

Lake County General Health District

Evaluation and Maintenance of Private Water Systems

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Basic Types of Water Systems

- Drilled Well
- Dug Well
- Point Well
- Cistern
- Hauled Water Storage Tank
- Pond



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Access to Public Water



- Look for Fire Hydrants
- No state requirement to tie into city water if accessible
- BOH still has authority to issue orders to connect if water is unsafe
- Call water purveyor to determine water source
- Call LCGHD to determine current or past PWSs on site

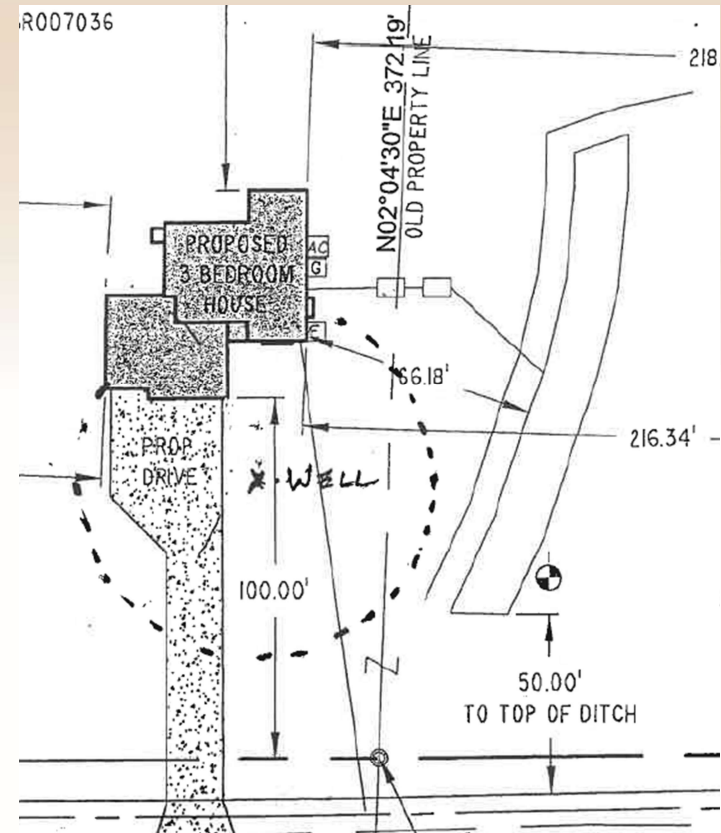


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Well Location Considerations

- Isolated from potential contamination sources
 - Home Sewage Treatment System (>50ft)
 - Propane Tank (>20ft)
 - Fuel Oil Tank (>50ft)
 - Pond (>25ft)



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Isolation Distances



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Private Water System Deficiencies

- Holes and cracks in casing
- Cracked or missing well caps
- Buried well casing
- Exposed Electrical Wiring
- Cap not secured to casing
- Unvented cap
- Cracked lid (safety)



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Photo credit: The Walking Dead



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Sealing Old Wells

- OAC: 3701-28-17(A) requires all private water systems that are not providing water for human consumption to be sealed or decommissioned.
- Plugs hole to prevent contamination of other wells/aquifer
- Unsealed dug wells are a serious safety hazard



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Can you spot all the issues?



Photo credit: Steve Wilson, Groundwater Hydrologist
Illinois State Water Survey at University of Illinois



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Not ideal...

- Posts are worn down...because it's a cow pasture! – Used as scratching posts (Feces, or cows could fall in)
- Does not prevent entry of snakes, rats, etc.
- Down grade from agricultural field – surface water/fertilizer contamination
- Safety hazard for humans
- Electrical hazard



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Contaminants of Concern

- **Total Coliform:** bacteria – indicator organism
 - Without disinfection, should be less than 5 CFU
 - With disinfection, should be 0 CFU
- **E coli:** one species of coliform bacteria; can cause illness
 - With and without disinfection, should be 0 CFU



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Contaminants of Concern [Cont.]

