



BOARD OF TRUSTEES
Regular Meeting
August 14, 2024
7:00 p.m.

1. CALL MEETING TO ORDER
2. PLEDGE OF ALLEGIANCE
3. ROLL CALL
4. APPROVAL OF AGENDA
5. PRESENTATIONS
6. PUBLIC HEARINGS
7. PUBLIC COMMENT: Restricted to three minutes regarding items on this agenda
Note: This is an opportunity for comments only, questions to the Board will not be answered at this time. For specific answers to questions, please call Township Hall (989-772-4600)
8. CLOSED SESSION
9. REPORTS/BOARD COMMENTS
 - A. Current List of Boards and Commissions – Appointments as needed
 - B. Board Member Reports
10. CONSENT AGENDA
 - A. Communications
 - B. Minutes – July 24, 2024 – Regular Meeting
 - C. Accounts Payable
 - D. Payroll
 - E. Meeting Pay
 - F. Fire Reports
11. NEW BUSINESS
 - A. Discussion/Action: (Nanney) Introduction and First Reading of a proposed Ordinance to repeal outdated and unenforceable Township ordinances
 - B. Discussion/Action: (Smith) Stone Ridge and Meadowbrook Subdivision Paving Special Assessment District – Informal Petition
 - C. Discussion/Action: (Smith) DWSRF ARPA Grant Division A Type 1 Water Well Bid Approval – Peerless Midwest

D. Discussion/Action: (Stuhldreher) Consider approval of a Participation Agreement with the City of Mt. Pleasant to formalize funding commitment for the Mid-Michigan/GKB Pathway North Connection Project

12. EXTENDED PUBLIC COMMENT: Restricted to 5 minutes regarding any issue

Note: This is an opportunity for comments only, questions to the Board will not be answered at this time. For specific answers to questions, please call Township Hall (989-772-4600)

13. MANAGER COMMENTS

14. FINAL BOARD MEMBER COMMENT

15. ADJOURNMENT

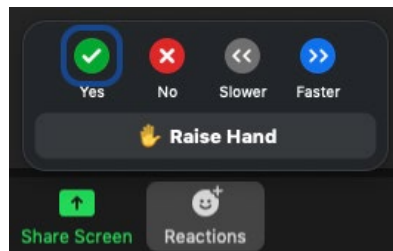
Hybrid Meeting Instructions for the Charter Township of Union Board of Trustees Meeting

The public can view all Union Township meetings live by clicking on our [YouTube Channel](#). For those who would like to participate during public comment, you can do so via Zoom.

[Click here](#) to participate in the Zoom Meeting via computer or smart phone. (Meeting ID Enter “861 1599 5624” Password enter “926394”). Access to the electronic meeting will open at 6:50 p.m. and meeting will begin at 7:00 p.m.

Telephone conference call, dial (312-626-6799). Enter “861 1599 5624” and the “#” sign at the “Meeting ID” prompt, and then enter “926394” at the “Password” prompt. Lastly, re-enter the “#” sign again at the “Participant ID” prompt to join the meeting.

- All public comments for items on the agenda will be received during the Public Comment section of the Agenda and any issue not on the agenda will be received during the Extended Public Comment section of the Agenda.
- Computer/tablet/smartphone audience: To indicate you wish to make a public comment, please use the “Reactions” icon. **Next, click on the “Raise Hand” icon** near the bottom right corner of the screen.



- **To raise your hand for telephone dial-in participants, press *9.** You will be called on by the last three digits of your phone number for comments, at which time you will be unmuted by the meeting moderator.
- Please state your name and address for the minutes and keep public comments concise.

You will be called upon once all in-person comments have been received, at which time you will be unmuted by the meeting moderator.

Persons with disabilities needing assistance should call the Township office at (989) 772-4600. Persons requiring speech or hearing assistance can contact the Township through the Michigan Relay Center at 711. A minimum of one (1) business day of advance notice will be necessary for accommodation.

Board Expiration Dates

Planning Commission Board Members (9 Members) 3 year term			
#	F Name	L Name	Expiration Date
1-BOT Representative	James	Thering	11/20/2024
2-Chair	Phil	Squatrito	2/15/2026
3-Vice Chair	Ryan	Buckley	2/15/2025
4-Secretary	Vacant		2/15/2025
5 - Vice Secretary	Jessica	Lapp	2/15/2026
6	Stan	Shingles	2/15/2027
7	Paul	Gross	2/15/2025
8	Nivia	McDonald	2/15/2026
9	Thomas	Olver	2/15/2027
Zoning Board of Appeals Members (5 Members, 2 Alternates) 3 year term			
#	F Name	L Name	Expiration Date
1-Chair	Liz	Presnell	12/31/2025
2 -Vice Chair	Richard	Barz	12/31/2025
3- PC Rep	Ryan	Buckley	2/15/2025
4 -	Lori	Rogers	12/31/2026
5 -	Eric	Loose	12/31/2024
Alt. #1	David	Coyne	12/31/2024
Alt #2	Brian	Clark	12/31/2026
Board of Review (3 Members) 2 year term			
#	F Name	L Name	Expiration Date
1	Jeanette	Corbin	12/31/2024
2	Sarvjit	Chowdhary	12/31/2024
3	Bryan	Neyer	12/31/2024
Alt #1	Vacant		12/31/2024
Construction Board of Appeals (3 Members) 2 year term			
#	F Name	L Name	Expiration Date
1	Joseph	Schafer	12/31/2025
2	Andy	Theisen	12/31/2025
3	William	Gallaher	12/31/2025
Hannah's Bark Park Advisory Board (2 Members from Township) 2 year term			
1	Mark	Stuhldreher	12/31/2024
2	John	Dinse	12/31/2025
Chippewa River District Library Board 4 year term			
1	Ruth	Helwig	12/31/2027
2	Lynn	Laskowsky	12/31/2025



Board Expiration Dates

EDA Board Members (9 Members) 4 year term			
#	F Name	L Name	Expiration Date
1-Chair	Thomas	Kequom	4/14/2027
2-VC/BOT Rep	Bryan	Mielke	11/20/2024
3	James	Zalud	4/14/2027
4	Richard	Barz	2/13/2025
5	Robert	Bacon	1/13/2027
6	Marty	Figg	6/22/2026
7	Sarvjit	Chowdhary	6/22/2027
8	Jeff	Sweet	2/13/2025
9	David	Coyne	3/26/2026
Mid Michigan Area Cable Consortium (2 Members)			
#	F Name	L Name	Expiration Date
1	Kim	Smith	12/31/2025
2	vacant seat		
Cultural and Recreational Commission (1 seat from Township) 3 year term			
#	F Name	L Name	Expiration Date
1	Robert	Sommerville	12/31/2025
Mt. Pleasant Airport Joint Operations and Mgmt Board (1 seat from Township) 3 year term			
#	F Name	L Name	Expiration Date
1 - Union Township	Rodney	Nanney	12/31/2026

2024 CHARTER TOWNSHIP OF UNION
Board of Trustees
Regular Meeting Minutes

A regular meeting of the Charter Township of Union Board of Trustees was held on July 24, 2024, at 7:00 p.m. at the Union Township Hall.

Meeting was called to order at 7:00 p.m.

Smith moved **Brown** supported to appoint Trustee Bills as temporary Clerk. **Vote: Ayes: 5 Nays: 0. Motion carried.**

Roll Call

Present:

Supervisor Mielke, Trustee Bills, Trustee Brown, Trustee Smith and Trustee Thering

Excused:

Clerk Cody (arrived 7:15 p.m.) Treasurer Rice

Approval of Agenda

Smith moved **Bills** supported to approve the agenda as presented. **Vote: Ayes: 5 Nays: 0. Motion carried.**

Presentation

Public Hearing

Public Comment

Open: 7:02 p.m.

Lori Rogers, 2248 Cornerstone Dr., expressed appreciation for what she has learned attending the meetings and emphasized the need for the Democratic and Republican parties to work together.

Closed: 7:03 p.m.

Reports/Board Comments

A. Current List of Boards and Commissions – Appointments as needed.

B. July Monthly Activity Report

C. Planning Commission, EDA, and ZBA updates by Community and Economic Development Director

D. Board Member Reports

Thering gave an update on the July 18th Planning Commission meeting.

Brown gave an update on the July 22nd City Commissioner meeting.

Smith gave updates on the Isabella County Road Commission meeting and the Isabella County Commissioners meeting.

Mielke gave an update on the July 18th Economic Development Authority meeting

Consent Agenda

- A. Communications
- B. Minutes – July 10, 2024 – Regular Meeting
- C. Accounts Payable
- D. Payroll
- E. Meeting Pay
- F. Fire Reports
- G. Resolution of support of Mt. Pleasant Brewing, LLC Small Distillery Licensing Application for 3068 Jen's Way
- H. Resolution to authorize Consumers Energy to add a new streetlight for Independence Dr.
- I. 2024 Manhole Rehabilitation Bids
- J. Summerton Road Traffic, Engineering, Speed Study Resolution

Bills moved Smith supported to approve the consent agenda as presented. Roll Call Vote: Ayes: Mielke, Cody, Bills, Brown, Smith, and Thering. Nays: 0. Motion carried.

New Business

A. Discussion/Action: (Stuhldreher) Policy Governance 2.0 Executive Constraints

Discussion by the board

B. Discussion/Action: (Teall) Policy Governance 2.5 Financial Conditions and Activities

Discussion by the board

C. Discussion/Action: (Board of Trustees) Policy Governance 4.4 Township Management Team Performance

Discussion by the board

EXTENDED PUBLIC COMMENT: RESTRICTED TO 5 MINUTES REGARDING ANY ISSUE

Open: 7:41 p.m.

No comments were offered.

Closed: 7:41 p.m.

MANAGER COMMENTS

- Welcomed the Townships new Skilled Labor Employee, Jacob Plont.
- Gave a reminder that the Hall will be closed to the public, but fully staff, for the election on August 6th.
- Informed the Board to expect to see a Participation Agreement with the City to fund a pathway to Mission Creek Park at the next meeting.

FINAL BOARD MEMBER COMMENT

Brown – Stated for the record that the warrants looked good for the consent agenda

Bills – Hopes everyone is enjoying the weather.

Mielke – Primary Election is August 6th and encouraged everyone to get out and exercise their right to vote.

ADJOURNMENT

Bills moved Smith supported to adjourn the meeting at 7:49 p.m. Vote: Ayes: 6. Nays: 0. Motion carried.

APPROVED BY:

Lisa Cody, Clerk

Bryan Mielke, Supervisor

(Recorded by Tera Green)

Check Date	Bank	Check	Vendor	Vendor Name	Description	Amount
Bank 101 POOLED CHECKING						
08/08/2024	101	716 (E)	00146	CONSUMERS ENERGY	1876 S LINCOLN RD	17.82
					2279 S MERIDIAN RD	24.86
					4511 E RIVER RD	14,285.06
					5144 BUDD ST	36.07
					5142 BUDD ST.	136.27
					1776 E PICKARD RD	126.06
					2180 S LINCOLN RD	61.01
					2010 S LINCOLN RD	898.07
					800 CRAIG HILL RD	46.11
					4520 E RIVER RD	196.85
					5076 S MISSION RD	1,266.28
					900 MULBERRY LN	64.25
					5240 E BROOMFIELD RD	1,044.06
					2270 NORTHWAY DR	35.55
					5525 E REMUS RD	66.13
					5537 E BROADWAY RD	71.22
					1933 S ISABELLA RD	564.34
					1660 BELMONT DR	110.26
					2188 E PICKARD RD	104.32
					1876 E PICKARD RD	48.97
					2495 E DEERFIELD RD	193.95
					2424 W MAY ST	716.73
					1633 S LINCOLN RD	218.91
					2279 S MERIDIAN RD	2,274.00
					5319 E AIRPORT	48.63
					4797 S MISSION ST BARN	319.70
					4795 S MISSION ST	3,601.01
					1046 S MISSION ST	98.21
					5228 S ISABELLA RD	8,888.55
					4822 ENCORE BLVD	111.46
					3998 E DEERFIELD RD	63.45
					5369 S CRAWFORD RD	55.94
					3248 S CONCOURSE DR	151.00
					4244 E BLUE GRASS RD	171.88
					1605 SCULLY RD	41.67
					STREETLIGHT(S)	2,038.45
					48858 LED LIGHT RD	502.66
					2010 S LINCOLN RD L4 LIGHT	84.84
					2055 ENTERPRISE DR MAIN	226.56
						<u>39,011.16</u>
08/08/2024	101	717 (E)	00146	VOID		
				Void Reason: Created From Check Run Process		
08/08/2024	101	718 (E)	00146	VOID		
				Void Reason: Created From Check Run Process		
08/07/2024	101	719 (E)	01105	MASTERCARD	MASTERCARD CRAWFORD	135.15
					MASTERCARD BEBOW	1,351.79
					MASTERCARD WALDRON	225.00
					MASTERCARD DEARING	149.90
					MASTERCARD MCBRIDE	2,702.13
					MASTERCARD ROCKAFELLOW	39.99
					MASTERCARD RICE	35.98
					MASTERCARD FUSSMAN	69.98
					MASTERCARD STUHLREHER	008189.16

Check Date	Bank	Check	Vendor	Vendor Name	Description	Amount
					MASTERCARD HOHLBIEN	56.08
					MASTERCARD OCKERT	832.66
					MASTERCARD THEISEN	26.96
					MASTERCARD NANNEY	80.00
					MASTERCARD PETERS	151.00
					MASTERCARD TEALL	67.83
					MASTERCARD COFFELL	224.34
						<u>6,337.95</u>
08/07/2024	101	720 (E)	01105	VOID		
				Void Reason: Created From Check Run Process		
08/08/2024	101	721 (E)	01186	COYNE PROPANE LLC	PROPANE FOR BROADWAY TOWER	300.25
08/14/2024	101	25649	01358	21ST CENTURY MEDIA-MICHIGAN	NOTICE FOR SIDEWALK ORDINANCE 24-02	403.18
					RENTAL INSPECTOR CLASSIFIED AD	895.00
					NOTICE OF PUBLIC HEARING-ZONING ORDINANC	192.15
					BOARD OF TRUSTEES MEETING-JUN 2024	210.50
					NOTICE FOR SIDEWALK ORDINANCE	275.80
					NOTICE OF ADOPTION-PRIVATE ROAD ORDINANC	275.80
					JOB POSTING AD-SKILLED LABORER	549.00
						<u>2,801.43</u>
08/14/2024	101	25650	00020	JAMES ALWOOD	WELL SITE LEASE-JULY 2024	480.32
08/14/2024	101	25651	01703	AMAZON CAPITAL SERVICES	RESTROOM CLOSED SIGNS FOR PARKS	125.94
					INK MAINTENANCE BOX -SHOP PRINTER	28.41
					DESKTOP WHITEBOARD DRY ERASE BOARD	31.98
						<u>186.33</u>
08/14/2024	101	25652	01893	ASPLUNDH TREE EXPERT	REFUND RENTAL DEPOSIT-JAMESON HALL	250.00
08/14/2024	101	25653	00084	B S & A SOFTWARE	ANNUAL BS&A SUPPORT 8-1-24 TO 8-1-25	9,084.00
08/14/2024	101	25654	01240	BRAUN KENDRICK FINKBEINER PLC	APPRAISAL-JAMESTOWN APARTMENTS LLC	6,500.00
08/14/2024	101	25655	00095	C AND C ENTERPRISES INC	JANITORIAL SUPPLIES FOR TWP HALL	213.50
					C-FOLD TOWELS FOR WWTP	144.50
					MULTIFOLD TOWELS FOR WTR PLANT	39.50
					TOWEL, TISSUE, CLOROX WIPES FOR WTR PLAN	212.75
					JANITORIAL SUPPLIES-WWTP	395.05
					C-FOLD TOWELS FOR WWTP	144.50
					JANITORIAL SUPPLIES FOR PARKS	330.90
						<u>1,480.70</u>
08/14/2024	101	25656	00116	CENTRAL PLUMBING	CLEAR PLUGGED TOILET-PARKS	120.00
08/14/2024	101	25657	01784	CIVICPLUS LLC.	MUNICODE ANNUAL SUPPORT 10/1/24-10/1/25	900.00
08/14/2024	101	25658	00129	CMS INTERNET, LLC	REPLACE BATTERY-LIFT STATION #2	67.58
					COMPUTER USB HUB-BLDG CLERK COMPUTER	45.99
					VEEAM BACKUP RENEWAL & UPGRADE	1,112.74
						<u>1,226.31</u>
08/14/2024	101	25659	01242	CULLIGAN WATER	BOTTLED WATER FOR WTR/SWR DEPT	92.00
08/14/2024	101	25660	00201	ELHORN ENGINEERING COMPANY	BULK CHLORINE/LIQUID AQUADENE	5,941.00
08/14/2024	101	25661	00257	GOURDIE FRASER INC	EGL E DWSRF PROJECT PLAN-PHASE I & II	16,023.13
08/14/2024	101	25662	00261	GRAINGER	SURGE PROTECTION-LIFT STN #3 & SPARE	731.49
					PARTS FOR TERTIARY FILTER	184.11
						<u>915.60</u>
08/14/2024	101	25663	01746	TERA GREEN	MILEAGE TO/FROM TWP HALL/BANK-JUL 2024	55.48

Check Date	Bank	Check	Vendor	Vendor Name	Description	Amount
08/14/2024	101	25664	00290	HOTSY OF MID-MICHIGAN	PUMP MAINTENANCE & OIL CHANGE	400.90
08/14/2024	101	25665	01857	JBS CONTRACTING	PERFORMANCE BOND REFUND	500.00
08/14/2024	101	25666	01982	SHILA KIANDER	IAAO ASSESSING CONFERENCE	40.00
08/14/2024	101	25667	00422	MICHIGAN PIPE & VALVE-MT. PLEASANT	BLIND FLANGE/FF FLG GASKET	162.00
08/14/2024	101	25668	00424	MICHIGAN RURAL WATER ASSN.	ANNUAL MEMBERSHIP DUES	825.00
08/14/2024	101	25669	01255	MID MICHIGAN SECURITY	INSTALLED NEW BATTERY FOR ALARM-TWP HALL	188.80
08/14/2024	101	25670	00463	MT PLEASANT HEATING AND AIR COND	SERVICE AIR CONDITIONING-TWP HALL	147.00
08/14/2024	101	25671	00539	PRINTING SYSTEMS INC	VOTER&AV BALLOT INSTRUCTION SHEETS	302.80
					VOTER ID INFORMATION CARDS	327.41
						<u>630.21</u>
08/14/2024	101	25672	01897	ROBERT HALF	TEMP WORKER-ACCT SPECIALIST ROLE	2,095.06
					TEMP WORKER-ACCT SPECIALIST ROLE	2,095.06
					TEMP WORKER-ACCT SPECIALIST ROLE	2,088.83
					TEMP WORKER-ACCT SPECIALST ROLE	1,468.49
						<u>7,747.44</u>
08/14/2024	101	25673	01595	ROMANOW BUILDING SERVICES	JANITORIAL SERVICES TWP HALL-JUL 2024	527.14
					JANITORIAL SERVICES WWTP-JUL 2024	316.29
					JANITORIAL SERVICES WTR PLANT-JUL 2024	316.29
						<u>1,159.72</u>
08/14/2024	101	25674	00597	SHERWIN WILLIAMS	PAINT FOR PARKS	279.74
08/14/2024	101	25675	01979	SMART BUSINESS SOURCE	INK PENS AND CORRECTION TAPE-TWP HALL	76.96
08/14/2024	101	25676	01771	SMART SOURCE LLC	WTR/SWR BILLING CARDS	502.87
08/14/2024	101	25677	00629	STU'S ELECTRIC MOTOR	BALL BEARING SHOP SUPPLIES	52.00
08/14/2024	101	25678	01495	MARK STUHLREHER	ROTARY DUES AND 1/2 MEMBERSHIP	153.00
08/14/2024	101	25679	00668	UNITED PARCEL SERVICE	SHIPPING FOR WTR PLANT	11.33
08/14/2024	101	25680	01032	UNITED STATES POSTAL SERVICE	REPLENISH PERMIT #11 WATER/SEWER BILLING	1,200.00
08/14/2024	101	25681	01013	USA BLUE BOOK	REPLACEMENT PAPER FILTER W/PREFILTER FOR THERMOMETER AND BUFFER SOLUTION	454.86
						<u>498.29</u>
						953.15
08/14/2024	101	25682	01314	VERIZON WIRELESS	CELL PHONES 6/16/24 TO 7/15/24	864.58
08/14/2024	101	25683	00703	WASTE MANAGEMENT OF MICHIGAN INC	DUMPSTER SERVICE WTR PLANT-AUG 2024	50.21
					DUMPSTER SERVICE SHOP-AUG 2024	49.71
					DUMPSTER SERVICE WWTP-AUG 2024	290.07
					DUMPSTER SERVICE JAMESON PARK-JUL 2024	121.75
					DUMPSTER SERVICE TWP HALL-AUG 2024	75.44
					DUMPSTER SERVICE MCDONALD PARK-AUG 2024	150.61
						<u>737.79</u>
101 TOTALS:						
Total of 41 Checks:						108,788.15
Less 3 Void Checks:						0.00
Total of 38 Disbursements:						<u>108,788.15</u>

Charter Township of Union Payroll
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Check Date: 8/1/24
Pay Period End Date: 7/27/24

NOTE: PAYROLL TRANSFER NEEDED

General Fund	\$	47,552.14
Fire Fund		
EDDA		
WDDA		
Sewer Fund		36,477.56
Water Fund		34,284.63
Total To Transfer from Pooled Savings	\$	118,314.33

NOTE: CHECK TOTAL FOR TRANSFER

Gross Payroll	\$	82,382.91
Employer Share Medicare		1,144.60
Employer Share SS		4,894.02
SUI		34.90
Pension-Employer Portion		6,393.62
Workers' Comp		484.42
Life/LTD		634.69
Dental		1,290.60
Health Care		23,385.60
Vision		353.00
Vision Contribution		(176.49)
Health Care Contribution		(2,581.60)
Flex Administrators		-
Cobra/Flex Administration		-
PCORI Fee		74.06
Total Transfer to Payroll Checking	\$	118,314.33

**CHARTER TOWNSHIP OF UNION
MEETING PAY REQUEST FORM**
(See Governance Policy 3.10 for additional details)

BOARD MEMBER: Connie Lee Bills

MONTH, YEAR: May, 2024

Date MM/DD	Meeting	Time Attended		Total
		1hr or less	More than Hr	
5/24	Intergovernmental Affairs Liaison	✓		\$ 50

Signature:  **Date:** 7/23/24

1. This form is to be filled out by the board member at the conclusion of each calendar month. Request forms should be sent to the Finance Department. Following approval by the Board of Trustees, the meetings will be paid in the next payroll run.
2. Only list those meetings that you have attended. For extra meetings that a member of the Board of Trustees attends and are eligible for "meeting pay", \$50 will be paid for meetings that are 1 hour or less and \$75 for meetings over 1 hour. The meeting pay request form must be filled out with the date of the meeting, the name of the meeting attended, the length of the meeting and the pay requested for each meeting.
3. The Township Supervisor, Clerk, and Treasurer shall not receive any meeting pay for attending meetings during regular township business hours of Monday through Friday 8:30 am to 4:30 pm.

