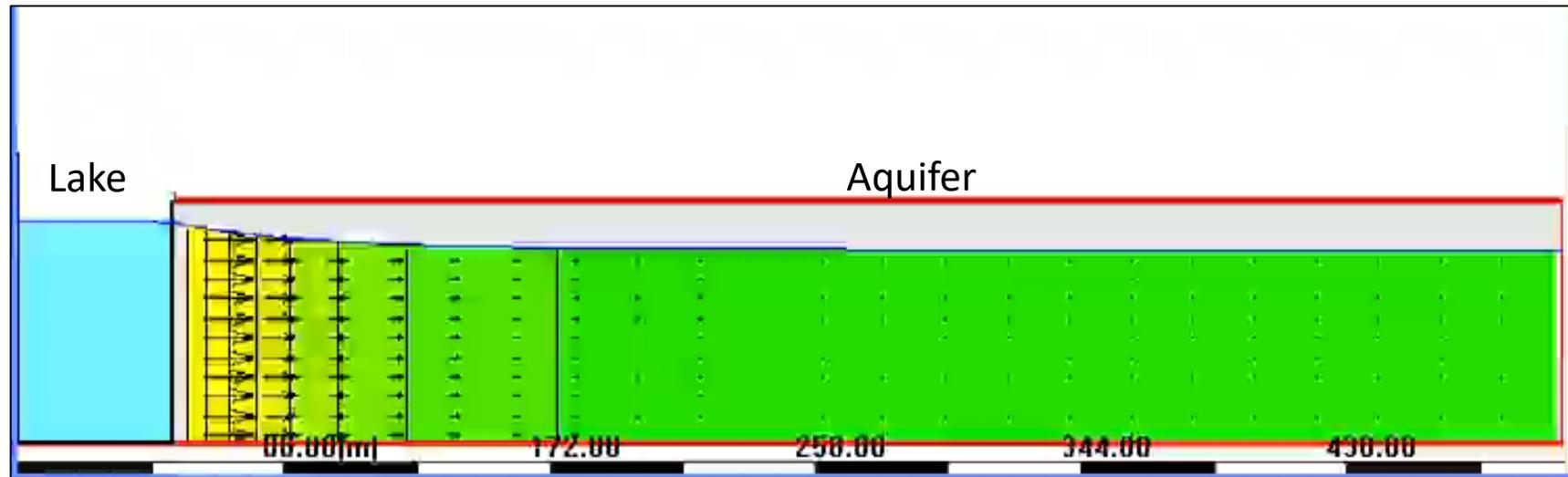
Water well locations and attributes (associated information) were acquired from the *Welogic* database maintained by the Michigan Department of Environment, Great Lakes, and Energy (EGLE):

<https://www.egle.state.mi.us/welogic/Login.aspx?ReturnUrl=%2fwelogic%2f>

Hydrologic Implications of Dam Removal

Removing the dam => surface water level to “drop” (decline).

A drop in surface water levels => groundwater levels near the lake also drop.



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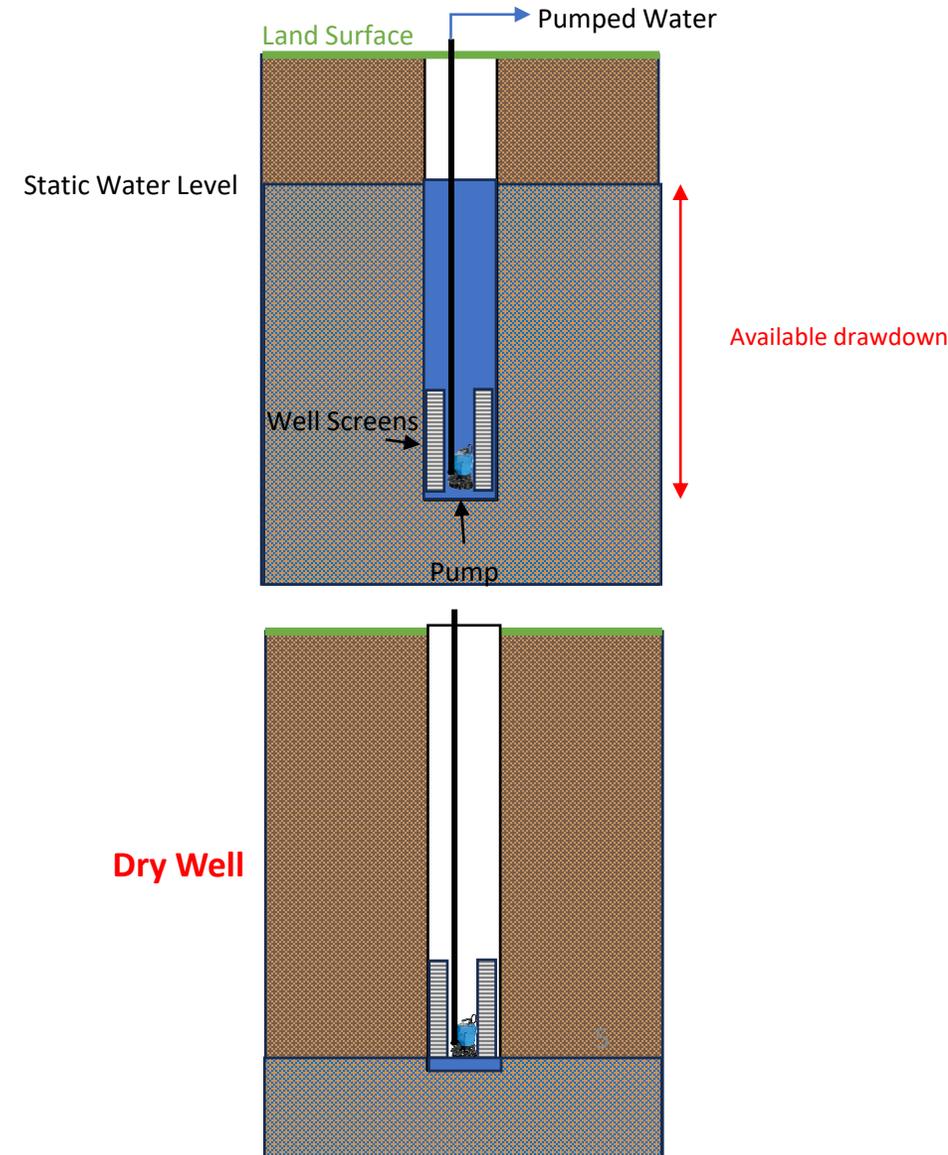
A drop in surface water levels => groundwater levels near the lake also drop.