- **Nitrate:** chemical contaminant; presence indicates surface contamination – fertilizer
 - Babies are most sensitive: Blue Baby Syndrome
 - May be treated with reverse osmosis or ion exchange
- Several others that can be tested for upon request – Check lender requirements
 - Advance notice needed



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Contaminant - Solutions

- Well shocking
 - Recommended annually
 - Can be done by PWS contractor or Homeowner
- Treatment systems
 - Specific to contaminant
 - Reverse osmosis, ion exchange, continuous disinfection, filters, etc.
- Annual sampling recommended



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Disinfection Systems



- Chlorine & UV
 - Chlorine: Needs to supply disinfectant residual (0.4 mg/L)
 - UV - no residual – bulb intensity can decrease
- Using continuous disinfection to address poor sample results is NOT recommended
 - Look for the root cause of the problem first
- Sample port should be installed before and after treatment to allow assessment of treatment effectiveness



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Other Considerations

- Low-Yield Well (<5 gal/min)
 - Recommend additional water storage tanks
 - Minimum 300 gal, or 100 gal/bedroom (whichever is greater)
 - Contact a PWS contractor to pull an alteration permit
- Water treatment vs. water aesthetics
 - Softeners, filters, chlorinator/UV if not required



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Resources for Realtors & Homeowners

- Public Water Purveyor Contact Info
- LCGHD – Public Records Requests
- ODNR Well Log Search Tool
- OSU Water Interpretation Tool
- ODH Disinfection Instructions
- ODH PWS Contractor Listing



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ODNR Well Log Search Tool

- <https://apps.ohiodnr.gov/water/maptechs/wellogs/app/>
- Well Logs provide relevant information:
 - Type of Well (Drilled, Dug)
 - Date of installation
 - Depth of well and to water source
 - Sustainable Yield



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Well Log Search Home Page

[Home](#)[Well Log Search](#)[Well Log Filing](#)[Contact Us](#)

[County & Twp. Search](#)[Address Search](#)[Custom Data Search](#)[Map-based Search](#)[Radius Search](#)[Area Search](#)[Polygon Search](#)

Technical Services
[Well Log Filing](#)
[Well Log Searches](#)

Related Laws
[Ohio Law Related to this Program](#)



Water Well Log Search by County, Township and Road, or Log Number

NOTE:

- This service requires the use of JavaScript. If you are having trouble using this service please make sure that JavaScript has been turned on in your browser preferences.
- The well log database is **off-line every Sunday morning between 5:00 am and 8:00 am** for updates.

Quick Start Short Instructions (below) [Detailed instructions](#)

Highlight a county from the pull down list and click the "Submit County" button, or enter the Well Log number in the box below and click the "Submit Well Log Number" button.

Or you may request a [Custom Off-line Search](#) for Well Logs or Sealing Reports.

LAKE

Submit County

-- OR --

Enter ODNR Well Log Number

Submit Well Log Number




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Search by Township or Road

[Home](#)[Well Log Search](#)[Well Log Filing](#)[Contact Us](#)

[Technical Services](#)[Well Log Filing](#)[Well Log Searches](#)


[Related Laws](#)[Ohio Law Related to this Program](#)



[County & Twp. Search](#)[Address Search](#)[Custom Data Search](#)[Map-based Search](#)[Radius Search](#)[Area Search](#)[Polygon Search](#)

Search By a Township or A Road

Highlight the township that the well is located in and click on the "Submit Township" button. If you are unsure of the township, you can select the first letter or number of the street name on which the well is located at the bottom of this page. For example, if you are interested in well logs on State Route 21, click on the number "2". The historical Township boundaries are still used by the Division of Water.

<Select Township> 

[Township Boundary Maps](#)
(If uncertain of the township, click the link above.
These boundaries are matched to DNR well log filing system)