**CHARTER TOWNSHIP OF UNION
MEETING PAY REQUEST FORM**
(See Governance Policy 3.10 for additional details)

BOARD MEMBER: Connie Lee Bills

MONTH, YEAR: June, July, 2024

Date MM/DD	Meeting	Time Attended		Total
		1hr or less	More than Hr	
6/25	Election Commission	✓		\$ 50
7/2	Election Commission	✓		\$ 50

Signature:  **Date:** 7/23/24

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CHARTER TOWNSHIP OF UNION MEETING PAY REQUEST FORM

(See Governance Policy 3.10 for additional details)

BOARD MEMBER: Brian Smith

MONTH, YEAR: June / July 2024

Date MM/DD	Meeting	Time Attended		Total
		1hr or less	More than Hr	
6/4	BOC Work Session	✓		\$ 50
6/18	BOC Work Session		✓	\$ 75
7/2	Election Commission	✓		\$ 50
7/11	County Road Commission	✓		\$ 50
7/16	BOC Work Session		✓	\$ 75

Signature:  **Date:** 7-24-24

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Union Township Report

Date: Tuesday, July 23, 2024



Alarm Date between 2024-07-14 and 2024-07-20

District	NFIRS Number	Alarm Date	Incident Type Code	Incident Type	Apparatus Name	Personnel Count	Alarms
Union Township	0000503						
		7/14/2024 3:01:00 AM	611	Dispatched & canceled en route	ENG 33	2	1
						Total Responding 2	
Union Township	0000505						
		7/14/2024 6:58:21 AM	733	Smoke detector activation due to malfunction	ENG 33	2	1
						Total Responding 2	
Union Township	0000506						
		7/14/2024 7:33:18 PM	736	CO detector activation due to malfunction	ENG 33	2	1
						Total Responding 2	

Union Township	0000512						
		7/16/2024 4:08:22 PM	322	Motor vehicle accident with injuries	ENG 32	2	1
						Total Responding 2	
Union Township	0000515						
		7/18/2024 3:50:40 PM	412	Gas leak (natural gas or LPG)	ENG 33	3	1
						Total Responding 3	
Union Township	0000518						
		7/19/2024 7:20:32 AM	130	Mobile property (vehicle) fire, other	C 31	1	2
		7/19/2024 7:20:32 AM	130	Mobile property (vehicle) fire, other	ENG 33	2	2
		7/19/2024 7:20:32 AM	130	Mobile property (vehicle) fire, other	POV	5	2
						Total Responding 8	

Union Township	0000522						
		7/19/2024 11:26:24 PM	700	False alarm or false call, other	ENG 33	2	1
						Total Responding 2	
	Total Runs 7					Total Responding 21	

Note: Alarms

1=Duty Crew

2=Paged Off Duty Full-time

3=Paged Paid-on-Call Firefighters

4=Paged All



Union Township Report

Date: Tuesday, August 6, 2024



Alarm Date between 2024-07-21 and 2024-07-27

District	NFIRS Number	Alarm Date	Incident Type Code	Incident Type	Apparatus Name	Personnel Count	Alarms
Union Township	0000527						
		7/21/2024 7:10:01 AM	745	Alarm system activation, no fire - unintentional	ENG 33	2	1
						Total Responding 2	
Union Township	0000532						
		7/22/2024 9:31:20 AM	311	Medical assist, assist EMS crew	ENG 33	2	1
						Total Responding 2	
Union Township	0000533						
		7/22/2024 10:05:34 AM	324	Motor vehicle accident with no injuries.	ENG 33	2	1
						Total Responding 2	

Union Township	0000537						
		7/23/2024 5:31:23 PM	321	EMS call, excluding vehicle accident with injury	ENG 33	2	1
						Total Responding 2	
Union Township	0000542						
		7/26/2024 8:14:35 AM	745	Alarm system activation, no fire - unintentional	ENG 33	2	1
						Total Responding 2	
	Total Runs						
	5					Total Responding 10	

Note: Alarms

1=Duty Crew

2=Paged Off Duty Full-time

3=Paged Paid-on-Call Firefighters

4=Paged All



Union Township Report

Date: Tuesday, August 6, 2024



Alarm Date between 2024-07-28 and 2024-08-03

District	NFIRS Number	Alarm Date	Incident Type Code	Incident Type	Apparatus Name	Personnel Count	Alarms
Union Township	0000549						
		7/28/2024 2:46:52 PM	412	Gas leak (natural gas or LPG)	ENG 33	2	1
						Total Responding 2	
Union Township	0000555						
		7/29/2024 9:33:26 AM	321	EMS call, excluding vehicle accident with injury	ENG 33	2	1
						Total Responding 2	
Union Township	0000556						
		7/29/2024 7:16:10 PM	444	Power line down	ENG 33	2	4
		7/29/2024 7:16:10 PM	444	Power line down	POV	12	4

							Total Responding 14
Union Township	0000559						
		7/31/2024 11:04:00 PM	745	Alarm system activation, no fire - unintentional	ENG 33	2	1
						Total Responding 2	
Union Township	0000561						
		8/1/2024 10:57:07 PM	733	Smoke detector activation due to malfunction	ENG 33	2	1
						Total Responding 2	
Union Township	0000562						
		8/2/2024 1:29:40 AM	311	Medical assist, assist EMS crew	ENG 33	2	1
						Total Responding 2	
	Total Runs						Total Responding 24
	6						

Note: Alarms

1=Duty Crew

2=Paged Off Duty Full-time

3=Paged Paid-on-Call Firefighters

4=Paged All



REQUEST FOR TOWNSHIP BOARD ACTION

To: Board of Trustees	DATE: July 16, 2024
FROM: Mark Stuhldreher, Township Manager	DATE FOR BOARD CONSIDERATION: 8/14/2024
ACTION REQUESTED: To introduce and conduct a First Reading for a proposed ordinance to repeal outdated and unenforceable Township ordinances.	

Current Action Emergency
 Funds Budgeted: If Yes Account # No N/A

BACKGROUND INFORMATION

Per the Board of Trustees’ direction, the Township Administration has evaluated many of the existing Township ordinances, and has prepared updates as needed to be consistent with the Board’s Global Ends. As part of that ongoing review and in consultation with the Township Attorney, the following four (4) existing ordinances were determined to be outdated and unenforceable due to conflicts with state laws and other Township ordinances. Accordingly, these ordinances are recommended to the Board of Trustees for repeal:

Junk Yard Ordinance of February 7, 1957.

[This ordinance](#) established a requirement for payment of an annual licensing fee of \$25.00 by owners and operators of “junk yards and places for dismantling, wrecking and disposing of the junk and/or refuse material of automobiles.” The ordinance further set several standards for location and setbacks from roads and “any residence or house, church, school or any public building,” similar to zoning requirements.

For administrative purposes, the ordinance references in part “the commissioner of the department of public safety at East Lansing, Michigan.” The only enforcement mechanism in the ordinance for noncompliance is “revoking any license herein granted.” Nothing in the ordinance requires removal or clean-up of a site where a license has been revoked.

This ordinance has also been in conflict with the equivalent and more comprehensive “junk yard” provisions of the Township’s zoning ordinances as adopted in 1971, 1981, 1991, and 2020.

Several junk yards exist in the Township, including a “snowmobile and motorcycle graveyard” at 4101 E. River Road, Top of the Hill Recycling, LLC at 735 S Mission Road, and W Wing Auto Parts at 4517 Packard Road. A preliminary review found that this ordinance and annual licensing payment requirement has not been applied to any of these existing businesses.

For these reasons, the Township Administration recommends that this ordinance be repealed.

Ordinance No. 1983-1 Establishing Procedures and Standards re: License to Sell Beer and Wine or Spirits.

[Ordinance No. 1983-1](#) purports to establish an additional, Township-based annual licensing requirement for beer, wine, and liquor sales in the Township. However, the Township Attorney has

confirmed that it is in conflict with current state law and should be considered unenforceable. Licensing for businesses that make, transport, or sell beer, wine, and liquor is primarily within the jurisdiction of the State of Michigan. Township jurisdiction is limited to making recommendations to the state Liquor Control Commission related to issuance of a requested license. For these reasons, the Township Administration recommends that this ordinance be repealed.

Adult Entertainment Businesses Ordinance No. 1989-9.

[Ordinance No. 1989-9](#) establishes zoning ordinance-like standards for a set of activities described as “special regulated uses,” such as adult bookstores, adult mini motion picture theaters, massage establishments, steam baths, health clubs, taxi dance halls, and establishments for the consumption of beer or intoxicating liquor on the premises which also have adult entertainment. The ordinance sets specific setback standards and requires an application to be submitted to the “Township Zoning Official” for Planning Commission approval.

The ordinance as written appears to inappropriately regulate massage therapists and health clubs as “adult entertainment” businesses. In addition, the standards and review process outlined in this ordinance are in direct conflict with equivalent provisions of the Township’s zoning ordinances as adopted in 1991 and 2020. For these reasons, the Township Administration recommends that this ordinance be repealed.

Marihuana Dispensary and Growing Facilities Ordinance No. 2011-04.

[Ordinance No. 2011-04](#) was adopted more than five years before the adoption of current state laws that established state and local licensing requirements for various medical and adult-use (recreational) marihuana provisioning centers, growing operations, and related marihuana establishments. Because this ordinance is not consistent with current state laws, it is unenforceable and cannot be used to authorize a local license for any marihuana establishment. It is also in conflict with more recent actions by the Board of Trustees related to prohibition of such establishments in the Township.

For these reasons, the Township Administration recommends that this ordinance be repealed.

SCOPE OF SERVICES

Introduction and First Reading of the proposed Ordinance to repeal the outdated and unenforceable Junk Yard Ordinance of February 7, 1957, Ordinance No. 1983-1 Establishing Procedures and Standards re: License to Sell Beer and Wine or Spirits, the Adult Entertainment Businesses Ordinance No. 1989-9, and the Marihuana Dispensary and Growing Facilities Ordinance No. 2011-04.

JUSTIFICATIONS

Adoption of the proposed Ordinance is necessary to remove certain outdated and unenforceable ordinances from the Township’s Code of Ordinances.

GOALS ADDRESSED

Board of Trustees goals addressed by this Ordinance (From Policy 1.0: Global End):

1. Community well-being and common good

Adoption of the proposed Ordinance would help facilitate the effective use of resources (1.0) and ensure fair and nondiscriminatory code enforcement (1.1.1.2).

COSTS

NA

TIMETABLE

After a Second Reading and adoption by the Board of Trustees, the Ordinance would take effect on the day immediately following publication of the required notice of adoption.

RESOLUTION

To introduce and conduct a First Reading for a proposed ordinance to repeal outdated and unenforceable Township ordinances.

Resolved by _____ Seconded by _____

Yes:

No:

Absent:

**CHARTER TOWNSHIP OF UNION
ISABELLA COUNTY, MICHIGAN**

ORDINANCE NO. _____

An ordinance adopted under the provisions of the Charter Township Act (Public Act 359 of 1947, as amended, being MCL 42.1 – MCL 42.34) and Public Act 246 of 1945, as amended (Township Ordinances, being MCL 41.181 – MCL41.187) to repeal the outdated and unenforceable Junk Yard Ordinance of February 7, 1957, Ordinance No. 1983-1 Establishing Procedures and Standards re: License to Sell Beer and Wine or Spirits, the Adult Entertainment Businesses Ordinance No. 1989-9, and the Marihuana Dispensary and Growing Facilities Ordinance No. 2011-04, all due to conflicts with state laws and other Township ordinances.

CHARTER TOWNSHIP OF UNION, ISABELLA COUNTY, MICHIGAN HEREBY ORDAINS:

Section 1.0 Repeal the Junk Yard Ordinance of February 7, 1957.

The Junk Yard Ordinance of February 7, 1957 is hereby repealed in its entirety.

Section 2.0 Repeal Ordinance No. 1983-1 Establishing Procedures and Standards re: License to Sell Beer and Wine or Spirits.

Ordinance No. 1983-1 Establishing Procedures and Standards re: License to Sell Beer and Wine or Spirits is hereby repealed in its entirety.

Section 3.0 Repeal the Adult Entertainment Businesses Ordinance No. 1989-9.

The Adult Entertainment Businesses Ordinance No. 1989-9 is hereby repealed in its entirety.

Section 4.0 Repeal the Marihuana Dispensary and Growing Facilities Ordinance No. 2011-04.

The Marihuana Dispensary and Growing Facilities Ordinance No. 2011-04 is hereby repealed in its entirety.

Section 5.0 Publication.

The Clerk for the Township shall cause this Ordinance to be published in the manner required by law.

Section 6.0 Effective Date.

This Ordinance was adopted by the Township Board on _____, 2024, after a first reading by the Township Board of Trustees on June 26, 2024, publication after such first reading as required by Public Act 359 of 1947, as amended, and a second reading held on _____, 2024. This Ordinance shall become effective immediately upon publication of a summary of the ordinance and notice of adoption in a newspaper of general circulation in the Township.

CERTIFICATION OF ADOPTION AND PUBLICATION OF TOWNSHIP ORDINANCE

I, Lisa Cody, the duly elected Clerk of The Charter Township of Union, Isabella County, Michigan, hereby certify that the foregoing Ordinance was adopted at a meeting of the Charter Township of Union Board of Trustees on the _____ day of _____, 2024, at which the following members of the Board of Trustees were present and voted in person as follows:

<u>Board of Trustees</u>	<u>Aye</u>	<u>Nay</u>	<u>Absent</u>	<u>Abstain</u>
Supervisor Bryan Mielke	_____	_____	_____	_____
Clerk Lisa Cody	_____	_____	_____	_____
Treasurer Kim Rice	_____	_____	_____	_____
Trustee Connie Bills	_____	_____	_____	_____
Trustee Jeff Brown	_____	_____	_____	_____
Trustee Brian Smith	_____	_____	_____	_____
Trustee James Thering	_____	_____	_____	_____

I further certify that a summary and notice of adoption of this Ordinance were published in The Morning Sun, a newspaper of general circulation in The Charter Township of Union on _____, 2024.

Certification Date: _____, 2024

Lisa Cody, Clerk

I, Bryan Mielke, the duly elected Supervisor of The Charter Township of Union, Isabella County, Michigan, hereby confirm the authenticity of this record and Ordinance.

Bryan Mielke, Supervisor

Date: _____, 2024



REQUEST FOR TOWNSHIP BOARD ACTION

To: Township Board of Trustees	DATE: August 7, 2024
FROM: Kim Smith – Public Service Director	DATE FOR BOARD CONSIDERATION: August 14, 2024
ACTION REQUESTED: Consideration/approval to prepare preliminary project cost estimates and develop the formal petition for the establishment of a Paving Special Assessment District for Stone Ridge and Meadowbrook Subdivisions.	

Current Action Emergency

Funds Budgeted: If Yes Account # No N/A

Finance Approval _____

BACKGROUND INFORMATION

Michigan state statute authorizes townships to make public improvements and provide services to their residents and taxpayers. The special assessment process is one way a township can expend public money for improvements. Act 188 of 1954, as amended, establishes and authorizes townships to utilize special assessment procedures to fund the costs of certain types of improvements. One of the improvements authorized by the act is the construction, improvement, and maintenance of public roads. While the statute allows for townships to initiate a special assessment district, it is typically done by petition of the property owners in a designated area who wish to make an authorized improvement. The township acts in an administrative capacity to establish the district, gather cost estimates, plan the improvement, provide financing, levy and collect special assessment funds to pay off the debt.

The residents of Stone Ridge and Meadowbrook Subdivisions have met the first requirement of this process by submitting an informal petition containing signatures of seventy-four percent (74%) of property owners in favor of pursuing the establishment of a paving special assessment district for their subdivisions. The special assessment district would include all of Stone Ridge Drive and Meadowbrook Drive.

The next step is to conduct a feasibility review in which the informal petition is reviewed by relevant township departments. Projects deemed feasible are brought to the Township Board of Trustees for consideration and approval to move forward with the development of preliminary project cost estimates. The petition before you has been reviewed by the Public Service Department, Assessing Department, and the Township Clerk. The Assessing Department has confirmed that over 74% of the property owners receiving benefit from the improvements have signed the informal petition in favor of the establishment of a paving special assessment district. For citizen initiated public improvement paving projects using PA 188 of 1954 as the underlying statute and when the Township is acting in the role of lender; total project cost

shall include all costs from the time of initial application through the life of the special assessment district except township administrative staff time associated with the project.

If authorized by the Township Board of Trustees, notices will be sent to all affected property owners that an informal petition for improvement was received and reviewed, and a formal petition has been created for circulation. The formal petition will be created by Township personnel and delivered to the original applicant for circulation. If the circulation of the formal petition is successful, an additional (15) steps are required to formally create the Special Assessment District. A copy of the Citizens Guide to Special Assessments (SAD) is included for your review.

SCOPE OF SERVICES

Establishment of a Paving Special Assessment District for Stone Ridge and Meadowbrook Subdivisions to complete a cold milling and a one and a half- inch (1 1/2") overlay.

JUSTIFICATION

It is recommended the Township Board of Trustees authorize Township staff to move forward with the preparation of preliminary project cost estimates and develop the formal petition for the establishment of a Paving Special Assessment District for Stone Ridge and Meadowbrook Subdivisions.

Preliminary recommendation for the terms of the special assessment district are as follows:

- Cost – not to exceed actual cost of project cost
- Interest – 3% over the local bank prime or 8% - whichever is lower
- Term Length - 10 years

Final terms and cost will be established and approved as part of step (9) of the special assessment process.

PROJECT IMPROVEMENTS

Board of Trustees goals addressed by this agreement (From Policy 1.0: Global End).

1. Community well-being and common good
2. Safety

COSTS

TBD

PROJECT TIME TABLE

2025 Construction Season

RESOLUTION

Approval to move forward with the preparation of preliminary project cost estimates and develop the formal petition for the establishment of a Paving Special Assessment District for Stone Ridge and Meadowbrook Subdivisions.

Resolved by _____ Seconded by _____

Yes:

No:

Absent:



CHARTER TOWNSHIP OF UNION - ISABELLA COUNTY, MICHIGAN

Via Email

INFORMAL PETITION FOR PUBLIC IMPROVEMENT BY SPECIAL ASSESSMENT
In accordance with Public Act 188 of 1954, as amended

APPLICANT INFORMATION
Name: Richard L. McGUIRK, Phone: 989-621-5000
Address: 770 Stoneridge DR.
City: Mt. Pleasant, State: MI, Zip Code: 48858, Property Identification Number: 14-019-40-003-09

PUBLIC IMPROVEMENT INFORMATION
Type of Improvement: [X] Public/Private Road, [] Water System, [] Sanitary Sewer, [] Lighting System, [] Other
Location of Improvement: (please give a detailed description of affected subdivisions, streets, and/or properties to be included in the district)
Street Mill s Asphalt Overlay

APPLICANT SIGNATURE
Richard L. McGUIRK, 6/19/2024

Table with 2 columns: TOWNSHIP DEPARTMENT REVIEW and INITIAL/DATE AND RETURN TO TOWNSHIP CLERK. Rows include Department of Public Service, Township r, and Other Staff Comments.



INFORMAL PETITION FOR IMPROVEMENT AND SPECIAL ASSESSMENT DISTRICT

WE, THE UNDERSIGNED, record owners of the respective properties identified below, petition the Township Board of the Charter Township of Union, Isabella County, Michigan to cause an improvement to be made to the:

PUBLIC/PRIVATE ROAD WATER SYSTEMS SANITARY SEWERS LIGHTING SYSTEMS OTHER Street Mill & Asphalt Overlay specifically described as follows:

Price/quote to mill and repave (to be determined by Isabella County Road Commission) Meadowbrook and Stoneridge Drives

And to defray the cost of such improvement, in whole or any part, by special assessment against the property especially benefited by the improvement, in accordance with Public Act 188 of 1954, as amended.