Will wells go “dry”? It depends on:

- how much surface water levels would drop if the lake is converted to a river
- where (vertically) the well pumps are located relative to the current static water level...[available drawdown]

Also depends on:

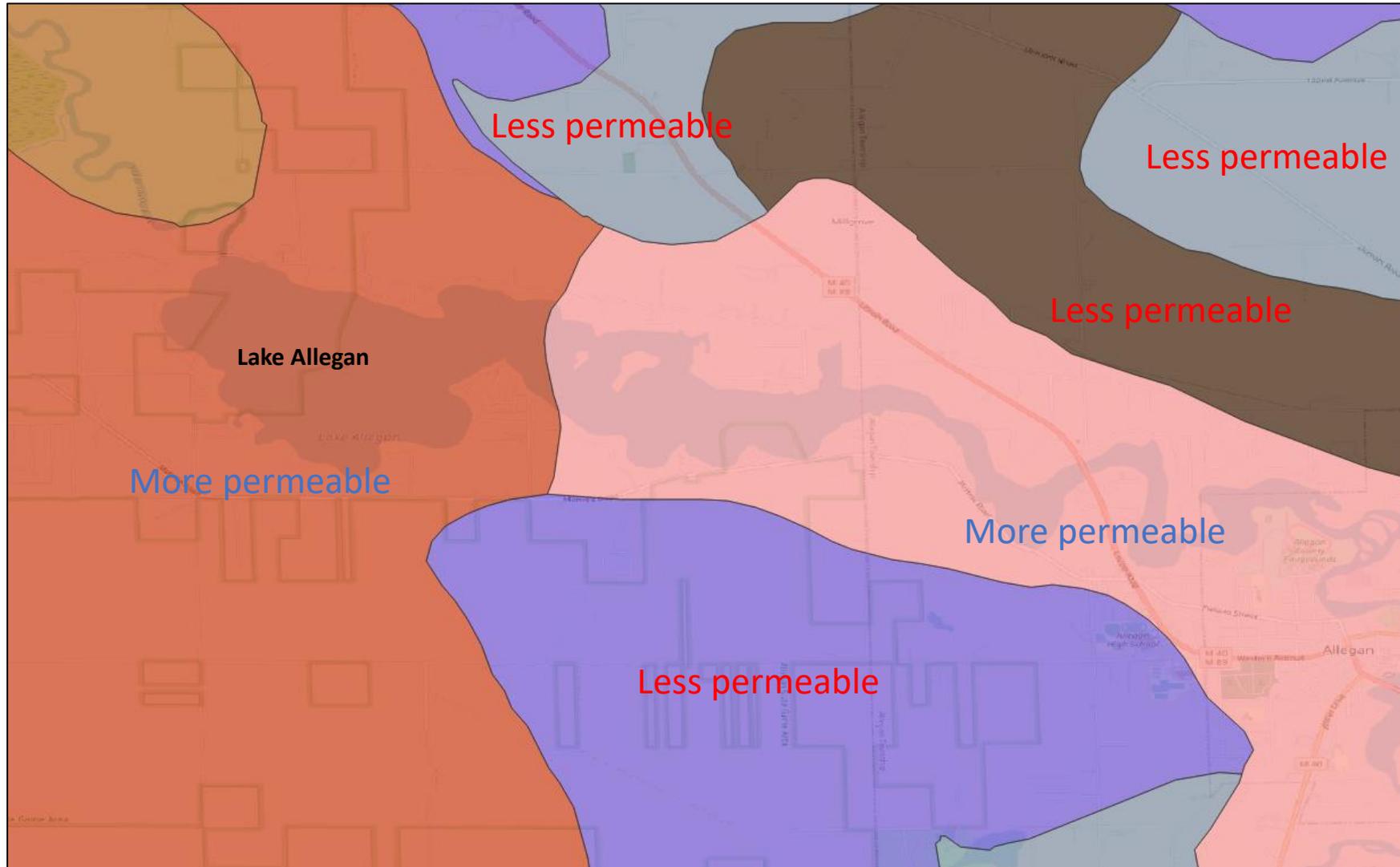
- how well-connected the lake/river is to the aquifer
 - more connected means more groundwater level drop
- The permeability of the aquifer
 - A more permeable aquifer generally means a further propagation distance
- Distance of wells from the water’s edge
 - Wells closest will exhibit largest changes



Screening-Level Analysis Using Existing Data

- Review of hydrogeologic properties of the local aquifer
 - to better understand how permeable the aquifer is, and how well connected the lake is to the aquifer.
- Analysis of available water well logs
 - to estimate the potential available drawdown (water column above the well screen and pump location)
- Analysis of upstream and downstream water elevations
 - to estimate the possible surface water level decline caused by dam removal
- Comparison of water level change and available drawdown
 - to characterize the risk of dry wells due to dam removal