Submit Township

- OR -

Select the first letter or number of a Road within **LAKE** county

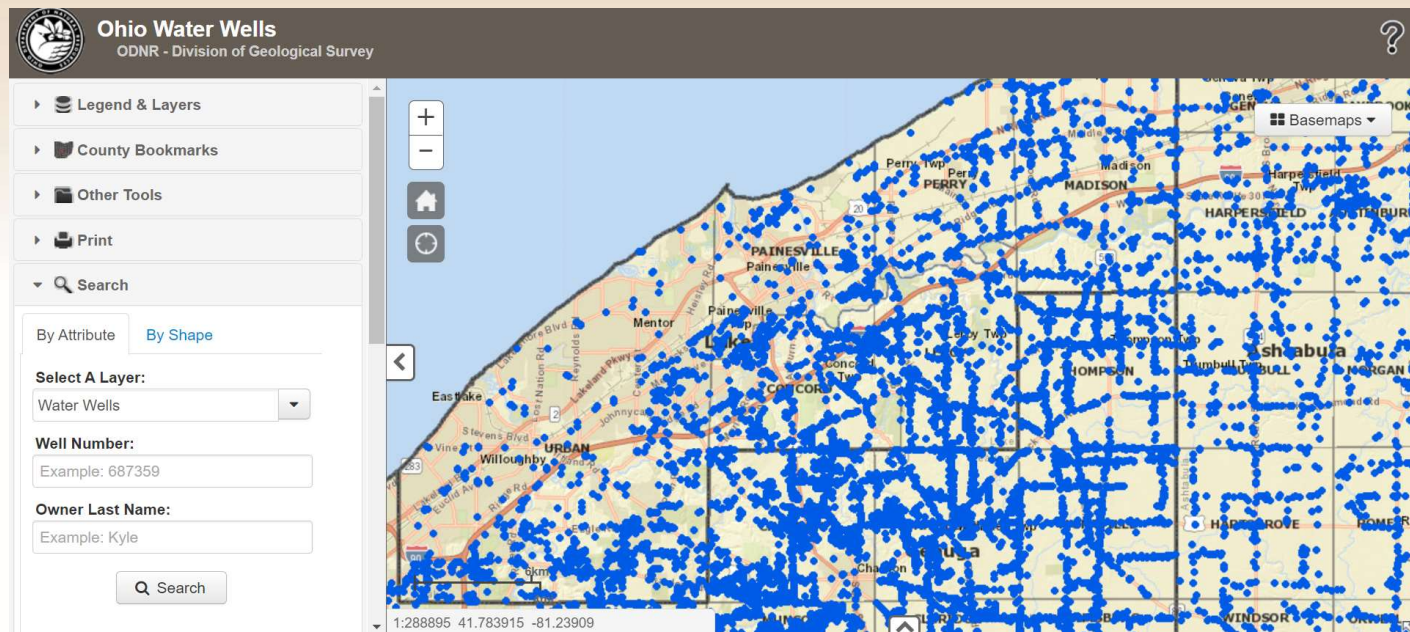
[A][B][C][D][E][F][G][H][I][J][K][L][M][N][O][P][Q][R][S][T][U][V][W][X][Y][Z]
[0][1][2][3][4][5][6][7][8][9]

[Contact Us](#) - [Website comments/questions](#) - [DNR web policy statements](#)



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Map-Based Search



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Well Log Interpretation

DNR 7802.15e

WELL LOG AND DRILLING REPORT
Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number
2087423

Page 1 of 1 for this record.