PRINTED NAME	SIGNATURE	ADDRESS	DATE	FOR OFFICE USE ONLY	
				PARCEL NUMBER	X
Richard L. McGuirk	<i>Richard L. McGuirk</i>	770 Stoneridge DR.	4/29/2023		
Ryan D. Schlicht	<i>Ryan D. Schlicht</i>	776 Stoneridge Dr.	4/29/2023		
Richard L. McGuirk	<i>Richard L. McGuirk</i>	850 Meadowbrook DR.	7/11/2023		
<i>Lee Ann Clark</i>	<i>Lee Ann Clark</i>	255 Meadowbrook	10/11/2023		
Whitley Hoover	<i>Whitley Hoover</i>	890 Meadowbrook	10/28/2023		
Kate Reischer	<i>Kate Reischer</i>	795 Meadowbrook	10/28/2023		
Julia LaBella	<i>Julia LaBella</i>	955 Meadowbrook	10/28/2023		
April Karlovich	<i>April Karlovich</i>	655 Meadowbrook	11/29/2023		
Sohn Hunter	<i>Sohn Hunter</i>	495 Meadowbrook	11/11/2023		
Joe Van Buskirk	<i>Joe Van Buskirk</i>	895 Meadowbrook	11/11/2023		
Gabriel Purrenhaage	<i>Gabriel Purrenhaage</i>	855 Meadowbrook	11/11/2023		
Dustin Burch	<i>Dustin Burch</i>	870 Meadowbrook	11/11/23		
Ray Burch	<i>Ray Burch</i>	825 Meadowbrook	11/11/23		
Reggy Obermesik	<i>Reggy Obermesik</i>	815 Meadowbrook	11/11/23		
<i>Lee Ann Clark</i>	<i>Lee Ann Clark</i>	800 Meadowbrook	11/11/23		
Jett Zarr	<i>Jett Zarr</i>	709 Meadowbrook	11-11-23		
Oliver McCarty	<i>Oliver McCarty</i>	525 Meadowbrook Dr.	11-11-23		

RECEIVED
 JUN 20 2024
 BY: FS
 Via Email

CHARTER TOWNSHIP OF
 UNION, COUNTY OF
 Isabella
 INFORMAL PETITION FOR IMPROVEMENT AND
 SPECIAL ASSESSMENT DISTRICT

FOR OFFICE USE ONLY

PRINTED NAME	SIGNATURE	ADDRESS	DATE	PARCEL NUMBER	x
Kim Gtler	<i>Kim Gtler</i>	777 Stoneridge	11/11/23		
Jen McGuirk	<i>Jen McGuirk</i>	755 Meadowbrook	6/19/24		
Ben Humphrey	<i>Ben Humphrey</i>	950 Meadowbrook	6/19/24		
Eric Lowe	<i>Eric Lowe</i>	975 Meadowbrook	6/19/24		
William Drake	<i>William Drake</i>	750 Meadowbrook	6/17/24		
Martin Skominis	<i>Martin Skominis</i>	735 Meadowbrook	6/17/24		
Greg Schmidt	<i>Greg Schmidt</i>	775 Meadowbrook	6/17/24		
Kate Anderson	<i>Kate Anderson</i>	820 Meadowbrook	6/17/24		

Preliminary Cost Estimate

Meadowbrook & Stone Ridge Subdivisions

August 7, 2024

TYPE OF WORK: Cold Milling, 1 -1/2 Inch overlay

STREETS IMPROVED: Meadowbrook D Stoneridge Dr

TOTAL LENGTH: 3590 ft 1161 Ft

NUMBER OF LOTS:	SUBDIVISION NAME	NO. LOTS
	Meadowbrook Drive	33
	Stoneridge Drive	6
	39 Total Lots	

PROJECT COST*:	ITEM	AMOUNT
	Engineering	\$0
	Construction	\$222,926
	20% Inflation estimate for 2025 Construction	\$44,580
	Legal and Allowable Administrative Expenses	\$13,375
	TOTAL ESTIMATED PROJECT COST	\$280,881
	Less Road Comm Share	\$0
	Less Union Twp Share	\$0
	TOTAL ASSESSMENT*	\$280,881

COST PER LOT:	LOT TYPE	LUMP SUM
Full assessment to front lots	Front Lot	\$7,202.08

*Notes:

Costs are approximate, actual costs may be more or less based upon 2025 bid unit price. Twenty percent inflation estimate for 2025 construction cost included preliminary cost estimate. Publishing and Legal cost - estimated five percent (5%) of construction cost estimate.

REQUEST FOR TOWNSHIP BOARD ACTION

To: Mark Stuhldreher - Township Manager **DATE:** August 6, 2024

FROM: Kim Smith – Public Services Director **DATE FOR BOARD CONSIDERATION:** August 14, 2024

ACTION REQUESTED: Approval of the bid from Peerless Midwest for the EGLE Drinking Water State Revolving Fund (DWSRF) ARPA Grant Division A Water Supply Well Development Capital Improvement Project in the amount of \$126,982.00 and authorize the Township Manager to sign the contract.

Current Action Emergency

Funds Budgeted: If Yes Account # _____ No 591-536-972.000 N/A _____

Finance Approval _____

Background Information

The Application for the State of Michigan Drinking Water State Revolving Fund (DWSRF) was initiated in November of 2022, with the submittal of an Intent to Apply for the program by Union Township. The DWSRF is a competitive loan / grant program that received Project Plans from over 200 communities for the FY2024 funding cycle.

In February of 2023 Union Township approved a contract with Gourdie Frasier to complete a Preliminary Engineering Project Plan Report. The Township submitted the Project Plan to the Department of Great Lakes and Energy (EGLE) Drinking Water Revolving Fund (DWRf) Loan / Grant program in June 2023. EGLE formally notified the Charter Township of Union in October of 2023 that we were awarded \$10,985,000 in grant funding for the entire scope of projects requested in the Project Plan. A power point presentation to the Township Board providing a high-level overview was completed at the Board of Trustees Meeting on October 25, 2023, which highlighted the following projects.

Treatment Facility Expansion (700 GPM)

- New Well / Transmission Line
- High Service Pump Room Expansion
- Iron Removal Filter Expansion

Watermain Extensions

- Pickard / Summerton Road to Broadway Road

Lead Service Line Inventory

- Final Inspection / Verification Inventory due October 16, 2024.
- 466 leads identified as unknown or lead origin.

Due to the complexity and unique scope of each major capital improvement the projects have been separated into Divisions. Utilizing separate Divisions will allow the Township the ability to bid and construct the projects in stages and obtain competitive bids for each separate Division.

The Project Divisions are broken down based on the type of task being completed. These are as follows:

- Division A: Water Supply – Well Development
- Division B: Water Main Transmission and Extension
- Division C: Water Treatment Plant Expansion
- Division D: Lead Service Line Inventory

The Township’s deadline for bidding of all of the projects is October of 2024. The deadline for completing the full scope of the projects and closeout is September 15, 2026.

Division A Water Supply – Well Development was bid, and sealed bids were received on Friday July 19, 2024, until 4:00 P.M. Two bids were received for this project. The bids are as follows:

Bidder	Amount
Peerless Midwest	\$126,982.00
Northern Pump and Well	\$177,920.00

Scope of Services

The scope of services are as follows:

- Installation of one (1) two-inch monitoring well
- Installation of one (1) twelve-inch test well to be converted to a production well
- Aquifer Analysis
- Water Quality Analysis
- Site Cleanup and Restoration

Justification

Peerless Midwest has completed several projects for Union Township and their bid met the specifications in the bid documents. Approving the bid from Peerless Midwest will allow us to meet the construction schedule for the Division A Well Development Project as well as the final ARPA Grant Project Completion and Closeout date of September 15, 2026.

Project Improvements

Board of Trustees goals addressed by this agreement (From Policy 1.0: Global End).

1. Community well-being and common good

Costs

\$126, 982.00 – Account Number 591-536-972.000 Capital Projects – Water System

Project Time Table

- Division A: Water Supply – Well Development – Substantial Completion October 1, 2024

Resolution

Approval of the bid from Peerless Midwest for the EGLE Drinking Water State Revolving Fund (DWSRF) ARPA Grant Division A Water Supply Well Development Capital Improvement Project in the amount of \$126,982.00 and authorize the Township Manager to sign the contract.

Resolved by _____ Seconded by _____

Yes:
No:
Absent:



August 6, 2024

Union Township Board of Trustees
Charter Township of Union
2010 South Lincoln Road
Mt. Pleasant, MI 48858

Re: Charter Township of Union – Drinking Water State Revolving Fund (DWSRF # 7705A)
Letter of Recommendation for Division A: Type I Water Well
GFA #23499

Dear Township Board:

We have reviewed the bids received on Friday July 19, 2024 for the above referenced project. The Two (2) responsive bidders to the project and their base bid price are summarized below. The complete bid tabulations for both bidders is attached to this letter for your reference.

Bid

- | | |
|---------------------------|---------------------|
| 1. Peerless Midwest, Inc. | \$126,982.00 |
| 2. Northern Well and Pump | \$177,920.00 |

Peerless Midwest has completed a significant number of well projects for Union Township over the years and therefore has extensive knowledge of your system and a good working relationship with both staff and GFA. Peerless Midwest was also involved in the test well construction, evaluation and EGLE coordination that was originally done on this site in 2023.

Accounting for the information noted above including experience and previous involvement with this project, it is our recommendation to the board that you approve Peerless Midwest Inc. as the low bidder for the bid price amount of \$126,982.00. GFA will be providing all construction oversight, contract and construction management and closeout for this project.

Please contact me if you have any questions.

Very truly yours,
Gourdie-Fraser, Inc.

Jennifer Graham, PE
Project Manager

enclosures



**Charter Township of Union
DWSRF Project DW-7705A
2024 Water System Upgrades
Division A: Type I Water Well
BID RESULTS SUMMARY**

Item No.	Description	Unit	Estimated Quantity	Peerless Midwest, Inc.		Northern Pump & Well	
				Bid Unit Price	Bid Amount	Bid Unit Price	Bid Amount
1	Mobilization, Max 5%	1	LS	\$ 6,000.00	\$ 6,000.00	\$ 8,640.00	\$ 8,640.00
2	Monitoring Well, 2-inch	200	LF	\$ 42.50	\$ 8,500.00	\$ 60.00	\$ 12,000.00
3	Test Well, 12-inch	200	LF	\$ 448.00	\$ 89,600.00	\$ 622.20	\$ 124,440.00
4	Aquifer Analysis	1	LS	\$ 14,800.00	\$ 14,800.00	\$ 17,740.00	\$ 17,740.00
5	Water Quantity Analysis	1	EA	\$ 2,582.00	\$ 2,582.00	\$ 5,100.00	\$ 5,100.00
6	Site Cleanup and Restoration	1	LS	\$ 5,500.00	\$ 5,500.00	\$ 10,000.00	\$ 10,000.00
Total of All Unit Price Bid Items					\$ 126,982.00		\$ 177,920.00

REQUEST FOR PROPOSALS

EGLE DRINKING WATER STATE REVOLVING FUND (DWSRF): DW-7705A 2024 WATER SYSTEM UPGRADES DIVISION A: TYPE I WATER WELL Union Township, Isabella County

Proposals Due:

4:00 P.M., Friday July 19, 2024

Address Proposals to (mail and/or email):

Engineer :

Attention: Jennifer Graham, P.E.
Gourdie-Fraser, Inc.
123 West Front Street
Traverse City, MI 49684
231-946-5874
jennifer@gfa.tc

Scope of Services:

We have been asked by our client, Union Township to solicit proposals from qualified Type 1 well drillers to investigate and evaluate a new groundwater source to meet the growing demands of the community. The Township recently completed initial aquifer investigation at the proposed well site by constructing a 6-inch test well that demonstrated potential to produce 300-600 gpm. The intent of this project is to proceed with next steps of constructing a 12-inch test well including aquifer and water quality analysis capable of producing up to 800 GPM including the installation of one (1) monitoring well. The information contained below are the specific qualifications each well driller must meet in order to provide an accurate proposal.

A preliminary site layout is attached for reference illustrating the approximate proposed well location, access drive and existing monitoring well. In addition, the 6-inch test well investigation report is also attached for reference.

Background Information:

The existing East Side Iron Removal Facility (Isabella Facility) is owned and operated by Union Township and provides municipal water service to the customers within the Township. The facility operates on two (2) 400 gpm and one (1) 700 gpm production wells (Wells #7, #10 and #11) all located at the facility, which provides iron removal treatment utilizing two (2) 750 gpm pressure filters and then distributes water out to system. Well #7, #10 and #11 are all located within the same aquifer.

With limited aquifer capacity at the Isabella Facility, the Township has investigated locations for a new well site to supplement future demand needs of the East Side Pressure District. The proposed well site is a 14-acre township owned parcel located at 5076 South Mission Road, approximately 1.7 miles west of the existing Isabella WTP. It is the intent of this work to demonstrate that a proposed well can be developed at the proposed well site in an aquifer that will be capable of meeting the proposed capacity requirements described previously. The well driller will be responsible to determine the best location and depth of the proposed well that will be able to provide the most flow capacity without impeding any surrounding wells in the area or regional water levels.

Requirements - General:

- This project is funded through the Michigan Clean Water State Revolving Fund Grant (DW-7705A), all state and/or federal funding requirements shall apply.
 - The following waivers apply to this Contract:
 - Certification Regarding Debarment, Suspension & Other Responsibility Matters
 - Davis-Bacon Act Compliance Certification
 - Davis–Bacon Act, as amended (40 U.S.C. 3141–3148) and Contract Work Hours and Safety Standards Act (40 U.S.C. 3701–3708) will be required. In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the U.S. Secretary of Labor.
- All labor and materials shall be installed compliant with Township, DPW, EGLE, EPA and manufacturer's recommendations.
- Contractor shall be responsible for obtaining all local regulatory permits, completing inspections and payment of all associated fees which include but are not limited to plumbing, mechanical, electrical.
- The site can be accessed by an existing temporary access drive, entrance off of E Deerfield Rd. Contractor shall be responsible to perform any additional clearing / drive improvements to accommodate equipment access as needed. Provide a one (1) year full labor and material warranty on all workmanship, material and equipment furnished for this project.
- It is strongly recommended that you make a site visit and perform an evaluation of the existing conditions and proposed scope of work. Coordinate with the DPW for site access:
 - Kim Smith, Public Services Director (989) 772-4600, Ext 224
 - Shawn McBride, Water Operator (989) 621-1361

Terms of Agreement:

General:

- To hold bid open for 90 consecutive calendar days from the bid due date
- To enter into and execute a contract with the Charter Township of Union

Insurance:

- Contractor will have Worker's Compensation Insurance in limits required by state law and Comprehensive General Liability Insurance coverage in force for all of its operations under this contract.
 - Insurance shall list Charter Township of Union and Gourdie Fraser as additional insureds.

Bonds:

- The Contractor shall include in the proposal price the cost to provide the following:
 - Maintenance and Guarantee Bond in the amount of 50% of the proposal amount, guarantying for a period of one (1) year from final acceptance of the project work
 - Letter of Surety, licensed to business in the State of Michigan, stating ability to obtain a Performance Bond, and Labor and Material Bond for 100% of the proposal amount.

Shop Drawings/O&M Submittals:

- Provide four (4) copies of material specification sheets and warranty information to Engineer. Do not proceed until written approval is received.
- Coordinate all work with Engineer

Schedule:

- To be completed by October 1, 2024

- All work must be completed within thirty (30) calendar days from the beginning of removal to final clean up. Delays by inclement weather shall be approved by the Engineer.

Drilling and Aquifer Testing

Test Well Construction

Installation of one (1) test well capable of producing up to 800 GPM and installation of one (1) monitoring well. The contractor shall be responsible for coordinating final location with engineer and DPW. The test well shall be used to verify water quality and aquifer capacity to meet proposed operation conditions for facility. This well shall be converted to a production well upon demonstrating satisfactory aquifer results as coordinated with the Township, Engineer and approved by EGLE.

The well shall be constructed in accordance with the State of Michigan Well Construction Code (Rules to Part 127 of Act 368 of the Public Acts of 1978, as amended). All materials in contact with drinking water shall meet ANSI/NSF approval and shall include the following:

Monitoring Well

- 2-inch Schedule 80 Steel casing and be installed in the following manner:
 - Total depth of the well is to be approximately 100 to 200 feet
 - Total length of casing not to exceed 190 feet +/-
 - The annulus is grouted with neat cement grout from the top of the gravel pack to the surface.
 - The static water level in the well is expected to be roughly 3 feet.
- Stainless steel screen
 - Length to be 10 feet +/-
 - Driller shall be responsible for determining sizing and submit to owner for review prior to installation
- Well seal, cap and vent

Test Well

- 12-inch Schedule 80 Steel casing and be installed in the following manner:
 - Total depth of the well is to be approximately 100 to 200 feet
 - Total length of casing not to exceed 180 feet +/-
 - The annulus is grouted with neat cement grout from the top of the gravel pack to the surface.
 - The static water level in the well is expected to be roughly 3 feet.
- Stainless steel screen
 - Length to be 20 feet +/-.
 - Driller shall be responsible for determining sizing and submit to owner for review prior to installation.
- Well shall be equipped with a means to measure the water level.
- Well seal, cap and vent.

Duties

Well Driller shall be responsible for performing the following, in addition to the work outlined above in the Well Construction section. Testing shall be completed compliant with High-capacity wells are subject to DWEHD policy and procedure ODWMA-399-003, "Aquifer Test Requirements for Public Water Supply Wells," under Act 399:

- Mobilization

- Performance of well construction log and static water including documentation provided to owner in accordance with the state EGLE Well Code.
- Development of well including conducting a well capacity test at various discharge rates to determine available aquifer capacity for a future production and determine potential influence on adjacent and regional water levels (Mount Pleasant City Wells and Wells #8 / #9 are approximately a quarter mile north of the intersection of Mission / Deerfield Road) as required by EGLE.
 - Driller shall be responsible for monitoring static water levels in proposed well and surrounding existing wells with respect to capacity test.
 - DPW and Engineer will assist driller with communication and coordination with existing well owners.
 - Documentation of all testing and water level observations shall be provided to owner
 - Driller shall be responsible for discharging water to acceptable location that will not cause any soil erosion or sedimentation
- Chemical and radiological water quality sampling shall be performed for proposed well in accordance the state EGLE Well Code including documentation of results to owner including a full Unit 36 Scan, Radiological and PFAS samples, and all sampling required by EGLE for new Type I Water Supply Well.
 - All costs incurred with the sampling and testing shall be the drillers' responsibility
- Well driller shall provide site clean-up upon completion of duties including restoration and/or repair.
- Complete Aquifer Test Analysis and report by a professional Geologist per EGLE Aquifer Testing requirements.

Equipment

Driller shall provide all equipment and materials necessary to complete the work outlined above in the Well Construction and Duties to provide for the well installation, development, yield and drawdown testing, disinfection, water quality sampling, mobilization, and clean-up. They shall include, but are not limited to, the following not stated previously:

- Site access including tree clearing and temporary access drive.
- Temporary Pumping and means of operation.
- Temporary Water and Power Supply
- Flow monitoring and water level measuring devices (pressure transducers accurate to 1/100th) with data logging capabilities.
- Piping, valving and appurtenances
- Discharge hose

Services / Materials Not To Be Included:

The proposal shall not include providing and/or installation of the following items:

- Permanent Pumps / Motors
- Site Electrical
- Distribution Piping
- Drop Pipe

Contractors Proposal Form

Bidders are instructed to submit bids for this project on a unit cost basis as stated in the Proposal. All labor, materials and equipment are considered incidental and to be included in total bid price. All work shall be in compliance with specifications and terms identified in the RFP and applicable laws.

No.	Item	Unit	Est. Qty.	Unit Price	Item Cost
1	Mobilization, Max 5%	LS	1	LS	\$6,000.00
2	Monitoring Well, 2-inch	LF	200	\$42.50	\$8,500.00
3	Test Well, 12-inch	LF	200	\$448.00	\$89,600.00
4	Aquifer Analysis	LS	1	LS	\$14,800.00
5	Water Quality Analytics	EA	1	LS	\$2,582.00
6	Site Cleanup and Restoration	LS	1	LS	\$5,500.00
				TOTAL BID	\$126,982.00

Bidders Signature *Bob Masters*

Printed Name: Bob Masters

Business Name: Peerless-Midwest, Inc.

Address: 505 Apple Tree Drive, Ionia, MI 48846

Contractor / Well Driller License No.:

Telephone: 616-690-8139

Email: bob.masters@peerlessmidwest.com

The Owner may make such investigations as deemed necessary to determine the ability of the Bidder to perform the Work and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any / all bids if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the work as requested.

Charter Township of Union reserves the right to accept or reject any or all proposals.