Glacial Geology of Lake Allegan



Glacial Land System

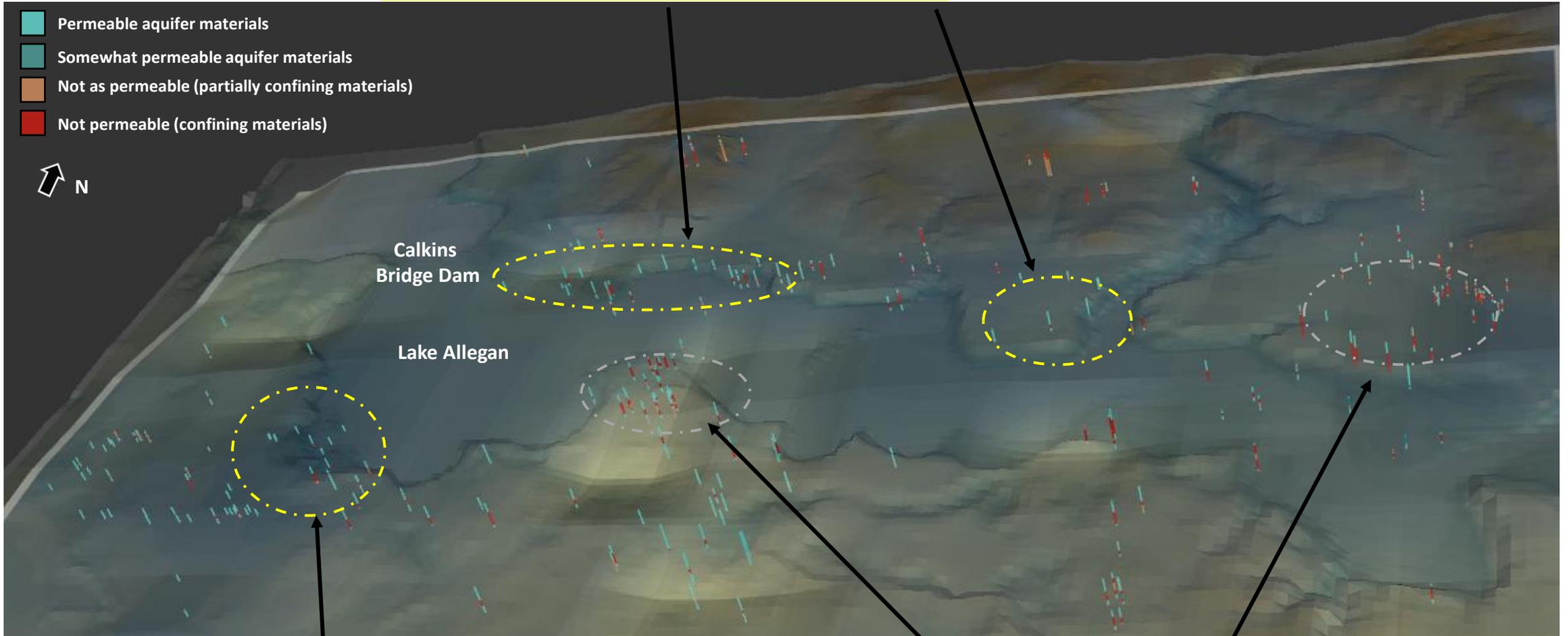
- Ice-contact Outwash
- Proglacial Outwash
- Lacustrine Coarse
- Lacustrine Fine
- Lodge Till / Fine Supraglacial Drift
- Ice-Marginal Till

Based on Regional Geology:

- aquifer permeability => relatively high
- lake and aquifer => well-connected.

Borehole Lithologies Near Lake Allegan

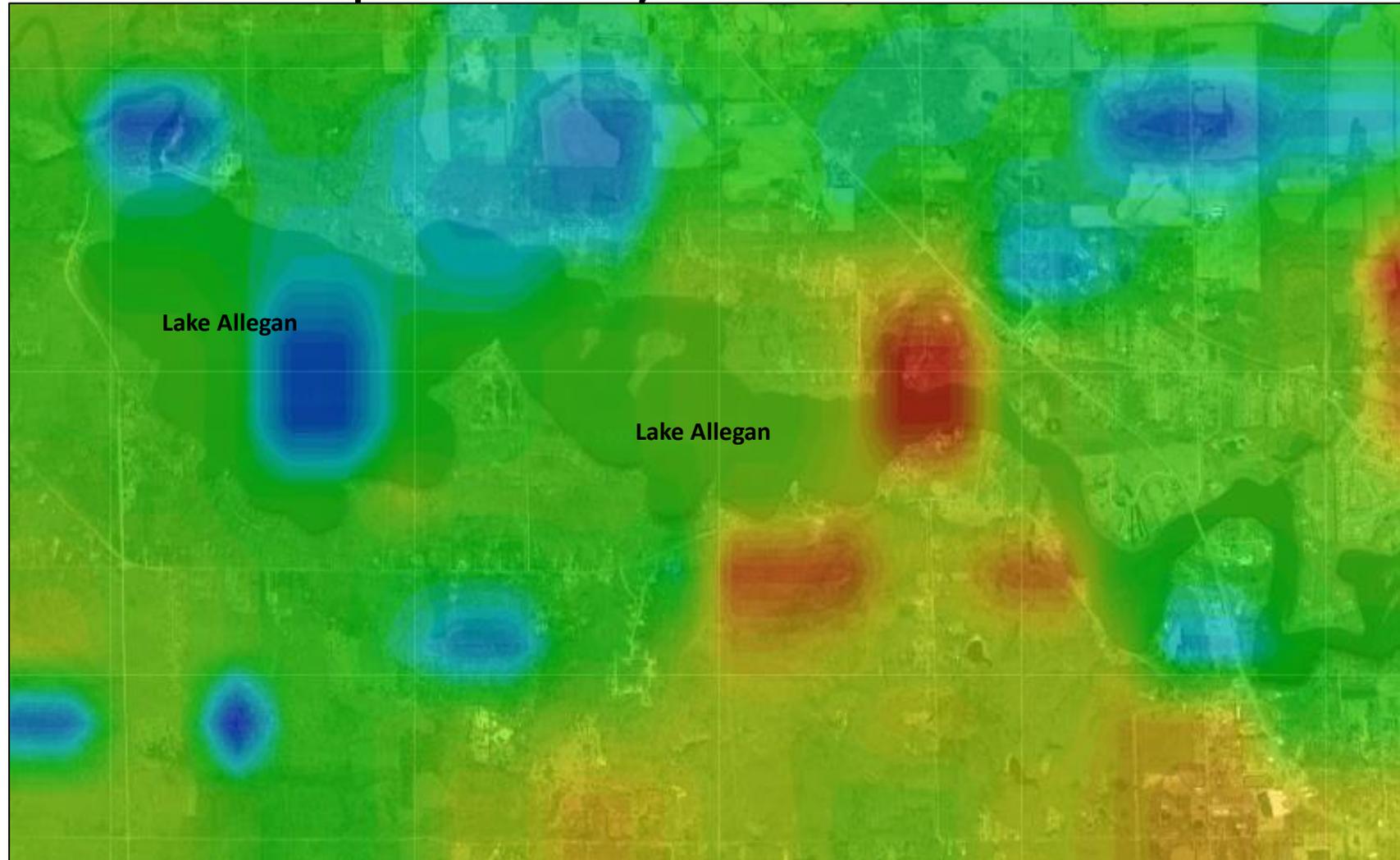
Shallow wells, next to Lake Allegan, in permeable area
=> more connected to the Lake, SWL reflects Lake level