WELL LOCATION		CONSTRUCTION DETAILS																																				
County <u>LAKE</u>	Township <u>LEROY</u>	Drilling Method: <u>ROTARY</u>																																				
Owner/Builder <u>ADAM & ANGELA GIGIOTTI</u>		BOREHOLE/CASING (Measured from ground surface)																																				
Address of Well Location <u>14072 RADCLIFFE</u>		1 Borehole Diameter <u>9.875</u> inches Depth <u>78</u> ft.																																				
City <u>LEROY</u> Zip Code <u>+4</u>		Casing Diameter <u>6.625</u> in. Length <u>80</u> ft. Thickness <u>0.316</u> in.																																				
Permit No. <u>2021540941</u> Section: _____ and/or Lot No. _____		2 Borehole Diameter <u>5.75</u> inches Depth <u>200</u> ft.																																				
Use of Well <u>DOMESTIC</u>		Casing Diameter _____ in. Length _____ ft. Thickness _____ in.																																				
Coordinates of Well (Use only one of the below coordinate systems)		Casing Height Above Ground <u>2</u> ft.																																				
State Plane Coordinates		Type { 1: <u>PVC</u>																																				
N <input type="checkbox"/> X _____ +/- _____ ft.		Joints { 1: <u>O-ring</u>																																				
S <input type="checkbox"/> Y _____ +/- _____ ft.		2: _____																																				
Latitude, Longitude Coordinates		SCREEN																																				
Latitude: <u>41.641731</u> Longitude: <u>-81.132153</u>		Diameter _____ in. Slot Size _____ in. Screen Length _____ ft.																																				
Elevation of Well in feet: _____ +/- _____ ft.		Type _____ Material _____																																				
Datum Plane: <input type="checkbox"/> NAD27 <input checked="" type="checkbox"/> NAD83 Elevation Source _____		Set Between _____ ft. and _____ ft.																																				
Source of Coordinates: <u>DIGITAL MAP</u>		GRAVEL PACK (Filter Pack)																																				
Well location written description:		Material/Size _____ Vol/Wt. _____ Used _____																																				
Comments on water quality/quantity and well construction:		Method of Installation _____																																				
		Depth: Placed FROM: _____ ft. TO: _____ ft.																																				
		GROUT																																				
		Material <u>BENTONITE/POLYMER SLURRY</u> Vol/Wt. <u>216</u> Gal/192H20400Bentonite																																				
		Method of Installation <u>PUMPED W/TREMIE PIPE</u>																																				
		Depth: Placed FROM: <u>0</u> ft. TO: <u>76</u> ft.																																				
		DRILLING LOG*																																				
		FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.																																				
		<table border="1"><thead><tr><th>Color</th><th>Texture</th><th>Formation</th><th>From</th><th>To</th></tr></thead><tbody><tr><td>BROWN</td><td></td><td>CLAY</td><td>0</td><td>10</td></tr><tr><td>BLUE</td><td></td><td>CLAY & GRAVEL</td><td>10</td><td>62</td></tr><tr><td>GRAY</td><td></td><td>SHALE</td><td>62</td><td>138</td></tr><tr><td>WHITE</td><td></td><td>SANDSTONE</td><td>138</td><td>191</td></tr><tr><td>DARK GRAY</td><td></td><td>SHALE</td><td>191</td><td>200</td></tr><tr><td></td><td></td><td>WATER AT</td><td>138</td><td>191</td></tr></tbody></table>		Color	Texture	Formation	From	To	BROWN		CLAY	0	10	BLUE		CLAY & GRAVEL	10	62	GRAY		SHALE	62	138	WHITE		SANDSTONE	138	191	DARK GRAY		SHALE	191	200			WATER AT	138	191
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Well Log Interpretation

WELL TEST *			
Pre-Pumping Static Level	101	ft.	Date 7/26/2021
Measured from	GROUND LEVEL		
Pumping test method	AIR		
Test Rate	10	gpm	Duration of Test 1 hrs
Feet of Drawdown	99	ft.	Sustainable Yield 10 gpm
*(Attach a copy of the pumping test record, per section 1521.05, ORC)			
Is Copy Attached?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Flowing Well? <input type="checkbox"/> Yes <input type="checkbox"/> No
PUMP/PITLESS			
Type of pump	SUBMERSIBLE		Capacity 10 gpm
Pump set at	180	ft.	Pitless Type DICKENS
Pump installed by	MAX HERR WELL AND PUMP		
I hereby certify the information given is accurate and correct to the best of my knowledge.			
Drilling Firm	ROBERT E BURROWS WELL DRILLING		
Address	9965 STAMM RD		
City, State, Zip	MANTUA OH 44255		
Signed	ROBERT E BURROWS		Date 7/26/2021
(Filed Electronically)			
ODH Registration Number	0479	Last Revised	10/7/2021
Date of Well Completion		7/26/2021	Total Depth of Well 200 ft.
Aquifer Type (Formation producing the most water.) SANDSTONE			

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Department.



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OSU Water Interpretation Tool

- <https://ohiowatersheds.osu.edu/know-your-well-water/well-water-interpretation-tool>
- Quick and easy tool to interpret results for chemical & biological contaminants



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Interpretation Tool – Home Page

OSU.EDU

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CFAES

[Give Today](#)

Ohio Watershed Network

Ohio State University Extension



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

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Well Water Interpretation Tool

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[Home](#) // [KNOW YOUR WELL WATER](#) // WELL WATER INTERPRETATION TOOL

The Ohio State University in conjunction with the Ohio Department of Health and Ohio EPA have developed an online assessment tool that offers instant water quality interpretation for Ohio residents. Please review [instructions](#) for this tool



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Result Entry Dashboard

Dissolved gas

Carbon Dioxide (CO ₂)	<input type="text"/>	mg/L ▼
Hydrogen Sulfide (H ₂ S)	<input type="text"/>	mg/L ▼
Methane (Dissolved in water)	<input type="text"/>	mg/L ▼