Proposed Site Plan



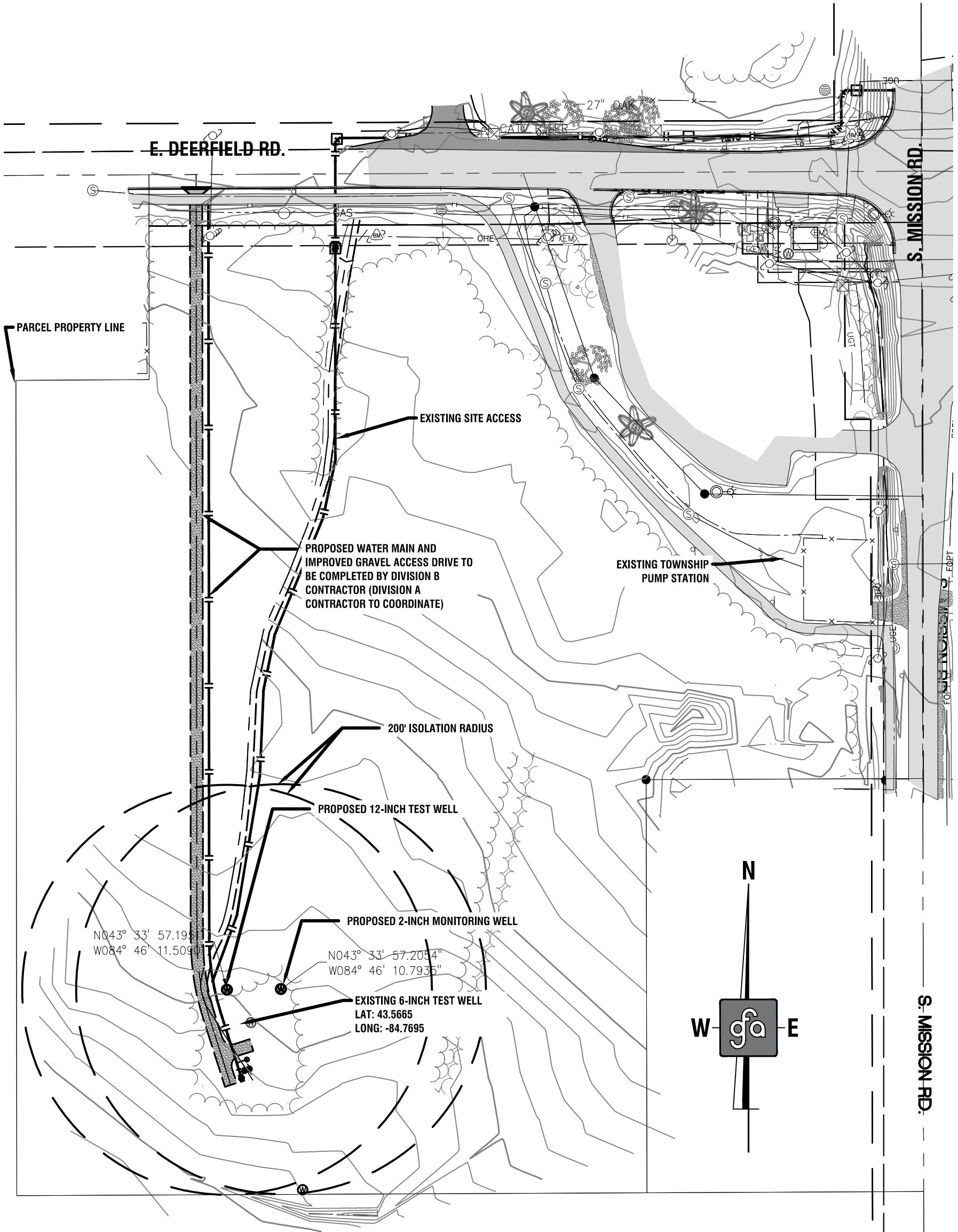
TYPE I TEST PRODUCTION WELL REQUEST PROPOSED WELL SITE PLAN

ENGINEERING
SURVEYING
TESTING & OPERATIONS
123 West Front Street
Traverse City, MI 49684



<http://gfa.lc>
231.946.5874 (p)
231.946.3703 (f)

GRAPHIC SCALE: 1 inch = 100 feet



LEGEND

- PROPOSED TEST WELL
- WATER WELL- RESIDENTIAL, TYPE I AND TYPE II
- 200 FT ISOLATION ZONE
- WELL SITE ACCESS ROAD



Technical Specifications



SECTION 02520 – WATER WELLS AND TESTING

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. This section encompasses all the work required for water wells including well performance testing. The general scope of the drilling and testing will be as follows;
 1. **Construction of one (1) 2-inch diameter observation wells** at an assumed depth of up to 200 feet. The construction will consist of approximately 2-inch steel casing with up to 10 feet of 2-inch PVC filter packed well screen.
 2. **Construction of one (1) 12-inch diameter production well** at an assumed depth of up to 200 feet. The construction will consist of approximately of steel casing with up to 20 feet of SSWW filter packed well screen.
 3. **Performance testing** consisting of a constant rate well performance test of 24-hours in duration.
 4. **Plumbness and Alignment Testing.**

1.02 REFERENCES:

- A. Groundwater Quality Control - Act 368 of the Public Acts of 1978, Part 127. Water Supply and Sewer Systems
- B. American Water Works Association (AWWA) Section A100 Deep Wells.
- C. AWS D1.1 Structural Welding Code
- D. ASTM specification A589-89a, Standard Specification for Seamless and Welded Carbon Steel water well pipe
- E. ASTM F480 – 14 - Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80
- F. American Petroleum Institute (API) Specification 5L
- G. Part 127 of the Public Health Code Act 368 of 1978, Water Supply and Sewer Systems, and Administrative Rules, which are collectively known as the "Michigan Water Well Construction and Pump Installation Code."
- H. Grouting of Community Water Supply Wells, ODWMA- Public Water Supply Program, ODWMA-399-016

1.03 QUALITY ASSURANCE

- A. Contractor shall provide at least 3 different references of successful well drilling projects of similar nature/size in the State of Michigan for Municipal Type I Systems.
- B. Contractor must have been in the pump and well business for a minimum of ten (10) years and must be a licensed well driller in good standing and current certification with the state of Michigan.
- C. Safety is of the highest importance, therefore all crew members working on site must be OSHA 40 hour trained and current on certification. Documentation must be provided prior to starting any work.

- D. All well construction shall conform to the **Michigan Water Well Construction and Pump Installation Code (Part 127, Act 368, PA 1978 and Administrative Rules)**.
 - E. Materials:
 - 1. Shall bear label, stamp, or other markings of specified testing agency.
 - 2. Comply with NSF 14 for plastic potable-water-service piping. Include marking “NSF-pw” on piping.
 - 3. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.
 - F. Well Testing shall conform to EGLE Policy and Procedure WD-03-003: AQUIFER TEST REQUIREMENTS FOR PUBLIC WATER SUPPLY WELLS
- 1.04 SUBMITTALS:
- A. Well Casing: Mill certificates required, or mill markings shall be clearly visible on all casing sections.
 - B. Well screen: provide sieve analysis and screen selection basis.
 - C. Drilling Logs: 1 set to ENGINEER.
 - D. Well Performance Tests: Report raw data only.
- 1.05 JOB CONDITIONS:
- A. Contamination: Cap well using threaded, flanged or compression seal when unattended. Prevent contamination of existing water system.
 - B. Cleanup: Promptly following well installation. Fill pits and return jobsite to original grade. Ground immediately surrounding casing shall be sloped away from well to prevent surface runoff from ponding around completed well.
- 1.06 SCHEDULES
- A. Details:
 - 1. Site Location Map/Site Map
 - 2. Existing 6-inch well analysis
 - 3. EGLE Test Well approval
- 1.07 GUARANTEE
- A. The Contractor shall provide a guarantee for their work according to the specifications.

PART 2 - PRODUCTS

2.01 CASING (2-inch Observation Well):

- A. Diameter-2-inches, AWWA A100, Section 4.3 Table 3, and ASTM Specification A-589 - heaviest new black steel pipe. Mill stencils shall be clearly visible on all pipe sections.

- B. Joints: Standard solvent weld couplings and fittings.
- C. The casing shall extend from two feet above finished grade to depth of up to 300 feet. Casing shall be placed to provide unobstructed, uniform placement of grout.

CASING (12-inch Test Well):

- A. Conform to AWWA A100, Section 4.3 Table 3, and ASTM Specification A-589 - heaviest new black steel pipe. Mill stencils shall be clearly visible on all pipe sections.
- B. Joints: Standard threaded couplings or standard AWS butt welding. Conform to AWWA C206.
- C. The casing shall extend from two feet above finished grade to depth of up to 300 feet.

2.02 GROUT:

- A. **Neat Cement Grout for all wells.** Proportioning: Conform to AWWA A100, Section 7, and Grouting of Community Water Supply Wells, ODWMA- Public Water Supply Program, ODWMA-399-016

2.03 CENTRALIZERS:

- A. Material: PVC or stainless steel placed at the bottom and top of the screened section, and at every 40 feet of casing from the top of the screened section to the surface.

2.04 SCREEN:

- A. Continuous slot, wire wound design. Johnson Screen Company or equal.
- B. Material: AISI Type, 304 Stainless Steel with threaded, recessed couplings or welded connections.
- C. End fittings: Provided with screen, shall be type 304 stainless steel, threaded or welded.
- D. Screen Fittings: Same material as the screen. Shall be welded or threaded, watertight, and straight.
- E. Screen slot size: Screen shall be designed based upon the results of the grain size analyses.
- F. Length:
 - a. **Monitoring Well:** 10 feet
 - b. **Test Well:** 20 feet but may be field adjusted according to encountered conditions.
- G. Depth Interval: The approximate screen setting will be from 170 to 190 feet below existing grade for Test Well.
- H. Diameter: twelve (12)-inch diameter pipe size for test Well
- I. CONTRACTOR shall ensure that the screen has adequate collapse and tensile strengths.
- J. Centralizers shall be securely attached to the top and bottom of the screen section.
- K. Submit sieve analyses results to ENGINEER for final selection of slot opening.**

2.05 GRAVEL PACK:

- A. Selection: In accordance with screen manufacturer's recommendations based on sieve analyses of the formation, and AWWA A100, Section 6.

2.06 CAP, VENT, & SEAL

- A. Shall be watertight and tightly secured to casing. Vent shall be screened.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install permanent casing plumb enabling discharge column, bowl assembly, and fittings to hang free of contact with permanent casing. Seat and seal permanent casing to prevent infiltration of sand, silt and water.
- B. Pressure Grouting Method: Force grout using the tremie method from the bottom of the casing toward the surface continuously in one operation while keeping tremie pipe submerged in grout at all times during the operation.
- C. Well Development Method: Yield maximum water per foot of available draw down and extract maximum practical quantity of sand from water bearing formation such that water produced under normal operating conditions is free of sand.
- D. After completion, cap well with screwed, flanged, or compression seal cap.
- E. Plugging or abandonment requires review by the ENGINEER.

3.02 TESTING AND INSPECTION:

A. General:

- 1. Complete, develop, clean and arrange with ENGINEER for required inspections and tests.
- 2. Provide all equipment, power, water supply and assistance necessary to conduct the performance tests, including suitable gate valve, orifice, pressure gauge, water sample tap, and at least 200 feet of discharge piping and splash pan.

B. Drillers Log: Provide all information as applicable and in accordance with EGLE Wellogie Water Well and Pump Record Submittals

C. Bore Hole Surveys:

- 1. General: The completed well shall be constructed round, plumb, and true to line as defined in this section of the standard. Test for plumbness and alignment will be required by ENGINEER after completed construction of the well. The well must meet AWWA Standards for plumbness and alignment. Testing shall be performed in accordance with AWWA A100-Appendix D.
- 2. Tolerances: The following tolerances shall be maintained by the CONTRACTOR:
 - a. Plumbness: The maximum allowable horizontal deviation (drift) of the well from the vertical shall not exceed two thirds of the smallest inside diameter of that part of the well being tested per 100 ft of depth.
 - b. Alignment: The alignment must be satisfactory for the successful installation and operation of the permanent pumping equipment such that pump and column hangs freely without contact with permanent casing.

3. Departures from the above tolerances shall be corrected by CONTRACTOR at CONTRACTOR'S expense.
- E. Aquifer Testing:
1. Test Procedure:
 - a. Water levels readings will be measured by ENGINEER.
 - b. Pumping rate will be established by ENGINEER, however, the test pump shall be capable of producing up to 800 gpm.
 - c. The pumping duration will be 24 hours with a 24 hour recovery period. The pump shall remain in the production well throughout the recovery period.
- 3.03.1 ADJUST AND CLEAN:
- A. Chlorination:
1. All well disinfection shall be in accordance with AWWA C654 latest edition.
 2. Chlorinate immediately following pumping testing work. Chlorine gas will not be permitted on job site.
 3. Procedure: prepare and apply chlorine solution to produce chlorine concentration of 100 ppm residual free chlorine in all parts of the well.
- B. Fill, stabilize and grade all pits and well spoils.
- C. The discharge from all test pumping shall not cause any soil erosion or sedimentation. Location to be coordinated with owner.
- D. Contractor shall be responsible for all site cleanup including restoration.

END OF SECTION 02520



DWSRF Certification Forms



**Certification Regarding
Debarment, Suspension, and Other Responsibility Matters**

The prospective participant certifies, to the best of its knowledge and belief, that it and its principals:

- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in transactions under federal nonprocurement programs by any federal department or agency;
- (2) Have not, within the three year period preceding the proposal, had one or more public transactions (federal, state, or local) terminated for cause or default; and
- (3) Are not presently indicted or otherwise criminally or civilly charged by a government entity (federal, state, or local) and have not, within the three year period preceding the proposal, been convicted of or had a civil judgment rendered against it:
 - (a) For the commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public transaction (federal, state, or local) or a procurement contract under such a public transaction;
 - (b) For the violation of federal or state antitrust statutes, including those proscribing price fixing between competitors, the allocation of customers between competitors, or bid rigging; or
 - (c) For the commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

I understand that a false statement on this certification may be grounds for the rejection of this proposal or the termination of the award. In addition, under 18 U.S.C. §1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to five years, or both.

Name and Title of Authorized Representative

Name of Participant Agency or Firm

Signature of Authorized Representative

Date

I am unable to certify to the above statement. Attached is my explanation.



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Project Number: _____

Period From: _____ To: _____

Davis-Bacon Act Compliance CERTIFICATION

I certify to the best of my knowledge and belief that the above referenced project:

Complies with Davis-Bacon and Related Acts and U.S. Environmental Protection Agency policy memo dated March 2, 2012, and the Fiscal Year 2012 Consolidated Appropriations Act (P.L. 112-74) and that all laborers and mechanics employed by contractors and subcontractors during the above referenced period were paid wages at rates not less than those listed on the prevailing wage rate contained in the contract documents and that all applicable provisions of the Davis-Bacon and Related Acts have been met.

Name of Loan Recipient

Date

Signature of Authorized Representative

Print Name and Title of Authorized Representative

"General Decision Number: MI20240106 04/19/2024

Superseded General Decision Number: MI20230106

State: Michigan

Construction Type: Building

County: Antrim County in Michigan.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be

adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/05/2024
1	01/19/2024
2	03/08/2024
3	03/15/2024
4	04/05/2024
5	04/19/2024

ASBE0047-005 07/01/2023

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR.....	\$ 36.62	19.78

BOIL0169-002 01/01/2024

	Rates	Fringes
BOILERMAKER.....	\$ 39.65	35.68

BRMI0009-024 08/01/2023

	Rates	Fringes
BRICKLAYER.....	\$ 34.32	21.69
TILE SETTER.....	\$ 34.32	21.69

CARP0202-002 06/01/2023

	Rates	Fringes
CARPENTER (Drywall Hanger and Form Work).....	\$ 25.61	20.92

CARP1102-005 06/01/2023

	Rates	Fringes
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MILLWRIGHT.....\$ 32.00 26.52

ENGI0324-021 06/01/2023

Rates Fringes

POWER EQUIPMENT OPERATOR:

GROUP 1.....	\$ 45.48	25.25
GROUP 2.....	\$ 42.18	25.25
GROUP 3.....	\$ 39.53	25.25
GROUP 4.....	\$ 37.82	25.25
GROUP 5.....	\$ 31.96	25.25
GROUP 6.....	\$ 29.48	25.25

Crane operator with main boom and jib 300' or longer: \$1.50 per hour above the group 1 rate.

Crane operator with main boom and jib 400' or longer: \$3.00 per hour above the group 1 rate.

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane operator with main boom and jib 400', 300', or 220' or longer.

GROUP 2: Crane operator with main boom and jib 140' or longer; tower crane, gantry crane and whirley derrick

GROUP 3: Crane; Paver; and Scraper; Stiff Leg Derrick

GROUP 4: Fork Truck (over 20' lift)

GROUP 5: Fork Truck (20' lift and under for masonry work)

GROUP 6: Oiler

IRON0025-005 06/01/2022

Rates Fringes

IRONWORKER (REINFORCING).....	\$ 31.43	34.77
IRONWORKER (STRUCTURAL).....	\$ 34.50	38.44

LAB01098-026 07/01/2023

Rates Fringes

LABORER

Mason Tender - Brick;

Mason Tender -

Cement/Concrete; and

Pipelayer.....\$ 19.37 13.45

Sandblaster.....\$ 18.61 12.90

 PLUM0085-001 05/04/2023

	Rates	Fringes
PIPEFITTER (Excluding HVAC Pipe & System Installation).....	\$ 38.01	21.73
PIPEFITTER (HVAC Pipe Installation Only).....	\$ 38.01	21.73
PLUMBER (Excluding HVAC Pipe & System Installation).....	\$ 38.01	21.73
PLUMBER (HVAC System Installation Only).....	\$ 38.01	21.73

 * SFMI0669-003 01/02/2024

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers).....	\$ 41.34	26.80

 SHEE0007-003 05/01/2023

	Rates	Fringes
SHEET METAL WORKER (Excluding HVAC Duct & System Installation).....	\$ 31.05	25.07
SHEET METAL WORKER (HVAC Duct Installation Only).....	\$ 31.05	25.07

 * SUMI2011-031 02/14/2011

	Rates	Fringes
CARPENTER, Excludes Drywall Hanging, and Form Work.....	\$ 18.58	2.06
CEMENT MASON/CONCRETE FINISHER...	\$ 20.75	5.82
ELECTRICIAN.....	\$ 19.12	4.91
GLAZIER.....	\$ 17.19 **	3.83
LABORER: Common or General.....	\$ 13.55 **	3.55
LABORER: Landscape & Irrigation.....	\$ 11.04 **	4.39
OPERATOR: Backhoe/Excavator.....	\$ 24.04	6.03

OPERATOR: Bulldozer.....	\$ 22.46	7.29
OPERATOR: Grader/Blade.....	\$ 24.04	6.03
OPERATOR: Roller.....	\$ 27.47	8.86
OPERATOR: Tractor.....	\$ 19.60	7.31
OPERATOR: Loader.....	\$ 24.04	6.03
PAINTER: Brush Only.....	\$ 16.20 **	2.07
PAINTER: Roller.....	\$ 16.61 **	2.09
PAINTER: Spray.....	\$ 16.37 **	2.08
ROOFER.....	\$ 13.64 **	4.58
TRUCK DRIVER, Includes Dump and Tandem Truck.....	\$ 16.56 **	3.50
TRUCK DRIVER: Flatbed Truck.....	\$ 17.44	4.51

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other

health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and

the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour

National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

"General Decision Number: MI20240157 05/17/2024

Superseded General Decision Number: MI20230157

State: Michigan

Construction Type: Heavy
PIPELINE

Counties: Michigan Statewide.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for

performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/05/2024
1	05/03/2024
2	05/17/2024

* ENGI0325-012 05/01/2024

	Rates	Fringes
Power equipment operators - gas distribution and duct installation work:		
GROUP 1.....	\$ 37.98	25.25
GROUP 2.....	\$ 34.75	25.25

SCOPE OF WORK: The construction, installation, treating and reconditioning of pipelines transporting gas vapors within cities, towns, subdivisions, suburban areas, or within private property boundaries, up to and including private meter settings of private industrial, governmental or other premises, more commonly referred to as ""distribution work,"" starting from the first metering station, connection, similar or related facility, of the main or cross country pipeline and including duct installation.

Group 1: Backhoe, crane, grader, mechanic, dozer (D-6 equivalent or larger), side boom (D-4 equivalent or larger), trencher(except service), endloader (2 yd. capacity or greater).

GROUP 2: Dozer (less than D-6 equivalent), endloader (under 2 yd. capacity), side boom (under D-4 capacity), backfiller, pumps (1 or 2 of 6-inch discharge or greater), boom truck (with powered boom), tractor (wheel type other than backhoe or front endloader). Tamper (self-propelled), boom truck (with non-powered boom), concrete saw (20 hp or larger), pumps (2 to 4 under 6-inch discharge), compressor (2 or more or when one is used continuously into the second day) and trencher(service). Oiler, hydraulic pipe pushing machine, grease person and hydrostatic testing operator.

MICHIGAN STATEWIDE

	Rates	Fringes
LABORER (DISTRIBUTION WORK)		
Zone 1.....	\$ 27.16	13.45
Zone 2.....	\$ 25.42	13.45
Zone 3.....	\$ 23.55	13.45
Zone 4.....	\$ 22.92	13.45
Zone 5.....	\$ 22.95	13.45

DISTRIBUTION WORK - The construction, installation, treating and reconditioning of distribution pipelines transporting coal, oil, gas or other similar materials, vapors or liquids, including pipelines within private property boundaries, up to and including the meter settings on residential, commercial, industrial, institutional, private and public structures. All work covering pumping stations and tank farms not covered by the Building Trades Agreement. Other distribution lines with the exception of sewer, water and cable television are included.

Underground Duct Layer Pay: \$.40 per hour above the base pay rate.