Shallow wells, next to Lake Allegan, in permeable area
=> more connected to the Lake, SWL reflects Lake level

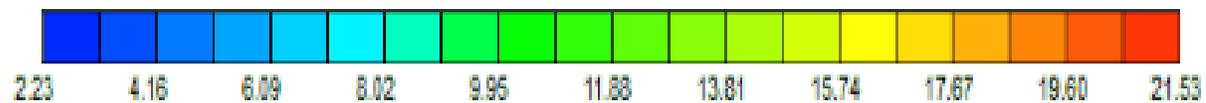
Shallow wells, next to Lake Allegan, but with some
confining materials, but no clear structure or layering

Aquifer Hydraulic Conductivity (K)

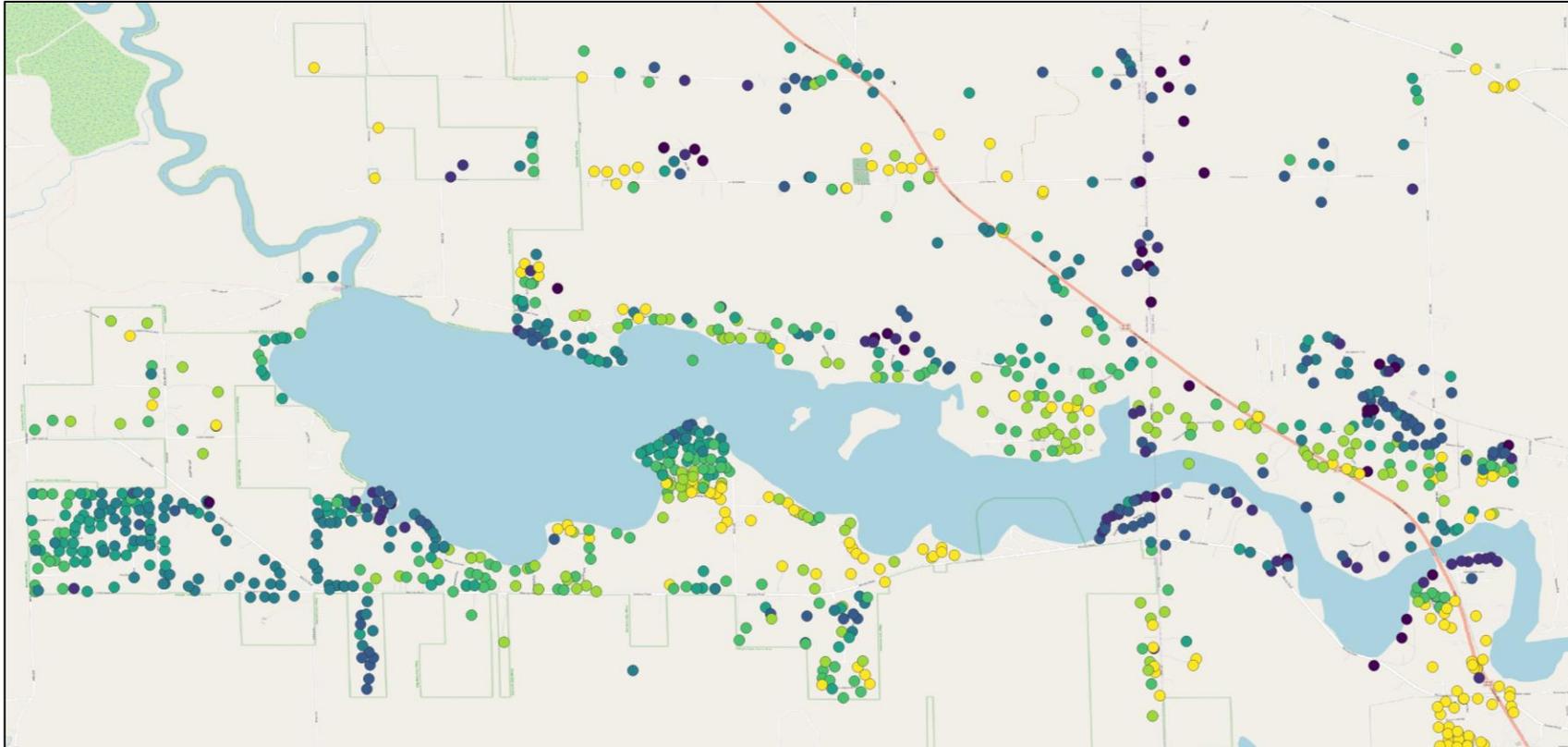


Aquifer under/around Lake Allegan => relatively high K

Aquifer Hydraulic Conductivity (m/d)



Water Wells Near Lake Allegan (Depth-to-water)