Field parameter

pH	<input type="text"/>	pH ▼
Specific Conductivity	<input type="text"/>	umhos/cm ▼
Total Dissolved Solids (TDS)	<input type="text"/>	mg/L ▼



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Example Result

E. coli

Lab Result	Interpretation	Standard or Advisory(s) Level	Typical range in Ohio	Major sources in drinking water
5 CFU/100mL	Action is recommended.	0 CFU/100mL		Human and animal fecal waste

MCL ADVISORY - ACTION IS REQUIRED

E. coli levels were detected in your water sample to exceed the maximum contaminant level (MCL).

GENERAL INFORMATION

One of hundreds of strains of the bacterium *Escherichia coli*, *E. coli* O157:H7 is an emerging cause of food-borne and water-borne illness. Most strains of *E. coli*



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Example Result (Cont.)

HEALTH EFFECTS

Infection often causes severe bloody diarrhea and abdominal cramps; sometimes the infection causes non-bloody diarrhea. Frequently, no fever is present. It should be noted that these symptoms are common to a variety of diseases, and may be caused by sources other than contaminated drinking water.

TREATMENT OPTIONS

Prior to providing treatment options, the source of fecal coliform or *E. coli* contamination should be determined and the cause of the contamination removed. Once the contamination has been eliminated as a threat to the water supply, disinfection of the private water system should be performed and the water re-sampled. It is recommended that the water from a private water system be tested for total coliforms and *E. coli* periodically in order to determine the need for maintenance, repair, or replacement. When the presence of *E. coli* is recurrent, it is not recommended that continuous disinfection be used in place of removing of the cause of contamination or repairing or replacing the private water system.



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Example Result (Cont.)

WEBSITE RESOURCES

- Ohio Department of Health - Private Water Systems Program - Water Quality - *Escherichia coli* (*E. coli*)
- USEPA - Water: Basic Information about Regulated Drinking Water Contaminants - Basic Information about Pathogens and Indicators in Drinking Water
- USEPA - Water: Basic Information about Regulated Drinking Water Contaminants - Basic Information about *E. coli* O157:H7 in Drinking Water
- USEPA - Water: Monitoring & Assessment - Fecal Bacteria
- CDC - Drinking Water - Well Testing
- CDC - Drinking Water - *E. coli* O157:H7 and Drinking Water from Private Wells

FACT SHEETS



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Ohio Department of Health


- <https://odh.ohio.gov/know-our-programs/private-water-systems-program>
- List of State-registered Private Water Systems Contractors
- PWS Contaminant & Treatment Fact Sheets
- General Educational Materials



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ODH PWS Webpage

**Ohio** Department of Health

WHO WE ARE
ABOUT US

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PROGRAMS

HEALTH RULES
LAWS & FORMS

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DATA & STATS

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HEALTH DISTRICTS

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Private Water Systems Program

The Ohio Department of Health's Private Water Systems Program regulates wells, springs, rain water cisterns, hauled water storage tanks and ponds that provide potable water to fewer than 25 people per day and have fewer than 15 service connections.

Private water systems are regulated by the Ohio Department of Health (ODH) and administered by both ODH and the Local Health Districts under Sections 3701.344 to 3701.347 of the Ohio Revised Code (ORC) and Chapter 3701-28 of the Ohio Administrative Code (OAC).

What are private water systems?

Private water systems are

- Wells
- Springs
- Ponds
- Cisterns
- Hauled water storage tank

that provide potable water for human consumption and supplies water to

- Fewer than fifteen (15) service connections; and
- Do not regularly serve an average of at least twenty-five (25) individuals daily at least sixty (60) days of each year.

These include

- 1, 2, and 3 family dwellings;
- Multiple dwellings on the same or adjacent properties;
- Buildings including barns, small businesses, churches, etc.; and
- Small manufactured home parks and campgrounds.

A private water system includes any auxiliary water supply for a structure to supplement toilet flushing or laundry.

WELCOME

CONTINUING EDUCATION

FORMS

INFORMATION FOR HOMEOWNERS

INFORMATION FOR CONTRACTORS

INFORMATION FOR LHDS

WATER QUALITY/TREATMENT

RESOURCES AND EDUCATION



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Questions?



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Thank You!

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