- Zone 1 - Macomb, Oakland and Wayne
- Zone 2 - Monroe and Washtenaw
- Zone 3 - Bay, Genesee, Lapeer, Midland, Saginaw, Sanilac, Shiawassee and St. Clair
- Zone 4 - Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon and Schoolcraft
- Zone 5 - Remaining Counties in Michigan

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours

they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

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A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

State Adopted Rate Identifiers

Classifications listed under the "SA" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in

the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

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- * a Wage and Hour Division letter setting forth a position on a wage determination matter
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U.S. Department of Labor
200 Constitution Avenue, N.W.
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2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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U.S. Department of Labor
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Washington, DC 20210

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END OF GENERAL DECISION"



EGLE Test Well Approval Letter





GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
BAY CITY DISTRICT OFFICE



PHILLIP D. ROOS
DIRECTOR

June 13, 2024

Kim Smith
Union Township
2010 South Lincoln Road
Mt. Pleasant, MI 48858

WSSN: 06725
County: Isabella

Dear Kim Smith:

SUBJECT: Union Township – Test Well 12 Approval Updated

The Department of Environment, Great Lakes, and Energy (EGLE), Drinking Water and Environmental Health Division (DWEHD) has reviewed the documentation submitted, and completed a site inspection of the proposed test well 12 (TW-12) location on March 13, 2023. During the latest site visit on May 29, 2024, it was determined a follow up site inspection was not needed prior to the installation of the final TW-12. The proposed capacity of the finished well will be at most 800 gallons per minute. Based on the results of the Adverse Resource Impact (ARI) completed by EGLE’s Source Water Unit, TW-12 shall not be pumped more than 12 hours per day to qualify for Zone B.

During the site investigation, it was determined TW-12 was able to meet the minimum isolation distance requirements from major sources of contamination. The Township is also the owner of the minimum 200-foot isolation radius around the wellhead. No isolation distance variance will be required for TW-12.

This letter grants drilling approval to conduct TW-12 site investigation work for the Union Township Community Water Supply. TW-12 will be completed at approximately 43.5659, -84.7698. According to a proposal submitted by Gourdie Fraser on May 3, 2024, TW-12 will utilize a 12-inch schedule 80 steel casing that will extend to a depth no greater than 280 feet. TW-12 is slated to be equipped with a wire wound stainless screen extending 20 feet below the casing.

Union Township has already installed a 6-inch PVC monitoring well to test the aquifer for sustainable well flows. A second monitoring well will be installed on site to monitor the drawdown from TW-12 as required by EGLE policy ODWMA-399-003, *Aquifer Test Requirements for Public Water Supply Wells*. Should conditions prove favorable during the testing and construction of TW-12, Union Township will apply for an Act-399 permit to construct the 12-inch production well.

Once the test well has been drilled, the following documentation must be submitted prior to applying for an Act-399 permit:

1. A final site plan showing the exact location of the test well relative to all major and potential sources of contamination. Additionally, the site plan should indicate the 100-year flood elevations relative to the wells.
2. A log of the test well. A pump record must also be included.
3. The results of a 72-hour pump test. According to EGLE standard policy *ODWMA-399-003 Aquifer Test Requirement for Public Water Supply Wells*, a 72-hour pump test must be completed to determine the reliability of the water source. A copy of the forementioned policy is included in this letter. The final permit will not be issued until the results of the required 72-hour pump test are completed and reviewed by this office.
4. Evidence that the annular space between the drill holes and well casings have been properly filled with neat cement grout. This requirement also applies to any observation wells that will remain in the standard isolation area.
5. Chemical monitoring must be done on the water from the proposed test well to help determine if there are similarities between the existing observation wells and the proposed test well, and to determine the potability of the water produced from the new well. A copy of the required chemical monitoring is included with this letter. The final permit will not be issued until the chemical monitoring has been completed and reviewed by this office.
6. Detailed plans and specifications must be submitted for the test well including depth, diameter, pump setting, pump curves, etc. must be collected at the end of the pump test for analysis. Copies of the analytical results along with conclusions and recommendations on the water quality will need to be included in the Report. Information on EGLE's Drinking Water Laboratory and list of other certified laboratories can be viewed at www.michigan.gov/drinkingwater.

This test well approval letter does not approve TW-12 for use as a production well or connection to a community water supply system. Installation of pump equipment and related appurtenances enabling a connection to the water system is prohibited. Before TW-12 can be switched to production, an Act-399 permit must be submitted to the Bay City District Office. A permit can be submitted electronically through the MiEHDWIS portal for Union Township. The permit application, construction specifications, and plans will need to be completed by an engineer registered in the State of Michigan.

This test well approval letter expires in two years of the date of this letter. This letter does not remove the need for other applicable local, state, or federal approvals or permits. If you should have any questions regarding this letter, please contact me by email at mudds@michigan.gov or by using the information below.

Sincerely,



Shane Mudd
District 22 Engineer
Bay City District Office
Drinking Water and Environmental Health
517-388-3582

Enclosure(s):
New Well Chemical Monitoring Requirements
ODWMA-399-003 Aquifer Test Requirement for Public Water Supply Wells

cc:
Shawn McBride, OIC
Central Michigan Health Department

**CHEMICAL MONITORING REQUIREMENTS
FOR NEW COMMUNITY WATER SUPPLY WELLS**

PARTIAL CHEMISTRY

(R, 32)*
Nitrate
Nitrite
Fluoride
Sulfate
Chloride
Sodium

WATER QUALITY PARAMETERS

(CORR, 33)*
Alkalinity
Calcium
Conductivity
Orthophosphate as PO₄ pH
(analyze in field) Temperature
(analyze in field)

GENERAL METALS

(CPM1, 36ME)*
Iron
Manganese
Copper
Zinc

METALS

(CMET2, 36ME)*
Arsenic
Barium
Cadmium
Chromium
Mercury
Antimony
Beryllium
Nickel
Selenium
Thallium

CYANIDE

(CCN, 36CN)*
Cyanide

VOLATILE ORGANICS (VOC)

(CXVO, 36VO)*
Benzene
Carbon Tetrachloride
o-dichlorobenzene
p-dichlorobenzene
1,2-dichloroethane
1,1-dichloroethylene
cis-1,2-dichloroethylene trans-1,2-
dichloroethylene Dichloromethane
(methylene chloride)
1,2-dichloropropane
Ethylbenzene
Monochlorobenzene
Styrene
Tetrachloroethylene
Toluene
1,2,4-trichlorobenzene
1,1,1-trichloroethane
1,1,2-trichloroethane
Trichloroethylene
Xylenes (total)
Vinyl Chloride

SYNTHETIC ORGANICS (SOC)

Pesticides
(CXPT, 36PT)*
Alachlor
Atrazine
Benzo(a)pyrene
Chlordane
Di(2-ethylhexyl) adipate
Di(2-ethylhexyl) phthalate
Endrin
Heptachlor Heptachlor
Epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Lindane
Methoxychlor
Polychlorinated Biphenols
Simazine
Toxaphene

SOC (cont.)

Herbicides
(CXHB, 36HB)*
Dinoseb
Pentachlorophenol
Picloram
2,4-D
2,4,5-TP (Silvex)

Carbamates
(CXL P, 36LP)*
Aldicarb
Aldicarb Sulfoxide
Aldicarb Sulfone
Carbofuran
Oxamyl (vydate)

PFAS

(CPFAS, 36PF)*
Perfluorobutanesulfonic Acid (PFBS)
Perfluorohexane Sulfonic Acid (PFHxS)
Perfluorononanoic Acid (PFNA)
Perfluorooctane Sulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
Perfluorohexanoic Acid (PFHxA)
HFPO-DA


RADIOACTIVITY

Uranium (CU, 36ME)*
Not performed at EGLE Lab:
Gross Alpha
Radium 226
Radium 228

A certified laboratory must perform the above testing.

Michigan Department of Environment, Great Lakes, and Energy (EGLE) Laboratory scans may include other contaminants for which monitoring is not mandated.

* EGLE Lab Test Code and Sample Unit

	OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: December 1, 1997	Subject: Aquifer Test Requirements for Public Water Supply Wells		Category: <input type="checkbox"/> Internal/Administrative <input type="checkbox"/> External/Noninterpretive <input checked="" type="checkbox"/> External/Interpretive
Revised Date: April 14, 2004	Division/Office and Program Names: ODWMA-Field Operations Section and Environmental Health Section		
Reformatted Date: January 14, 2013	Number: ODWMA-399-003	Page: 1 of 6	

A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION, PURPOSE, OR ISSUE:

The goal of this policy and procedure is to establish standards for the acquisition of information used in implementing sound groundwater resource management practices. The Office of Drinking Water and Municipal Assistance (ODWMA) has established the following requirements and evaluation criteria for yield tests and hydrogeological assessments on wells serving public water supply systems. The requirements for a yield test are based upon widely accepted practices for conducting an aquifer test for the purpose of estimating potential yields from an aquifer and wells, characterizing the groundwater resource, and managing the groundwater resource.

AUTHORITY:

R 325.10807 (Rule 807), R 325.10809 (Rule 809), R 325.10812 (Rule 812), R 325.10813 (Rule 813), R 325.10814 (Rule 814), and R 325.10830 (Rule 830) of the administrative rules adopted under the Safe Drinking Water Act, 1976 PA 399, as amended, covering the location of wells, isolation area modification, location of wells with respect to major sources of potential contamination, studies of hydrogeological conditions by suppliers of water to Type I and Type IIa public water supplies, studies of suppliers of water of Type IIb and Type III public water supplies, and yield or performance testing requirements.

STAKEHOLDER INVOLVEMENT:

This policy and procedure was vetted before the consulting community through a public meeting in 1995. There were no objections to the policy and procedure. Language was added, such as the requirements for obtaining static water elevations and the determination of the groundwater gradient and direction of flow, at the recommendation of the consulting community.

DEFINITIONS:

High Capacity Well: a well or combination of wells that is or will be equipped with a pump of 70 gallons per minute (gpm) or greater capacity intended to serve a Type I public water supply

OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE

Subject: Aquifer Test Requirements for Public Water
Supply Wells

Number: ODWMA-399-003

Page 2 of 6

system, or a Type II or Type III public water supply system with a pump of 70 gpm or greater capacity where the projected water withdrawal is over 100,000 gallons per day average for any 30 consecutive days.

Hydrogeologic Assessment: a study of hydrogeologic conditions, including a yield test, conducted for the purpose of determining an isolation area or assessing the acceptability of a well location.

Low Capacity Well: a well or combination of wells intended to serve a Type I, Type II, or Type III public water supply system that does not meet the definition of high capacity.

Yield Test: a test completed to determine the long-term production capability and/or drawdown of an aquifer or well.

POLICY:

1. Yield Tests for High Capacity Wells: High capacity wells shall be subject to the requirements of this policy and procedure.
2. Yield Tests for Low Capacity Wells: The requirements of this policy and procedure may apply to a low capacity well where deemed necessary by the ODWMA. Yield tests on low capacity wells may be required to fulfill all or a portion of this policy and procedure as deemed necessary by the ODWMA.
3. Hydrogeological Assessments: Yield tests conducted as part of a hydrogeologic assessment, such as those required under R 325.10830 on a Type I, Type II, or Type III well or a Wellhead Protection Area delineation, shall conform to the requirements of this policy and procedure. Waiver of the requirements for a yield test shall be contingent upon the availability of information on the aquifer necessary to completing the assessment using existing sources of information.
4. Replacement of Well Capacity: The requirements of this policy and procedure may be waived where a well intended to serve an existing Type I, Type II, or Type III public water supply is being constructed for the sole purpose of replacing previously existing capacity. Waiver of the requirements shall be contingent upon the availability of existing information that fulfills the requirements and intent of this policy and procedure.

PROCEDURES:

The purpose of an aquifer test is to define aquifer hydraulic characteristics and determine the ability of the aquifer to yield water. Data from an aquifer test shall be subject to a suitable mathematical analysis to predict the effects of continuous pumping with no recharge and determine a safe withdrawal rate from the aquifer. In certain instances, an aquifer test may be required to assess the effects of well interferences, determine if groundwater recharge or barrier boundaries exist, or assess the aquifer's vulnerability to contamination.

OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE

Subject: Aquifer Test Requirements for Public Water
Supply Wells

Number: ODWMA-399-003

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Observation Well Requirements – Aquifer tests shall be conducted using a minimum of two observation wells. The observation wells may consist of adjacent wells terminated in the same aquifer and not in service during the aquifer test, or wells constructed for the sole purpose of obtaining drawdown measurements during the aquifer test. Observation wells shall be completed in the same aquifer and screened at or near the depth of the production well. If the production well terminates in the bedrock, the observation wells shall terminate in the same bedrock formation at approximately the same depth and exhibit a similar interval of open borehole. It is recommended observation wells be located at distances from the production well one to five times the thickness of the aquifer and at right angles to each other. The observation wells shall be located at different distances from the production well.

Location Information – Locations for all wells at the well site or used in the aquifer test (production well and observation wells) shall be obtained. Locations shall be obtained using a global positioning system and reported as latitude and longitude in degrees-minutes-seconds or in degrees to an accuracy of 0.00001 of a degree.

Water Well Records – Water well records for all wells at the site shall be entered into Wellogic or copies of the water well records transmitted to the ODWMA for entry into Wellogic. The water well records shall include complete and accurate location information, which at a minimum is to include the latitude and longitude of the well, the township name, township number, range number, section number, and county name where the wells are located. (Note: Transmittal of water well records to the ODWMA does not preclude the responsibility on the part of the water well driller to retain a copy and transmit a copy of the water well record to the local health department and the owner of the well in accordance with the Michigan Water Well Construction and Pump Installation Code, Part 127, Water Supply and Sewer Systems, of the Public Health Code, 1978 PA 368, as amended, and the administrative rules promulgated thereunder).

Static Water Elevations, Groundwater Gradient, and Direction of Flow – Static water elevations shall be obtained in all wells constructed at the well site or utilized in the aquifer test. Static water elevations shall be provided in feet above mean sea level (ft AMSL) with reference to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988. Static water elevations shall be determined by surveying the top-of-casing (ft AMSL), measuring the depth from the top-of-casing to the static water level in the well, and subtracting this depth from the top-of-casing elevation to determine the static water elevation in the wells. All surveyed elevations, depth from the top-of-casing to the static water level, and static water elevations shall be reported to an accuracy of 0.01 feet.

The static water elevations shall be used to determine the groundwater gradient and the direction of groundwater flow. The gradient and direction of groundwater flow shall be determined by "triangulation," at a minimum, on three static water elevations (one from the production well and one each from the two observation wells). Wells may be in such close proximity that obtaining an accurate groundwater gradient and direction of groundwater flow is

OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
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Subject: Aquifer Test Requirements for Public Water
Supply Wells

Number: ODWMA-399-003

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not possible. In such instances the top-of-casing elevation, depth from the top-of-casing to the static water level, and static water elevation shall be provided.

Prior to the Aquifer Test – The collection of background static water levels is required to account for any natural or manmade trends in groundwater level that might impact the outcome of the aquifer test. Before beginning the aquifer test, static water level measurements shall be obtained from the production well and observation wells. Static water level measurements shall be taken at a minimum of one reading every hour for a period of time equal to at least 1/3 of the anticipated length of the aquifer test.

Pumping Rate and Duration – The production well shall be set up and equipped to discharge at or above the desired production rate for the duration of the aquifer test. Provisions shall be made to maintain a constant flow rate from the production well over the course of the aquifer test. Periodic measurement of the flow rate should be made to ensure a constant discharge. Water from the production well shall be discharged in a manner that will not impact water levels in the aquifer or the outcome of the aquifer test. Provisions shall be provided to control or precisely know the time and magnitude of groundwater withdrawals from the aquifer as a result of nearby large capacity wells producing from the same aquifer.

Where a production well is completed in a confined aquifer, the duration of the aquifer test shall be a minimum of 24 hours. Where hydrogeologic data suggests the aquifer is unconfined, the duration of the aquifer test shall be a minimum of 72 hours.

Drawdown and Recovery Measurements – During the aquifer test, drawdown measurements shall be recorded in the production well and observation wells to an accuracy of 0.01 feet. Drawdown measurements shall be made in the production well and observation wells, at a minimum, in accordance with the following schedule:

<u>ELAPSED TIME</u>	<u>MEASUREMENT FREQUENCY</u>
0 to 10 minutes	1 per minute
10 to 20 minutes	Every 2 minutes
20 to 60 minutes	Every 5 minutes
60 to 180 minutes	Every 15 minutes
180 to 360 minutes	Every 30 minutes
360 minutes to completion	Every 60 minutes

Upon completion of pumping, measurements of water level recovery shall be obtained from the production and observation wells for a period of time not less than 1/3 the length of the period of pumping. During recovery, measurements shall be made in accordance with the schedule as noted above for drawdown measurements.

The pretest, time-drawdown, and recovery data that is collected shall be provided in both hard copy and digital form to the ODWMA. Where data has been automatically collected in digital form at a frequency greatly in excess of the aforementioned elapsed time and measurement frequency, the data shall be reduced to a reasonable and manageable size and form prior to submittal of the data to the ODWMA.

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Analysis of Data – At a minimum, the aquifer hydraulic characteristics transmissivity and storage coefficient shall be determined employing the methods of Cooper and Jacob (1946) or Theis (1935). More complex methods of analysis, including but not limited to the following, should be used where appropriate to the area hydrogeology and response of the aquifer to the withdrawal of groundwater:

- Hantush and Jacob, 1955 – leaky-confined conditions
- Hantush, 1960 – leaky-confined conditions
- Neuman, 1972 – unconfined conditions and/or delayed yield
- Neuman, 1974 – unconfined conditions and partial penetration
- Hantush, 1961 – partial penetration
- Ferris, et al., 1962 – the presence of boundaries

The analysis of data shall include a prediction of the effects of 100 days pumping at the maximum pumping rate of the permanent pump. The predictions shall include the following:

- Maximum safe withdrawal rate for the production well.
- Projected drawdown in the production well (corrected for well losses where necessary).
- Projected drawdown throughout the aquifer (i.e., distance-drawdown or plan review).

REFERENCES:

- Cooper, H.H., Jr., and C.E. Jacob, 1946. *A generalized graphical method for evaluating formation constants and summarizing well field history*, Transactions of the American Geophysical Union, Vol. 27, pp. 526-534.
- Ferris, J.G., D.B. Knowles, R.H. Brown, and R.W. Stallman, 1962. *Theory of Aquifer Tests*, Ground-Water Hydraulics, Geological Survey Water-Supply Paper 1536-E, p. 174.
- Hantush, M.S. and C.E. Jacob, 1955. *Non-steady radial flow in an infinite leaky aquifer*, Transactions of the American Geophysical Union, Vol. 36, pp. 95-100.
- Hantush, M.S., 1960. *Modification of the theory of leaky aquifers*, Journal of Geophysical Research, Vol. 65, No. 11, pp. 3713-3725.
- Hantush, M.S., 1961. *Drawdown around a partially penetrating well*, Journal of Hydraulic Division, Proceeding of the American Society of Civil Engineers, Vol. 87(HY4), pp. 83-98.
- Neuman, S.P., 1972. *Theory of flow in unconfined aquifers considering delayed response of the watertable*, Water Resources Research, Vol. 11, pp. 1031-1045.
- Neuman, S.P., 1974. *Effect of partial penetration on flow in unconfined aquifers considering delayed gravity response*, Water Resources Research, Vol. 10, No. 2, pp. 303-312.

OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE

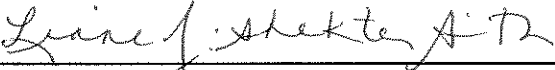
Subject: Aquifer Test Requirements for Public Water
Supply Wells

Number: ODWMA-399-003


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Theis, C.V., 1935. *The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage*, Transactions of the American Geophysical Union, Vol. 16, pp. 519-524.

OFFICE CHIEF APPROVAL:



Liane J. Shekter Smith, Chief
Office of Drinking Water and Municipal Assistance



Date



Existing 6-inch Monitoring Well Analysis Report





Ionia, MI / 616.527.0050
Fenton, MI / 810.215.1295

August 29, 2023

Kim Smith, Utilities Director
Charter Township of Union
Mt. Pleasant, MI

**RE: Observation Well Drilling, Construction and APT Analysis- Observation Well 23A,
Union Charter Township, Michigan**

Dear Mrs. Smith:

Peerless-Midwest, Inc. (PMI) was contracted by the Charter Township of Union, Michigan (Union Township) in collaboration with their Township Engineer, Gourdie Fraser (GFA) to construct an observation well (OW 23A); conduct an aquifer performance test (APT); analyze the APT data sets; determine the 100-day maximum safe yield rating potential for a new future well at the proposed site (The Site) in Union Township, Michigan; and construction details of a 6-inch well that will be converted to a monitoring well upon project completion.

The Site is approximately 2 miles south of downtown Mt. Pleasant, Michigan. OW 23A is located approximately 650 feet west of South Mission Road and 810 feet south of East Deerfield Road. The Site is located on the Mount Pleasant USGS 1:24,000 quadrangle in the northeast quarter of Section 34, Union Township (T14N, R4W), Isabella County, Michigan (Figure 1).

Project Need:

The existing East Side Iron Removal Facility (Isabella Facility) is owned and operated by Union Township and provides municipal water service to the customers within the Township. The facility operates on two (2) 400 gpm and one (1) 700 gpm production wells (Wells #7, #10 and #11) all located at the facility, which provides iron removal treatment utilizing two (2) 750 gpm pressure filters and then distributes water out to system. Well #7, #10 and #11 are all located within the same aquifer. Based on the development and testing of the three (3) Isabella Facility Wells #7, #10, and #11 it was determined that the aquifer is capable of producing a rated capacity of 1100 GPM allowing the Township to have the flexibility to use Well #7 simultaneously with one of the other wells (well #11 or #10 - operating lead / lag).