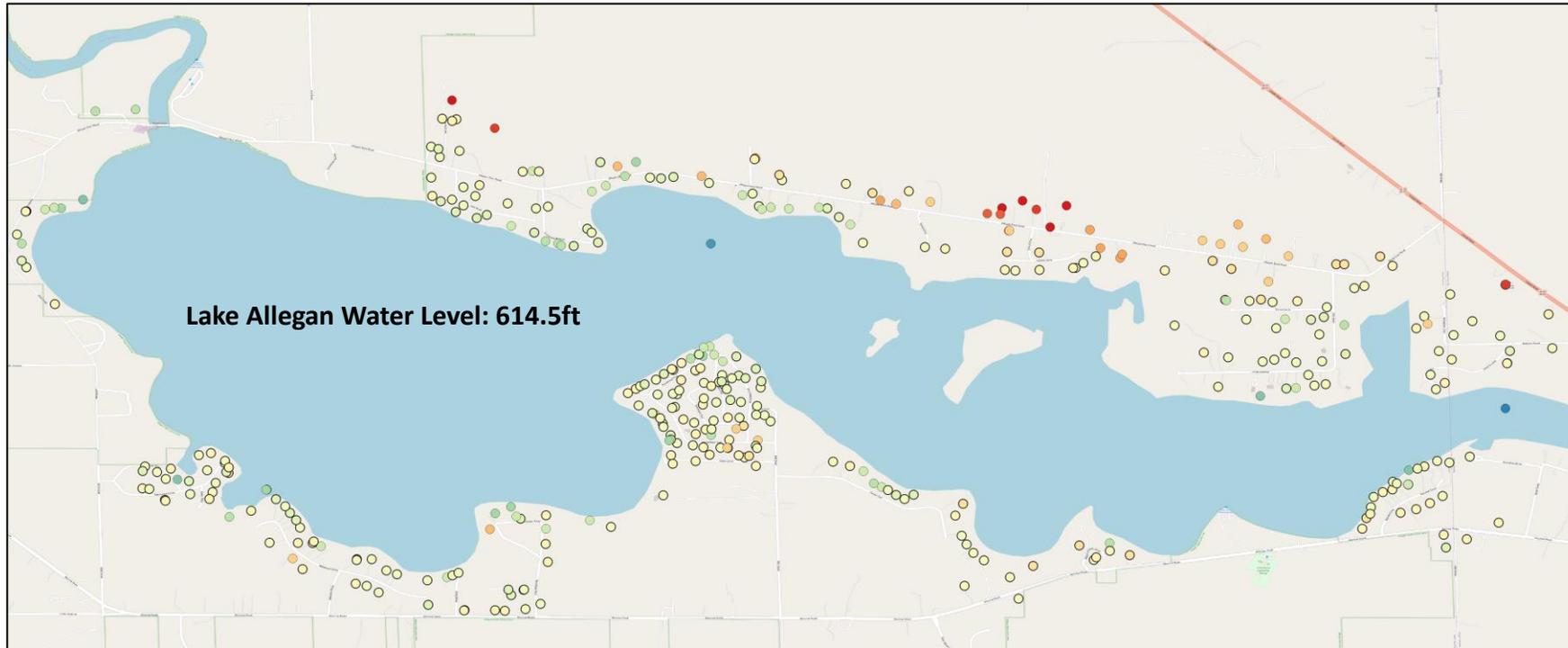
Significant number of wells with small (<20ft) depth-to-water (DTW)

Many wells right on “water’s edge” have <3ft

**Depth to
Static Water Level (ft)**

- 0 - 3
- 3 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 63+

Static Water Elevations Along Lake Allegan



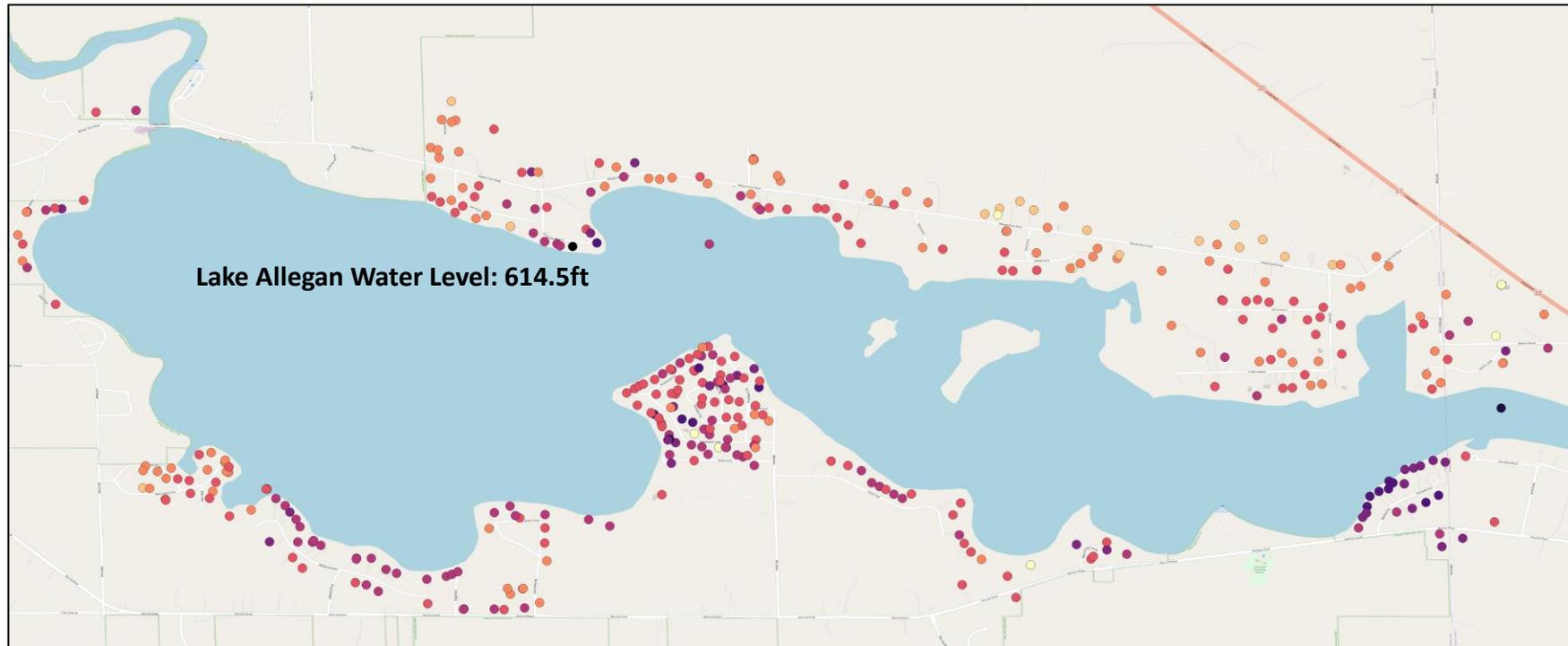
Significant number of wells with SWL close to Lake water level => aquifer and lake are well connected

Static Water Level (ft)