With limited aquifer capacity at the Isabella Facility, the Township began investigating locations for a new well site to supplement future demand needs of the East Side Pressure District. A feasibility study completed by GFA in November 2021 identified several plausible sites of

which they ultimately selected a 14 acre parcel they owned located at 5076 South Mission Road. In 2022 the Township was successful in obtaining a Source Water Protection Grant from Michigan Department of Environment, Great Lakes and Energy (EGLE) Source Water Protection Grant in 2022 to partially fund further exploration of this site. This year the Township solicited a Request for Proposals (RFP) to retain a well driller to proceed with this work. It was the intent of the RFP scope for the selected contractor to construct and develop an observation well and demonstrate that the aquifer would be capable of meeting the proposed capacity requirements of 400 Gallons Per Minute or greater for future use. This well, upon completion of the analysis will be utilized as a monitoring well for a future test production and associated well pump testing, if applicable.

Geologic/ Hydrogeologic Background

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) identifies the primary unconsolidated material at the Site as end moraines of medium-textured till. Till is typically considered poorly sorted (well-graded), unstratified material. These materials are deposited directly by ice, as compared to meltwater deposits, and are often angular in shape. Given the poorly sorted nature of the materials, till deposits often don't have vertically continuous sand and gravel units required for high-capacity well development and thus aren't typically utilized for this application. Wells completed in these materials are often able to meet the needs of domestic users where sand and gravel lenses are present.

Moraines are the landforms formed by the accumulation of till which are deposited as a result of advances/ retreats of glaciers. End moraines, as their name suggests, form at the terminus, or end, of a glacier. When the glacier stops "advancing" and temporarily pauses (is neither "advancing" or "retreating"), till is continuously deposited, and is able to form a ridge or mound at the end of the glacier, before it starts retreating. As explained above, end moraines are not typically associated with high-capacity wells, given the limited vertical thickness of sand and gravel deposits.

EGLE maps identify the consolidated material near the Site as Saginaw Formation. The Saginaw Formation is identified as Pennsylvanian-aged (323-299 million years ago) and is up to 400 feet thick in areas. The Saginaw Formation is also identified as sandstone and is often combined with the underlying Parma Sandstone, where present. The Saginaw Formation is utilized as an aquifer source where prolific unconsolidated materials are not available.

Well Drilling

In July of 2023, one well was constructed (OW 23A using the direct rotary method. At OW 23A, a thick sequence of glacial till was encountered from ground level to 147 feet below ground level (bgl). This sequence was primarily composed of clay with a thin lens of sand from 90 to 110 feet bgl. A continuous sand and gravel formation was then encountered from 147 feet bgl to at least 160 feet bgl, Only glacial till and clay was found below that depth to 300 feet. OW 23A was completed as a 6-inch diameter PVC-cased well. This well has 150 feet of 6-inch diameter PVC casing set from 2 feet above ground level (agl) to 148 feet bgl and 10 feet of 0.030-inch slot 6-inch diameter stainless steel, wire-wrapped screen from 148 feet bgl to 158 feet bgl. The annular space was filled with Type 1L Neat Cement grout from ground level to 147 feet bgl and silica gravel pack from 147 feet bgl to 158 feet bgl. The static water level was recorded as 12.30 feet below top of casing (btoc).

Aquifer Performance Test

An aquifer performance test (APT) was conducted at the Site to determine the aquifer hydraulic parameters and provide information necessary to determine the 100-day safe yield rating of a proposed future twelve-inch production well located near OW 23A. An 8 hour APT was completed at OW 23A on August 1st, 2023. Water levels were recorded within the well during the background, pumping, and recovery periods at one-minute intervals using pressure transducers equipped with data loggers. Water levels within the well were recorded regularly by field technicians during the pumping period. The well location is shown in Figure 2.

Background Period

Background readings were collected within OW 23A for 21 hours before the test began to document natural fluctuations in water levels. Except for valve adjustments immediately prior to the start of the test, the potentiometric surface varied 0.76 feet in OW 23A during the background period. The minor interference was attributed to nearby high-capacity well operations.

Pumping Period

OW 23A was pumped at a rate of 112 gpm for the duration of the 8-hour APT. The water level within OW 23A before starting the pump was 12.30 feet btoc. The water level within OW 23A after 8 hours of pumping was 96.50 feet btoc, resulting in a specific capacity of 1.33 gallons per minute per foot of drawdown (gpm/ft dd). The graphical representation of transducer data sheets, field data sheets, and reduced transducer drawdown data are provided in Attachment B.

Recovery Period

Recovery readings were recorded by pressure transducers equipped with data loggers within OW 23A for 144 hours after the pump was shut down. Water levels in OW 23A recovered to 95% of the drawdown within 37 minutes and 99% of the drawdown within 6 hours of the pump being turned off. The reduced transducer recovery data is provided in Attachment B.

APT Analysis/ Production Well Design

APT Analysis

The drawdown data from OW 23A were analyzed using the analytical modeling software AQTESOLV® (HydroSOLV, 2007). The Dougherty-Babu (1984) method for a confined aquifer was used for analysis of drawdown data to calculate the transmissivity (**T**) and storativity (**S**). The Theis (1935) method was used for analysis of recovery data to calculate **T** as well. The average **T** is calculated to be 828.8 square feet per day (ft²/day) and the average **S** is calculated to be 8.54×10^{-5} (unitless). Assuming an aquifer thickness of 13 feet, the average calculated hydraulic conductivity (**K**) is calculated to be 63.754 feet per day (ft/day) and the specific storage (**Ss**) is calculated to be 6.57×10^{-6} per foot (ft⁻¹). These results are summarized below in Table 1. Copies of the graphical analyses are provided in Attachment C. The aquifer responds confined to pumping, which will prevent the downward migration of contaminants.

TABLE 1 Well OW 23A Aquifer Performance Test Analysis Results

Wells	Analysis Method	Transmissivity (ft ² /day)	Hydraulic Conductivity (ft/day)	Storativity (dimensionless)	Specific Storage (ft ⁻¹)
OW 23A	Dougherty-Babu (1984)	919.3	70.715	8.54 x 10 ⁻⁵	6.57 x 10 ⁻⁶
OW 23A Recovery	Theis (1935) Recovery	738.3	56.792	-	-
Average		828.8	63.754	8.54 x 10⁻⁵	6.57 x 10⁻⁶

Safe Yield Analysis

A safe yield is generally determined by extrapolating well performance based on the average hydraulic parameter values and well efficiency results for 100 days of continuous pumping with no recharge to the aquifer. PMI extrapolated data from the 6" well to predict performance for a proposed future 12" production well at the same site location and depth. The 100-day safe yield production rate for this new 12-inch diameter production well (referred to as Well 12 for this report) was calculated using the AQTESOLV® Forward Solution method which is a predicting tool that estimates the drawdown observed in a well using specified pumping rate and hydraulic parameter values as inputs into the appropriate analytical solution. Proposed Well 12 is assumed to be constructed at the same depth with the same lithology as the six-inch well and have the same hydraulic parameters. This forward solution does not take into account any potential interference to any existing production wells in the well field if they were to be ran simultaneously.

Using the AQTESOLV® forward solution, the average hydraulic parameter values summarized in Table 1 were used as input to the Dougherty-Babu (1984) analytical solution and the 100-day safe yield values for Proposed Well 12 was estimated. The forward solution was modeled with Proposed Well 12 pumping at 152 gpm. At this rate, the 100-day predicted drawdown in Proposed Well 12 is 117.82 feet. With an assumed static water level of 12.30 feet btoc at Proposed Well 12, the predicted pumping water level is 130.12 feet. Graphic results with the predicted 100-day drawdown are provided in Attachment D. Based on these calculations, Proposed Well 12 can safely yield 152 gpm for 100 days. Using specific capacity data the well yield is projected to be 175 gpm.

In our experience extrapolating the data from a 6" well to a 12" well, we feel that you can use a multiplier of 2-4 times the transmissivity measured on the small test well due to well losses in the 6" well at high flow rates. Using that data, we estimate you can achieve 300 to 600 gpm out of a properly developed 12" well on this site. There are no guarantees of that quantity. This is the best estimate we can make based upon the data from a single 6" observation well projection.

We recommend based upon the results for the 6" observation well that there is enough data to support further exploring the site and potential further with a 12" test/production well. It is also likely the site could support more than one well, subject to further test drilling and assuming adequate isolation area is available.

Future 12" Well Construction

A sieve analysis was conducted on the interval from 147 to 160 feet below grade. Based on those results, we feel a properly constructed 12" well would have an .080" slot well screen with a

corresponding gravel pack. Thirteen feet of well screen would be used. A graph of the sieve analysis is attached along with a proposed well construction print.

Groundwater Chemistry

Water samples were collected at the time of the testing to evaluate quality compliant with EGLE requirements. The chemistry results are not yet available from the laboratory at the time of this report. We expect those results within two weeks or early September and will be provided upon receipt.

Results and Conclusions

PMI was contracted by Union Township to construct a six-inch well (OW 23A); conduct an APT; analyze the APT data set; and determine the 100-day maximum safe yield rating for a proposed potential future new 12-inch diameter production wells in Union Township, Michigan. The extrapolation was based upon field collected data from a 6-inch well that was constructed onsite. The drawdown data were analyzed using the Dougherty-Babu (1984) method for a confined aquifer. The transmissivity of the aquifer is calculated to be 828.8 ft²/day and the storativity is calculated to be 8.54×10^{-5} . Based upon the results, it is our opinion that this site could support a 12" production well between 300 to 600 gpm with possibility for a second well. The final **allowable final capacity of the proposed future production well will depend on the results of the Adverse Resource Impact (ARI)** as completed by EGLE's Source Water Unit.

EGLE provided a letter of approval in March 2023 supporting the construction of the observation well. However please note the naming convention used in that letter differed as it was referred to as TW12 and is the same well as referred to in this report (OW23A). Please note, the EGLE letter refers to this OW-23A as TW-12 and they are in fact one in the same.

The calculations presented within this report are based upon the current understanding of the aquifer properties at the Site. If future investigations at the Site are conducted, further evaluation of the aquifer is recommended (i.e. additional APTs) to verify the aquifer hydraulic parameters are consistent with the findings of this report. If the aquifer parameters vary at the Site, the safe yield analysis and resulting recommended pump setting should be re-evaluated.

* * *

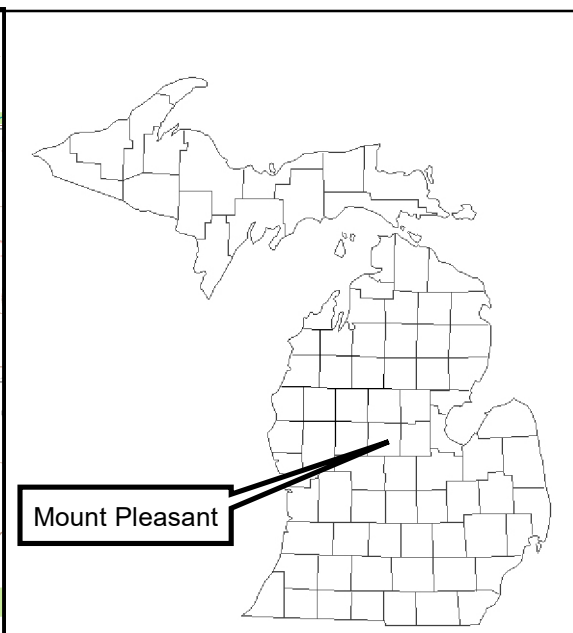
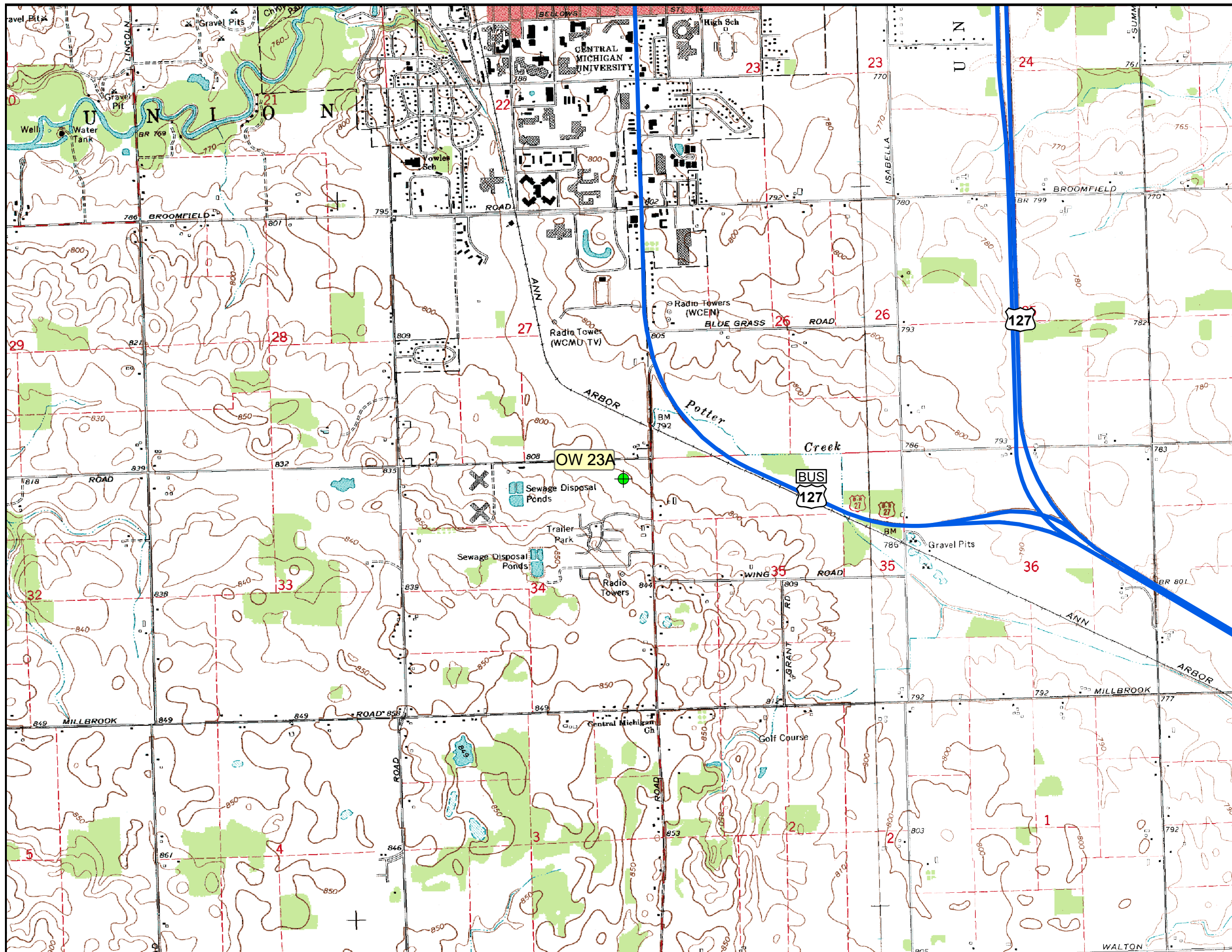
We appreciate the opportunity to provide Union Township with professional hydrogeologic services and look forward to our continued relationship. Should you have any questions or if you would like to discuss this report further, please contact us at your convenience.

Sincerely,

PEERLESS-MIDWEST, INC.



Bob Masters, M.S. -Project Manager/Hydrogeologist

FIGURES



Mount Pleasant

Legend

-  Test Well
-  Major Road



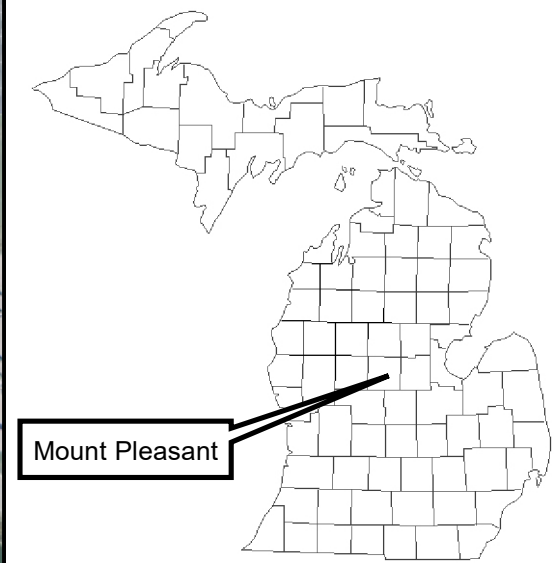
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LOCATION MAP

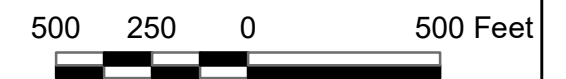
Union Township OW 23A APT Analysis
 SO: 58844 | Drawn by: KNS | Date: 08/23/23





Legend

-  Test Well
-  Major Road



Scale 1 : 6,000



SITE DETAIL MAP

Union Township OW 23A APT Analysis

SO: 58844

Drawn by: KNS

Date: 08/23/23



Attachment A

Well Logs



WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 of 1978 PA 368, as amended.

TAX NUMBER		Failure to comply is a misdemeanor.			PERMIT NUMBER																
LATITUDE <u>43.5668</u>		LONGITUDE <u>84.7695</u>		COUNTY <u>Isabella</u>		TOWNSHIP <u>Union</u>															
DISTANCE & DIRECTION FROM ROAD INTERSECTION <u>S of Deerfield W of S. Mission</u>		WELL STREET ADDRESS, CITY/ZIP		WSSN <u>06725</u>	SOURCE ID/ WELL NO.	SECTION <u>14</u> TOWN NO. <u>14N</u> RANGE NO. <u>4W</u>															
DRILLING METHOD <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable Tool <input type="checkbox"/> Hollow Rod <input type="checkbox"/> Jetted <input type="checkbox"/> Auger/Bored <input type="checkbox"/> Other <input type="checkbox"/> Rotary w/Casing Hammer <input type="checkbox"/> Cable Tool w/Casing Hammer		WELL USE <input type="checkbox"/> Household <input type="checkbox"/> Type I Public <input type="checkbox"/> Heat Pump-Supply <input type="checkbox"/> Irrigation <input type="checkbox"/> Type II Public <input type="checkbox"/> Heat Pump-Return <input type="checkbox"/> Industrial <input type="checkbox"/> Type III Public <input type="checkbox"/> Other <input type="checkbox"/> Test Well		WELL OWNER NAME <u>Union Twp</u> ADDRESS <u>2010 S Lincoln</u> CITY/ZIP <u>Mt Pleasant</u> Owner Address Same As Well Address? <input type="checkbox"/> Yes <input type="checkbox"/> No																	
WELL DEPTH <u>158</u> 320 ft.		DATE COMPLETED <u>07/11/23</u>		PUMP <input checked="" type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only Manufacturer _____ Pump Type <input type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Other _____ Model Number _____ HP _____ Volts _____ Pump Capacity _____ G.P.M. <input type="checkbox"/> Drawdown Seal Installed Length of Drop Pipe _____ ft. Diameter of Drop Pipe _____ in.																	
CASING Type <input checked="" type="checkbox"/> Plastic <input type="checkbox"/> Steel-Black <input type="checkbox"/> Steel-Galvanized <input type="checkbox"/> Other _____ Diameter <u>6</u> in. to <u>148</u> ft. depth <u>21</u> SDR Height Above Grade <u>1</u> ft. Fittings <input type="checkbox"/> Drive Shoe <input type="checkbox"/> Shale Packer		WELL TYPE <input checked="" type="checkbox"/> New <input type="checkbox"/> Replacement <input type="checkbox"/> Dry Hole <input type="checkbox"/> Boring (Uncased) <input type="checkbox"/> Deepening		PRESSURE TANK <input checked="" type="checkbox"/> Not Installed <input type="checkbox"/> Buried <input type="checkbox"/> Diaphragm/Bladder <input type="checkbox"/> Galvanized Manufacturer _____ Model _____ Total Tank Capacity _____ gal. <input type="checkbox"/> Pressure Relief Valve Installed																	
BOREHOLE Diameter <u>10</u> in. to <u>158</u> ft. depth		STATIC WATER LEVEL <u>12</u> ft. Below Grade <input type="checkbox"/> Flowing Flow Rate Before Control _____ G.P.M.		FORMATION DESCRIPTION																	
WELL YIELD TEST Pumping Level <u>158</u> ft. after <u>1</u> hrs. pumping at <u>300</u> G.P.M. <input type="checkbox"/> Air <input type="checkbox"/> Bailer <input type="checkbox"/> Plunger <input type="checkbox"/> Test Pump		SCREEN <input type="checkbox"/> Not Installed <input checked="" type="checkbox"/> Filter-Packed Diameter <u>6</u> in. MATERIAL <input checked="" type="checkbox"/> Stainless Steel <input type="checkbox"/> Plastic <input type="checkbox"/> Other Slot <u>30</u> Length <u>10</u> ft. From <u>148</u> ft. To <u>158</u> ft. Slot _____ Length _____ ft. From _____ ft. To _____ ft.		Thickness of Stratum																	
INSTALLATION FITTINGS <input type="checkbox"/> Telescoped <input checked="" type="checkbox"/> Attached <input type="checkbox"/> Neoprene Packer <input type="checkbox"/> Bremer Check BLANK <input type="checkbox"/> Above _____ ft. Other _____		WELL GROUTED <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Bentonite Dry Granular <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Neat Cement with Bentonite <input type="checkbox"/> Concrete No. of Bags <u>26</u>		Depth to Bottom of Stratum																	
WELLHEAD COMPLETION <input type="checkbox"/> Pitless Adapter <input checked="" type="checkbox"/> 12 in. Above Grade <input type="checkbox"/> Basement Offset <input type="checkbox"/> Well House		ADDITIVE METHOD <input type="checkbox"/> Lost Circulation Material <input type="checkbox"/> Accelerator <input type="checkbox"/> Retarder <input type="checkbox"/> Grout pipe outside casing <input type="checkbox"/> Driven dry grout <input type="checkbox"/> Grout pipe inside casing <input type="checkbox"/> Displacement plug		<table border="1" style="width:100%; border-collapse: collapse;"> <tr><td style="width:70%;"><u>brown clay</u></td><td style="width:15%;"><u>10</u></td><td style="width:15%;"><u>10</u></td></tr> <tr><td><u>gray clay</u></td><td><u>80</u></td><td><u>90</u></td></tr> <tr><td><u>gray sand</u></td><td><u>20</u></td><td><u>110</u></td></tr> <tr><td><u>gray clay</u></td><td><u>37</u></td><td><u>147</u></td></tr> <tr><td><u>gray sand + gravel</u></td><td><u>23</u></td><td><u>160</u></td></tr> </table>			<u>brown clay</u>	<u>10</u>	<u>10</u>	<u>gray clay</u>	<u>80</u>	<u>90</u>	<u>gray sand</u>	<u>20</u>	<u>110</u>	<u>gray clay</u>	<u>37</u>	<u>147</u>	<u>gray sand + gravel</u>	<u>23</u>	<u>160</u>
<u>brown clay</u>	<u>10</u>	<u>10</u>																			
<u>gray clay</u>	<u>80</u>	<u>90</u>																			
<u>gray sand</u>	<u>20</u>	<u>110</u>																			
<u>gray clay</u>	<u>37</u>	<u>147</u>																			
<u>gray sand + gravel</u>	<u>23</u>	<u>160</u>																			
NEAREST SOURCE OF POSSIBLE CONTAMINATION Type <u>None</u> Distance _____ ft. Direction _____ Type _____ Distance _____ ft. Direction _____		ABANDONED WELL PLUGGED <input type="checkbox"/> Yes <input type="checkbox"/> No Latitude _____ Longitude _____ Casing Diameter _____ in. Depth _____ ft.		USE SECOND SHEET IF NECESSARY																	
PLUGGING MATERIAL <input type="checkbox"/> Cement/ Bentonite Slurry <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Concrete Grout <input type="checkbox"/> Bentonite Chips No. of Bags _____ Casing Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No		REMARKS <u>drilled for Peerless Midwest</u>		DRILLING MACHINE OPERATOR <input type="checkbox"/> Employee <input type="checkbox"/> Subcontractor Name <u>Mason Rosenberg</u>																	
ATTENTION WELL OWNER: FILE WITH DEED		WATER WELL CONTRACTOR'S CERTIFICATION: This well and/or pump installation was performed under my registration. <u>Taper Well Drilling</u> <u>2227</u> Registered Business Name _____ Registration No. _____ Address <u>7300 Millett</u> City/State/Zip <u>Cansing MI</u> Signature of Registered Contractor <u>[Signature]</u> Date <u>7/11/23</u>																			