- 558 - 564
- 564 - 571
- 571 - 578
- 578 - 585
- 585 - 591
- 591 - 598
- 598 - 605
- 605 - 610
- 610 - 617
- 617 - 625
- 625 - 632
- 632 - 639
- 639 - 646
- 646 - 652
- 652 - 659
- 659 - 666
- 666 - 673
- 673 - 679

***385 wells**

Well Screen Elevations Along Lake Allegan

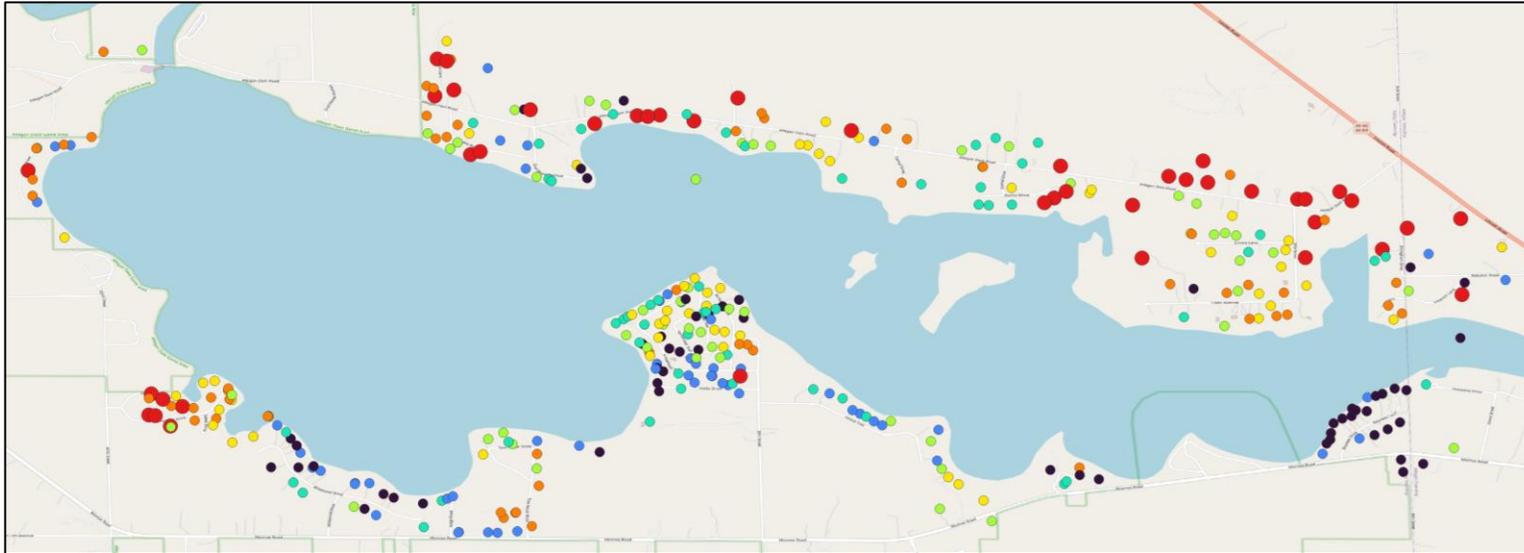


Significant number of wells that have screen top elevations that are less than 30ft below that current lake level

Screen Top Elevation (ft)

- 375 - 411
- 411 - 446
- 446 - 481
- 481 - 516
- 516 - 551
- 551 - 586
- 586 - 621
- 621 - 656
- 656 - 692

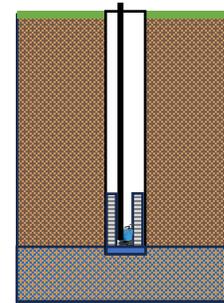
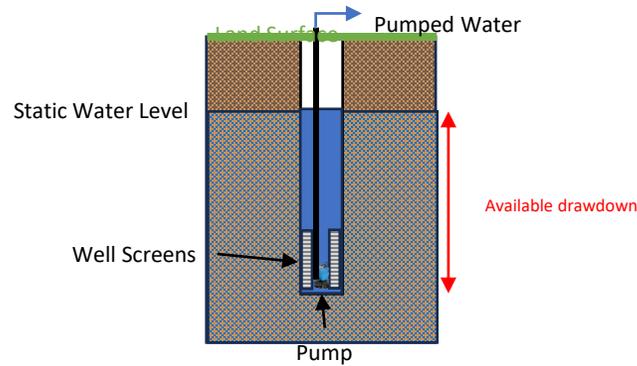
Available Drawdown Along Lake Allegan



Available Drawdown

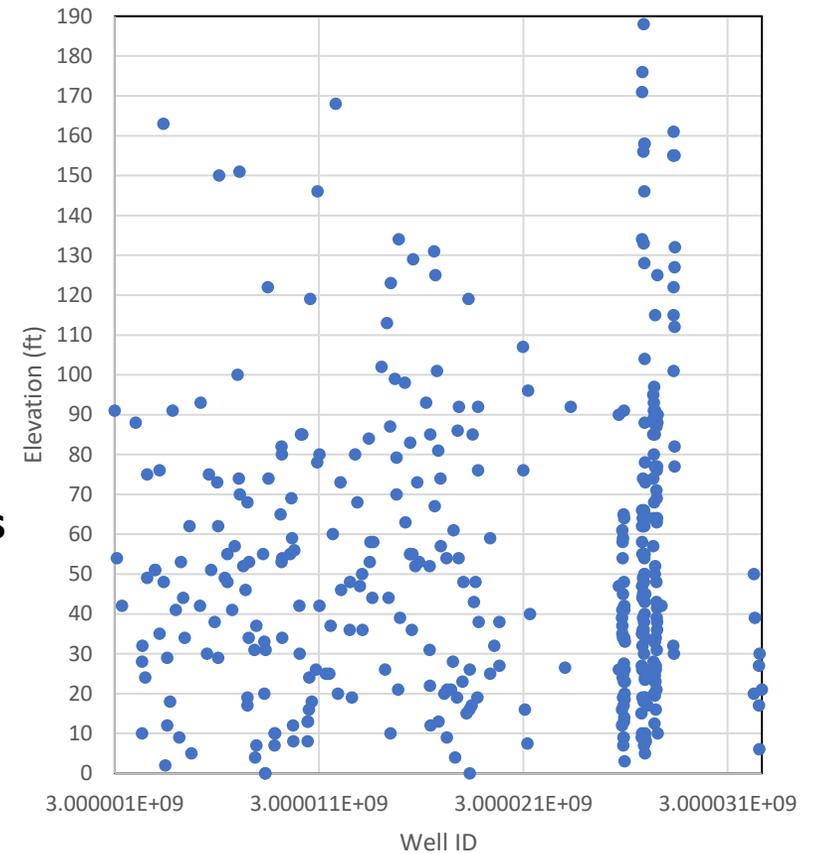
- 0 - 15.1
- 15.1 - 26.3
- 26.3 - 38.6
- 38.6 - 51.5
- 51.5 - 67.2
- 67.2 - 90.1
- 90.1 - 227.7