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION

WATER WELL AND PUMP RECORD

Completion is required under authority of Part 127 of 1978 PA 368, as amended.

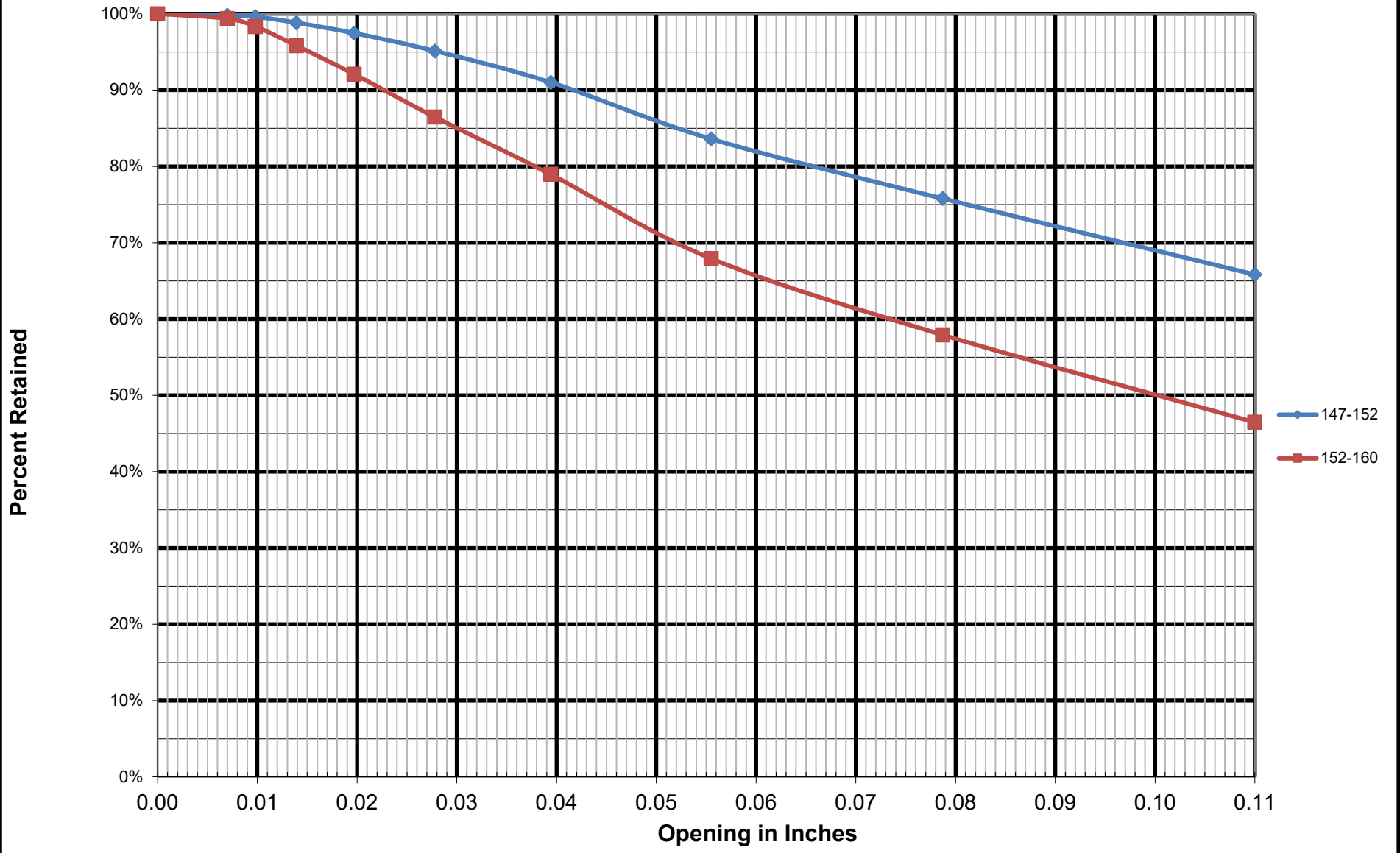
Failure to comply is a misdemeanor.

TAX NUMBER		PERMIT NUMBER		
LATITUDE 43.5665	LONGITUDE 84.7695	COUNTY Isabella	TOWNSHIP Union	
DISTANCE & DIRECTION FROM ROAD INTERSECTION S of Deerfield W. of S Mission		WELL STREET ADDRESS, CITY/ZIP	WSSN	SOURCE ID/WELL NO.
				SECTION 14 TOWN NO. 14N RANGE NO. 4W
DRILLING METHOD <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable Tool <input type="checkbox"/> Hollow Rod <input type="checkbox"/> Jetted <input type="checkbox"/> Auger/Bored <input type="checkbox"/> Other <input type="checkbox"/> Rotary w/Casing Hammer <input type="checkbox"/> Cable Tool w/Casing Hammer		WELL USE <input type="checkbox"/> Household <input type="checkbox"/> Type I Public <input type="checkbox"/> Heat Pump-Supply <input type="checkbox"/> Irrigation <input type="checkbox"/> Type II Public <input type="checkbox"/> Heat Pump-Return <input type="checkbox"/> Industrial <input type="checkbox"/> Type III Public <input checked="" type="checkbox"/> Other test boring <input type="checkbox"/> Test Well	WELL OWNER NAME Union Twp ADDRESS 2010 S. Lincoln CITY/ZIP Mt Pleasant Owner Address Same As Well Address? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
WELL DEPTH 300 ft.	DATE COMPLETED 07 11 23	WELL TYPE <input checked="" type="checkbox"/> New <input type="checkbox"/> Replacement <input type="checkbox"/> Dry Hole <input type="checkbox"/> Boring (Uncased) <input type="checkbox"/> Deepening	PUMP <input checked="" type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only Manufacturer _____ Pump Type <input type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Other _____ Model Number _____ HP _____ Volts _____ Pump Capacity _____ G.P.M. <input type="checkbox"/> Drawdown Seal Installed Length of Drop Pipe _____ ft. Diameter of Drop Pipe _____ in.	
CASING Type <input type="checkbox"/> Plastic <input type="checkbox"/> Steel-Black <input type="checkbox"/> Steel-Galvanized <input type="checkbox"/> Other _____ Joint <input type="checkbox"/> Glued <input type="checkbox"/> Spline <input type="checkbox"/> Welded <input type="checkbox"/> Threaded Diameter _____ in. to _____ ft. depth _____ SDR Height Above Grade _____ ft. Fittings <input type="checkbox"/> Drive Shoe <input type="checkbox"/> Shale Packer	PRESSURE TANK <input checked="" type="checkbox"/> Not Installed <input type="checkbox"/> Buried <input type="checkbox"/> Diaphragm/Bladder <input type="checkbox"/> Galvanized Manufacturer _____ Model _____ Total Tank Capacity _____ gal. <input type="checkbox"/> Pressure Relief Valve Installed		Formation Description	
BOREHOLE Diameter 5.518 in. to 300 ft. depth	STATIC WATER LEVEL _____ ft. Below Grade <input type="checkbox"/> Flowing Flow Rate Before Control _____ G.P.M.		Thickness of Stratum	
WELL YIELD TEST Pumping Level _____ ft. after _____ hrs. pumping at _____ G.P.M. <input type="checkbox"/> Air <input type="checkbox"/> Bailer <input type="checkbox"/> Plunger <input type="checkbox"/> Test Pump	SCREEN <input type="checkbox"/> Not Installed <input type="checkbox"/> Filter-Packed Diameter _____ in. MATERIAL <input type="checkbox"/> Stainless Steel <input type="checkbox"/> Plastic <input type="checkbox"/> Other _____ Slot _____ Length _____ ft. From _____ ft. To _____ ft. Slot _____ Length _____ ft. From _____ ft. To _____ ft. INSTALLATION <input type="checkbox"/> Telescoped <input type="checkbox"/> Attached FITTINGS <input type="checkbox"/> Neoprene Packer <input type="checkbox"/> Bremer Check BLANK <input type="checkbox"/> Above _____ ft. Other _____		Depth to Bottom of Stratum	
WELL GROUTED <input checked="" type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Bentonite Dry Granular <input type="checkbox"/> Neat Cement <input type="checkbox"/> Neat Cement with Bentonite <input type="checkbox"/> Concrete No. of Bags 15	ADDITIVE <input type="checkbox"/> Lost Circulation Material <input type="checkbox"/> Accelerator <input type="checkbox"/> Retarder METHOD <input type="checkbox"/> Grout pipe outside casing <input type="checkbox"/> Driven dry grout <input type="checkbox"/> Grout pipe inside casing <input type="checkbox"/> Displacement plug		brown clay 10 10 gray clay 80 90 gray sand 20 110 gray clay 37 147 gray sand + gravel 23 160 gray clay 30 190 gray clay + strips of sand 20 210 gray clay 90 300	
WELLHEAD COMPLETION <input type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12 in. Above Grade <input type="checkbox"/> Basement Offset <input type="checkbox"/> Well House	NEAREST SOURCE OF POSSIBLE CONTAMINATION Type None Distance _____ ft. Direction _____ Type _____ Distance _____ ft. Direction _____		USE SECOND SHEET IF NECESSARY	
ABANDONED WELL PLUGGED <input type="checkbox"/> Yes <input type="checkbox"/> No Latitude _____ Longitude _____ Casing Diameter _____ in. Depth _____ ft.	PLUGGING MATERIAL <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Cement/ Bentonite Slurry <input type="checkbox"/> Concrete Grout <input type="checkbox"/> Bentonite Chips No. of Bags _____ Casing Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No		DRILLING MACHINE OPERATOR <input checked="" type="checkbox"/> Employee <input type="checkbox"/> Subcontractor Name Mason Rosenberry	
REMARKS drilled for Peerless Midwest test boring for samples, grouted shut. No casing installed	ATTENTION WELL OWNER: FILE WITH DEPT. OF ENVIRONMENT		PUMP INSTALLER (If different from drilling machine operator.) Name _____	
WATER WELL CONTRACTOR'S CERTIFICATION: This well and/or pump installation was performed under my registration. Der Well Drilling 2227 Registered Business Name _____ Registration No. _____ Address 7300 Millett Hwy City/State/Zip Lansing MI		Signature of Registered Contractor McPae		Date 7/11/23

Attachment B

**Drawdown Graph, Field Data Sheets,
and Condensed Transducer Data Sheets**

Charter Township of Union - Mount Pleasant, MI OB-23A Sieve Analysis



Location	Customer	Job #
Well ID	Tare Weight	Date
interval		
start weight		
0.110		
0.0937		
0.0787		
0.0661		
0.0555		
0.0469		
0.0394		
0.0331		
0.0278		
0.0234		
0.0197		
0.0165		
0.0139		
0.0117		
0.0098		
0.0083		
0.007		
0.0059		
0.0049		
0.0041		
0.0035		
0.0029		
0.0023		
bottom pan		

interval		
start weight		
0.110		
0.0937		
0.0787		
0.0661		
0.0555		
0.0469		
0.0394		
0.0331		
0.0278		
0.0234		
0.0197		
0.0165		
0.0139		
0.0117		
0.0098		
0.0083		
0.007		
0.0059		
0.0049		
0.0041		
0.0035		
0.0029		
0.0023		
bottom pan		

PEERLESS-MIDWEST, INC.

Charter Township of Union - Mount Pleasant, MI OB-23A 147-152 ft

	Inches Opening	mm Opening	Weight Retained (g)	ACC Weight Retained	ACC % Retained
	0.11		337	337	65.8%
	0.0787		51	388	75.8%
	0.0555		40	428	83.6%
	0.0394		38	466	91.0%
	0.0278		21	487	95.1%
	0.0197		12	499	97.5%
	0.0139		7	506	98.8%
	0.0098		4	510	99.6%
	0.007		1	511	99.8%
	0		1	512	100.0%
Weight of sample =	512 grams				

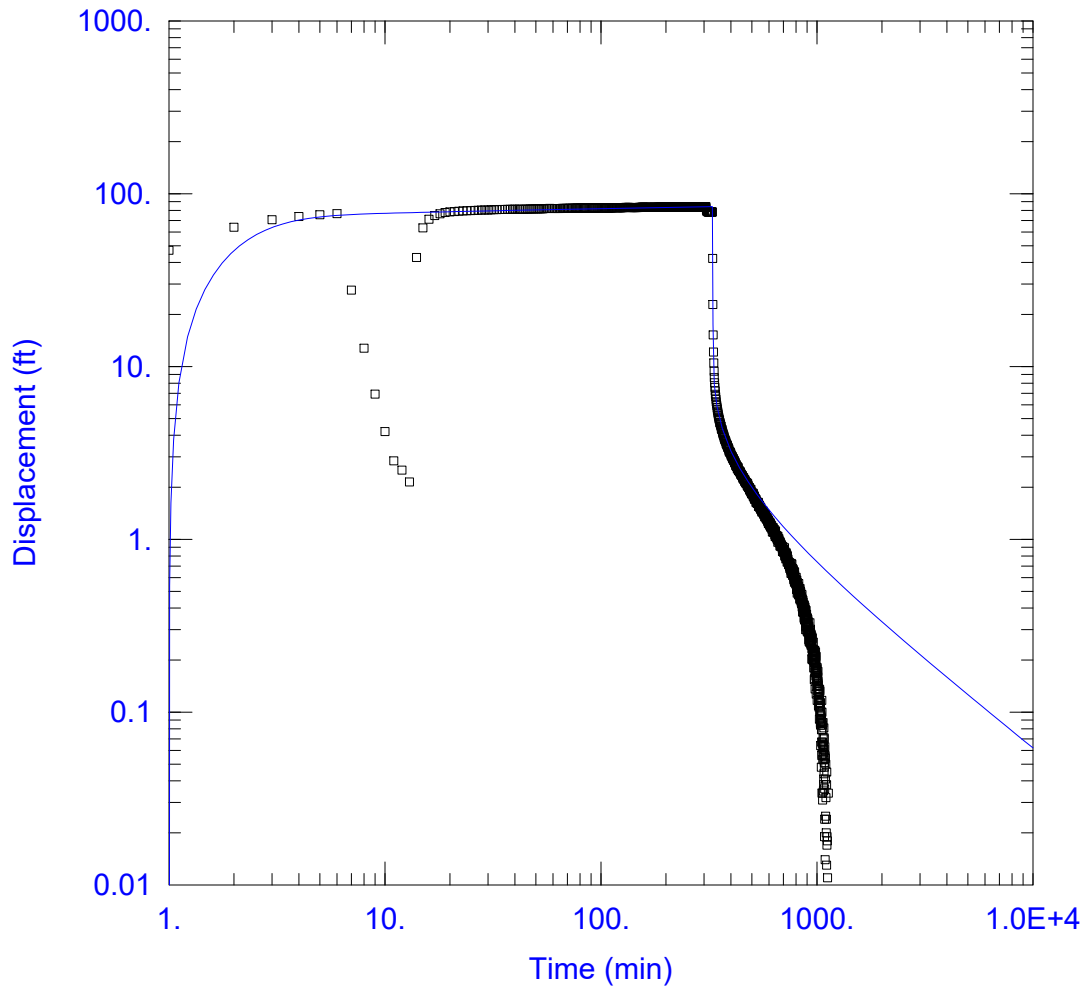
PEERLESS-MIDWEST, INC.