Significant number of wells whose available drawdown is less than the estimated lake level change due to dam removal

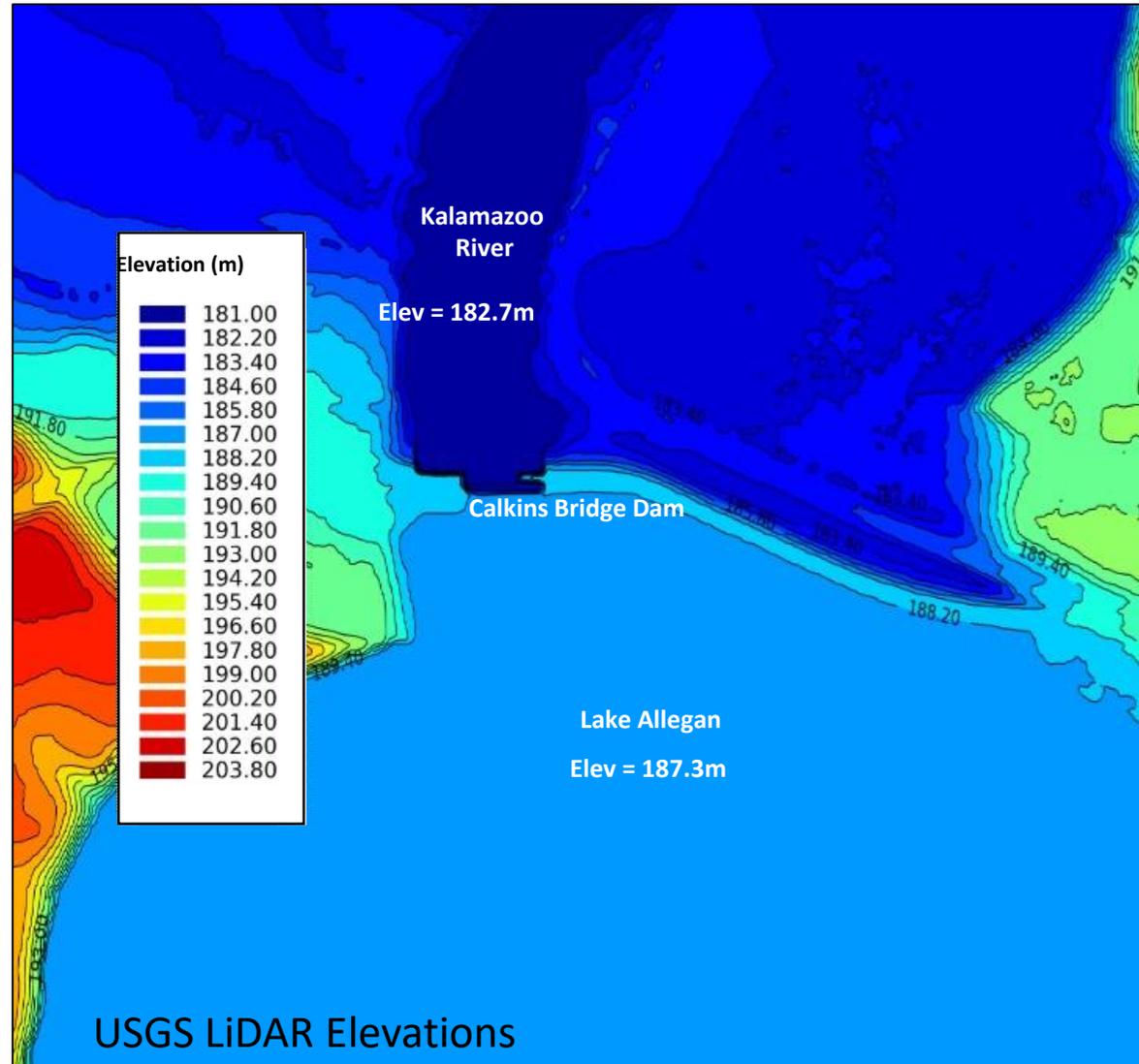


Dry Well
if water level drop is more than available drawdown

Available Drawdown (SWL Elevation minus ScreenTop Elevation)

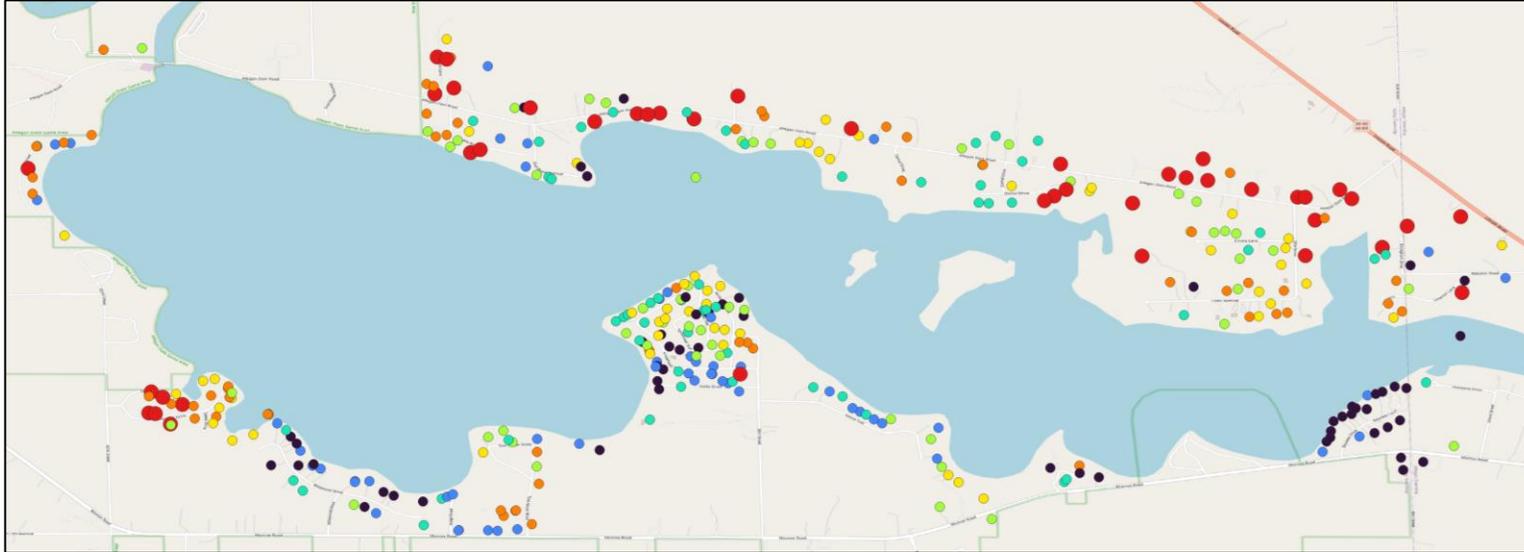


Expected Surface Water Level Drop Due to Dam Removal



The elevation difference (expected drop) based is about 4.6m (15.1ft).

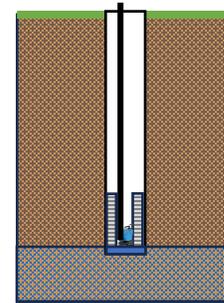
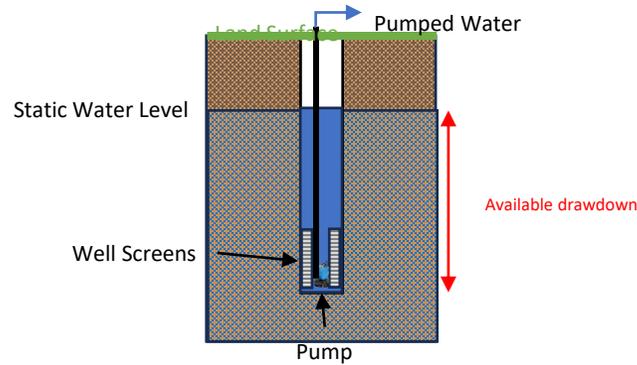
Implications for Nearby Water Wells



Available Drawdown

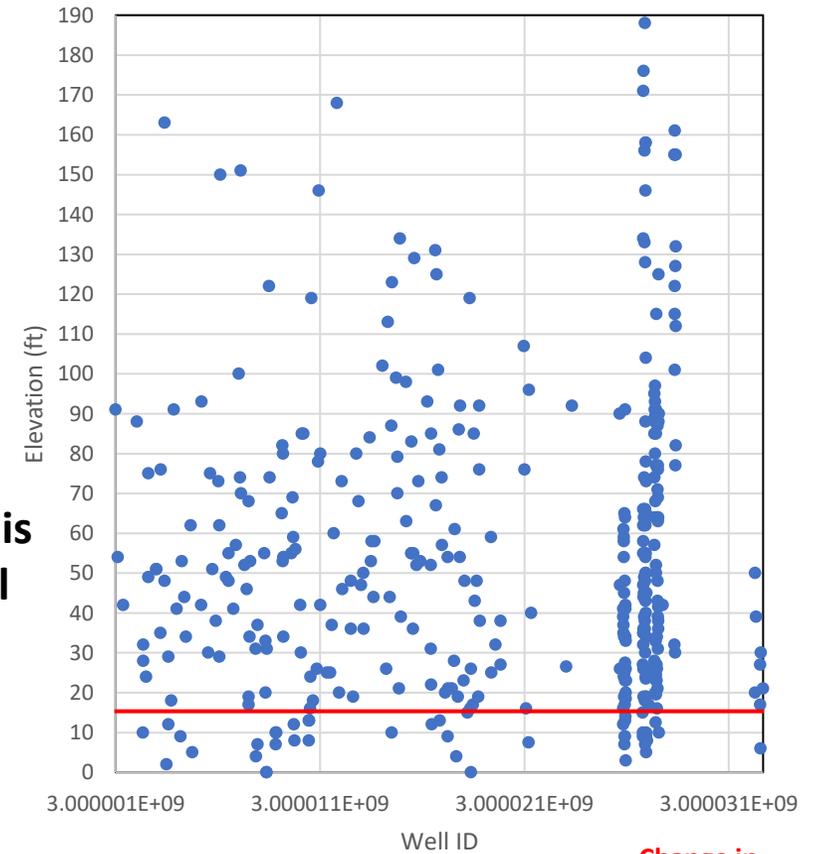
- 0 - 15.1
- 15.1 - 26.3
- 26.3 - 38.6
- 38.6 - 51.5
- 51.5 - 67.2
- 67.2 - 90.1
- 90.1 - 227.7

Significant number of wells (30+) whose available drawdown is less than the estimated lake level change due to dam removal



**Dry Well
if available drawdown less than 15.1m**

Available Drawdown (SWL Elevation minus ScreenTop Elevation)



**Change in
Lake Level**

Conclusions

The local aquifer is expected to be relatively permeable and well-connected to Lake Allegan.

The relatively high aquifer permeability and strong lake-aquifer connection means:

- a) groundwater levels near the lake are likely to be very similar to the lake water elevation
- b) a drop in the surface water level will likely cause nearby SWL in groundwater wells to drop;
and
- c) the likelihood of the surface water drop propagating further from the lake shoreline is higher.

The removal of the dam may cause surface water levels to decline as much as 15ft

The “available drawdown” (SWL in the well minus the pump/screen elevation) in a significant number of wells (30+) is less than the expected Lake Level decline.

When pumping occurs, there the water level in the well declines in response, and thus, the available drawdown (water column height above the pump/screen) is even less!