Charter Township of Union - Mount Pleasant, MI OB-23A 152-160 ft

	Inches Opening	mm Opening	Weight Retained (g)	ACC Weight Retained	ACC % Retained
	0.11		223	223	46.5%
	0.0787		55	278	57.9%
	0.0555		48	326	67.9%
	0.0394		53	379	79.0%
	0.0278		36	415	86.5%
	0.0197		27	442	92.1%
	0.0139		18	460	95.8%
	0.0098		12	472	98.3%
	0.007		5	477	99.4%
	0		3	480	100.0%
Weight of sample =	480 grams				

Attachment C

Aqtesolv Analysis Graphs



OW 23A APT

Data Set: T:\...\58844_UnionTwp_OW23A_DoughertyBabu.aqt
 Date: 08/16/23 Time: 13:24:10

PROJECT INFORMATION

Company: Peerless Midwest
 Client: Union Township, MI
 Project: 58844
 Location: Mt. Pleasant, MI
 Test Well: OW 23A
 Test Date: 8/1/23

AQUIFER DATA

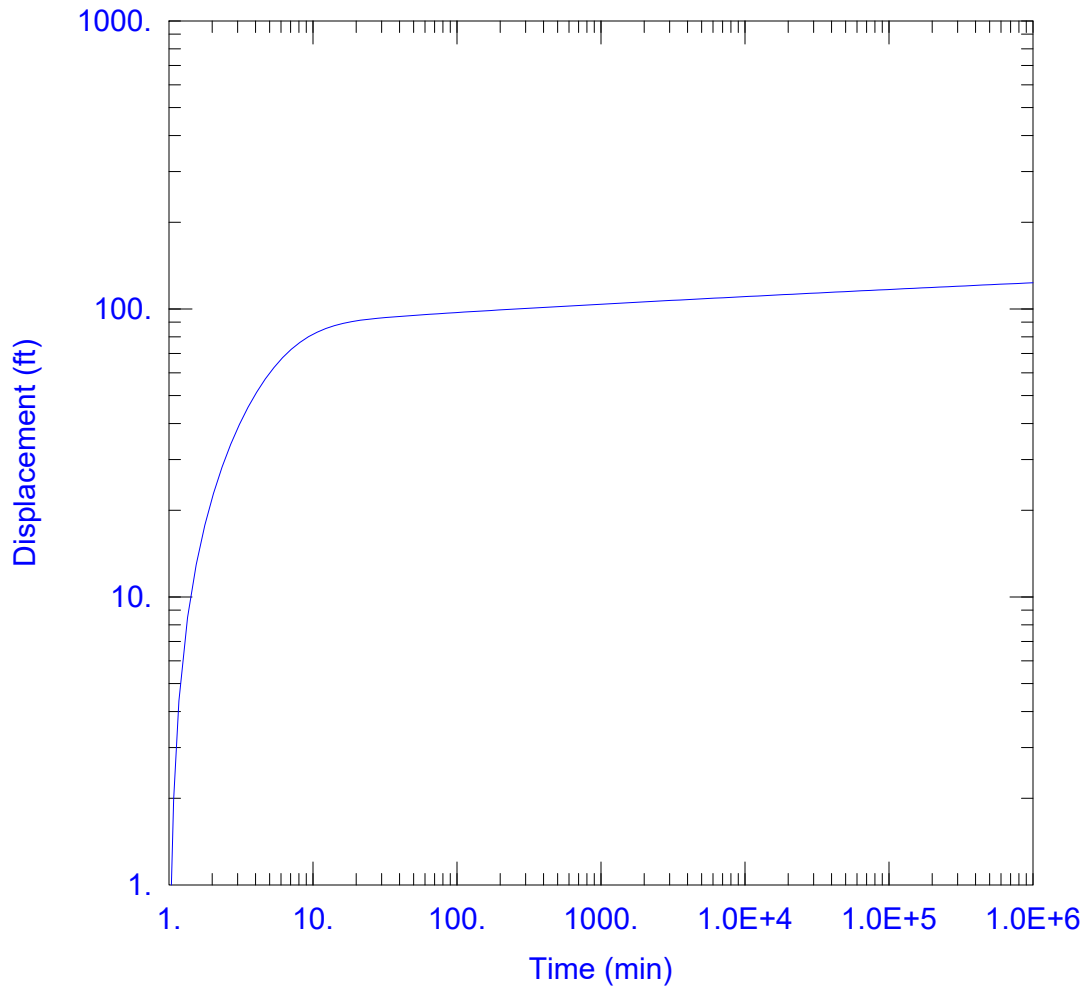
Saturated Thickness: 13. ft Anisotropy Ratio (Kz/Kr): 0.03055

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
OW 23A	0	0	□ OW 23A	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Dougherty-Babu
 T = 919.3 ft²/day S = 8.536E-5
 Kz/Kr = 0.03055 Sw = 9.525
 r(w) = 0.25 ft r(c) = 0.25 ft



OW 23A APT

Data Set: T:\...\58844_UnionTwp_OW23A_DoughertyBabu_Fwd.aqt
 Date: 08/16/23 Time: 13:15:26

PROJECT INFORMATION

Company: Peerless Midwest
 Client: Union Township, MI
 Project: 58844
 Location: Mt. Pleasant, MI
 Test Well: OW 23A
 Test Date: 8/1/23

AQUIFER DATA

Saturated Thickness: 13. ft Anisotropy Ratio (Kz/Kr): 0.03055

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)
Proposed Well 12	0	0

Well Name	X (ft)	Y (ft)
□ Proposed Well 12	0	0

SOLUTION

Aquifer Model: Confined

Solution Method: Dougherty-Babu

T = 828.8 ft²/day

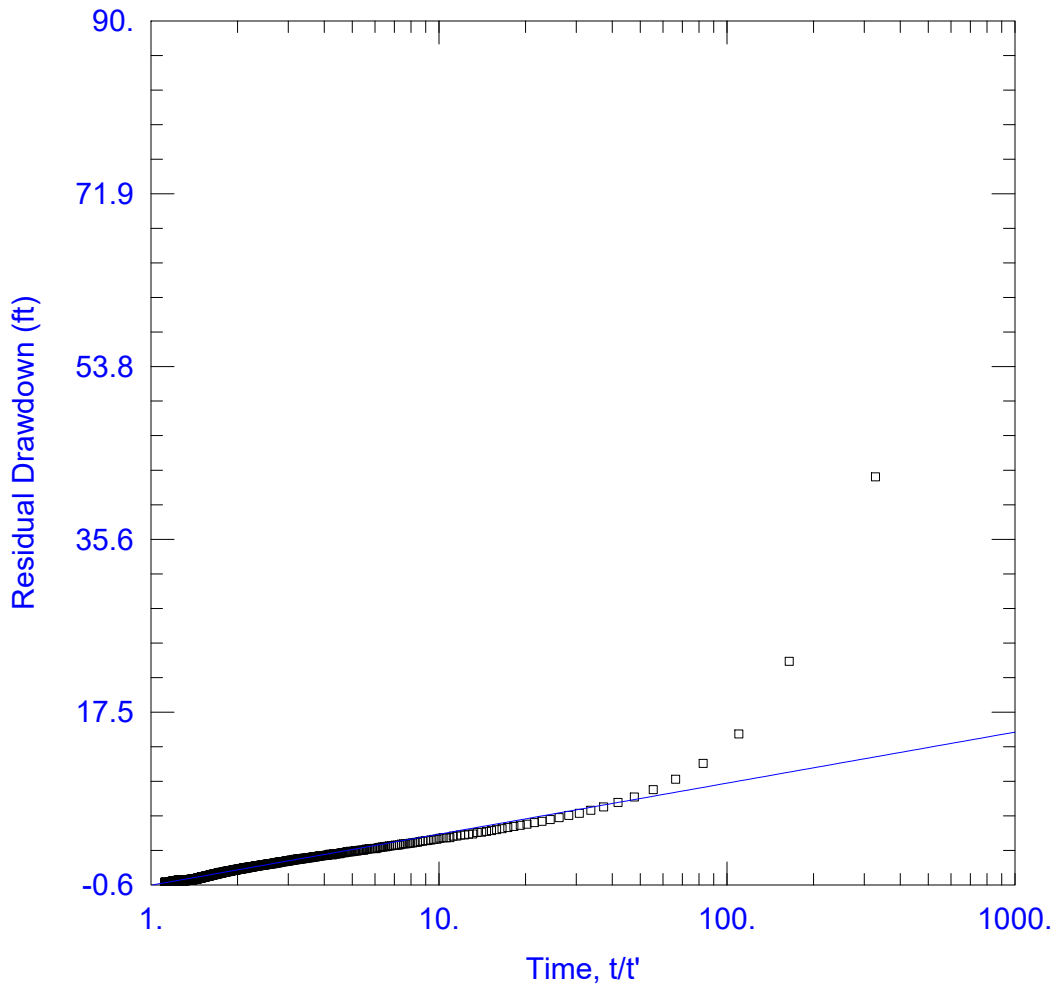
S = 8.536E-5

Kz/Kr = 0.03055

Sw = 9.525

r(w) = 0.5 ft

r(c) = 0.5 ft



OW 23A APT

Data Set: T:\...\58844_UnionTwp_OW23A_DoughertyBabu_Rec.aqt
 Date: 08/16/23 Time: 13:16:09

PROJECT INFORMATION

Company: Peerless Midwest
 Client: Union Township, MI
 Project: 58844
 Location: Mt. Pleasant, MI
 Test Well: OW 23A
 Test Date: 8/1/23

AQUIFER DATA

Saturated Thickness: 13. ft Anisotropy Ratio (Kz/Kr): 0.03055

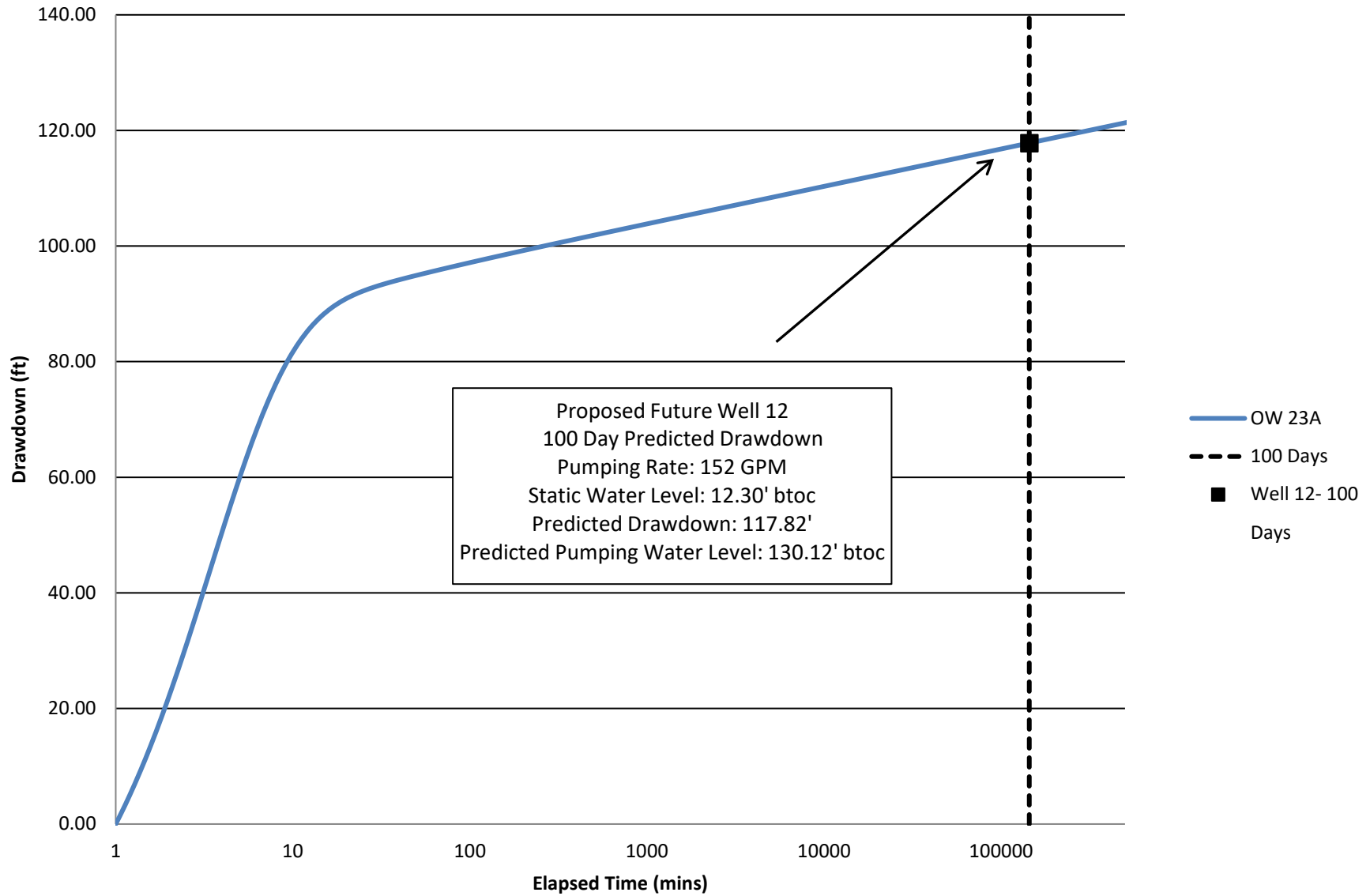
WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
OW 23A	0	0	□ OW 23A	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)
 $T = 738.3 \text{ ft}^2/\text{day}$ $S/S' = 1.313$

100 Day Predicted Drawdown Union Township, MI- Proposed Future Well 12



Attachment D

Forward Solution Graphs

Attachment E

**Groundwater Quality Table
Groundwater Quality Lab Reports**

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

September 05, 2023

Katelynn Shail
Peerless Midwest Inc.
55860 Russell Industrial Parkway
Mishawaka, IN 46545

Phone: (574) 252-4142
Fax: *

RE: Trace Project 23H0087
Client Project Union Charter Twp.

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at dhilleary@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Drew Hilleary".

Drew Hilleary
Project Manager
Enclosures

STATE OF MICHIGAN LABORATORY ID: 8001

The Reg level for all analytes with the exception of Lead and Copper is the MCL, for Lead and Copper it is the AL.

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2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
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www.trace-labs.com

SAMPLE SUMMARY

Trace Project ID: 23H0087
Client Project ID: Union Charter Twp.

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
23H0087-01	OW23A	Drinking Water	PV	08/01/23 15:15	08/02/23 09:30

CERTIFICATE OF ANALYSIS

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

MS	Matrix Spike
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL/AL	Maximum Contamination Limits / Action Levels as set by the Federal Safe Drinking Water Act
Not Detected	Indicates that the compound was not detected at the RDL
TNTC	Too Numerous To Count

Results that are reported in bold or red have equalled or exceeded the MCL/AL.

DATA QUALIFIERS

Trace ID: 23H0087-01

Analysis: EPA 170.1

Temperature Note SITE : The analysis was performed on site at the time of sampling.

Analysis: SM 4500 S2D-11

Sulfide Note 229 : The MS and MSD recoveries were out of control. The RPD between the MS and MSD was also out of control. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

Sulfide Note 404 : The reporting limit was raised due to a dilution required because of matrix interference.

Analysis: SM 4500-H+ B-11

pH Note pH : The pH was analyzed at 10:23

Trace ID: T139476-DUP1

Analysis: SM 4500-H+ B-11

pH Note pHa : The pH was analyzed at 10:24

Trace ID: T139675-MSD1

Analysis: SM 4500 S2D-11

CERTIFICATE OF ANALYSIS

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Sulfide

Note 229 : The MS and MSD recoveries were out of control. The RPD between the MS and MSD was also out of control. The result for this analyte, in the non-spiked version of the sample, must be considered estimated.

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Sample Location: Union Charter Twp.

Trace ID: 23H0087-01 Date Collected: 08/01/23 15:15
 Sample Point Description: CT23A Date Received: 08/02/23 09:30

PARAMETERS	RESULTS	RDL	UNITS	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL									
Analysis Method: EPA 200.7 Rev. 4.4									
<i>Batch: T139726</i>									
Calcium	72	1.0	mg/L	8/8/23 9:49	ckd	8/8/23 19:51	ckd	N	No MCL
Iron	* 0.83	0.10	mg/L	8/8/23 9:49	ckd	8/8/23 19:51	ckd	N	0.30
Magnesium	27	1.0	mg/L	8/8/23 9:49	ckd	8/8/23 19:51	ckd	N	No MCL
Sodium	16	1.0	mg/L	8/8/23 9:49	ckd	8/8/23 19:51	ckd	N	No MCL
Analysis Method: EPA 200.8 Rev. 5.4									
<i>Batch: T139776</i>									
Antimony	Not Detected	0.0020	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.0060
Arsenic	Not Detected	0.0010	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.010
Barium	0.052	0.0050	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	2.0
Beryllium	Not Detected	0.0010	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.0040
Cadmium	Not Detected	0.0020	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.0050
Chromium	Not Detected	0.010	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.10
Copper	Not Detected	0.025	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	1.3
Lead	Not Detected	0.0010	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.015
Manganese	0.035	0.020	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.050
Nickel	Not Detected	0.010	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	No MCL
Selenium	Not Detected	0.0020	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.050
Thallium	Not Detected	0.00050	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	0.0020
Zinc	0.011	0.010	mg/L	8/9/23 8:36	acs	8/9/23 14:34	acs	N	5.0
Analysis Method: EPA 245.1 Rev. 3.0									
<i>Batch: T139664</i>									
Mercury	Not Detected	0.00020	mg/L	8/8/23 11:00	fs	8/8/23 14:55	ckd	N	0.0020
METALS, TOTAL									
Analysis Method: SM 2340 B-11									
<i>Batch: [CALC]</i>									
Hardness as CaCO3	290	2.5	mg/L	8/8/23 9:49		8/8/23 19:51	ckd	N	No MCL

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Sample Location: Union Charter Twp.

Trace ID: 23H0087-01 Date Collected: 08/01/23 15:15
Sample Point Description: CT23A Date Received: 08/02/23 09:30

PARAMETERS	RESULTS	RDL	UNITS	PREPARED	BY	ANALYZED	BY	NOTES	MCL
------------	---------	-----	-------	----------	----	----------	----	-------	-----

METALS, TOTAL

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Sample Location: Union Charter Twp.

Trace ID: 23H0087-01 Date Collected: 08/01/23 15:15
 Sample Point Description: CT23A Date Received: 08/02/23 09:30

PARAMETERS	RESULTS	RDL	UNITS	PREPARED	BY	ANALYZED	BY	NOTES	MCL	
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
Analysis Method: EPA 524.2										
<i>Batch: T139486</i>										
Dichlorodifluoromethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Chloromethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Vinyl chloride	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	2.0
Bromomethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Chloroethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Trichlorofluoromethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,1-Dichloroethene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	7.0
Methyl-tert-butyl ether	Not Detected	1.0	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Methylene chloride	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
trans-1,2-Dichloroethene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	100
1,1-Dichloroethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
2-Butanone	Not Detected	1.0	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
cis-1,2-Dichloroethene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	70
2,2-Dichloropropane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Bromochloromethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Tetrahydrofuran	Not Detected	5.0	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Chloroform	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	80
1,1,1-Trichloroethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	200
1,1-Dichloropropene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Carbon tetrachloride	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
Benzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
1,2-Dichloroethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
Trichloroethene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
1,2-Dichloropropane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
Dibromomethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Bromodichloromethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	80
cis-1,3-Dichloropropene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
4-Methyl-2-pentanone	Not Detected	1.0	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Toluene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	1000

CERTIFICATE OF ANALYSIS

STATE OF MICHIGAN LABORATORY ID: 8001

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ANALYTICAL RESULTS

Sample Location: Union Charter Twp.

Trace ID: 23H0087-01 Date Collected: 08/01/23 15:15
 Sample Point Description: CT23A Date Received: 08/02/23 09:30

PARAMETERS	RESULTS	RDL	UNITS	PREPARED	BY	ANALYZED	BY	NOTES	MCL	
VOLATILE ORGANIC COMPOUNDS BY GC-MS										
trans-1,3-Dichloropropene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,1,2-Trichloroethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
1,3-Dichloropropane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Tetrachloroethene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	5.0
Dibromochloromethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	80
1,2-Dibromoethane (EDB)	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Chlorobenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	100
1,1,1,2-Tetrachloroethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Ethylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	700
m,p-Xylene	Not Detected	1.0	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	10000
o-Xylene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	10000
Xylenes, total	Not Detected	1.5	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	10000
Styrene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	100
Bromoform	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	80
Isopropylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,1,2,2-Tetrachloroethane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,2,3-Trichloropropane	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
Bromobenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
n-Propylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
2-Chlorotoluene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,3,5-Trimethylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
4-Chlorotoluene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
t-Butyl Benzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,2,4-Trimethylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
sec-Butylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
p-Isopropyltoluene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,3-Dichlorobenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,4-Dichlorobenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	75
n-Butylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL
1,2,3-Trimethylbenzene	Not Detected	0.50	ug/L	8/3/23	8:00	kl	8/3/23 12:59	kl	N	No MCL

CERTIFICATE OF ANALYSIS

STATE OF MICHIGAN LABORATORY ID: 8001

The Reg level for all analytes with the exception of Lead and Copper is the MCL, for Lead and Copper it is the AL.

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Trace Analytical Laboratories, Inc.
 2241 Black Creek Road
 Muskegon, MI 49444-2673



231-773-5998 Phone
 888-979-4469 Fax
 www.trace-labs.com

ANALYTICAL RESULTS

Sample Location: Union Charter Twp.

Trace ID: 23H0087-01 Date Collected: 08/01/23 15:15
 Sample Point Description: CT23A Date Received: 08/02/23 09:30

PARAMETERS	RESULTS	RDL	UNITS	PREPARED	BY	ANALYZED	BY	NOTES	MCL
VOLATILE ORGANIC COMPOUNDS BY GC-MS									
1,2-Dichlorobenzene	Not Detected	0.50	ug/L	8/3/23 8:00	kl	8/3/23 12:59	kl	N	600
1,2-Dibromo-3-chloropropane	Not Detected	1.0	ug/L	8/3/23 8:00	kl	8/3/23 12:59	kl	N	No MCL
Hexachloroethane	Not Detected	0.50	ug/L	8/3/23 8:00	kl	8/3/23 12:59	kl	N	No MCL
1,2,4-Trichlorobenzene	Not Detected	0.50	ug/L	8/3/23 8:00	kl	8/3/23 12:59	kl	N	70
Hexachlorobutadiene	Not Detected	0.50	ug/L	8/3/23 8:00	kl	8/3/23 12:59	kl	N	No MCL
Naphthalene	Not Detected	0.50	ug/L	8/3/23 8:00	kl	8/3/23 12:59	kl	N	No MCL
1,2,3-Trichlorobenzene	Not Detected	0.50	ug/L	8/3/23 8:00	kl	8/3/23 12:59	kl	N	No MCL
Surrogates:									
4-Bromofluorobenzene	114 %	46-147		8/3/23 8:00	kl	8/3/23 12:59	kl	N	
1,2-Dichlorobenzene-d4	116 %	52-135		8/3/23 8:00	kl	8/3/23 12:59	kl	N	

CERTIFICATE OF ANALYSIS

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ANALYTICAL RESULTS

Sample Location: Union Charter Twp.

Trace ID: 23H0087-01 Date Collected: 08/01/23 15:15
 Sample Point Description: CT23A Date Received: 08/02/23 09:30

PARAMETERS	RESULTS	RDL	UNITS	PREPARED	BY	ANALYZED	BY	NOTES	MCL
WET CHEMISTRY									
Analysis Method: EPA 120.1									
<i>Batch: T139519</i>									
Specific Conductance (EC) (µmho/cm at 25.0 C)	600	1.0	umhos/cm	8/3/23 13:14	lc	8/3/23 14:22	lc	N	No MCL
Analysis Method: EPA 170.1									
<i>Batch: T139491</i>									
Temperature	10.2		°C	8/3/23 9:05	dh	8/3/23 9:06	dh	SITE, N	No MCL
Analysis Method: EPA 300.0 Rev. 2.1									
<i>Batch: T139402</i>									
Fluoride	0.53	0.15	mg/L	8/1/23 17:46	jh	8/2/23 13:19	jh	N	4.0
Chloride	1.0	1.0	mg/L	8/1/23 17:46	jh	8/2/23 13:19	jh	N	250
Nitrate as N	Not Detected	0.10	mg/L	8/1/23 17:46	jh	8/2/23 13:19	jh	N	10
Nitrite as N	Not Detected	0.10	mg/L	8/1/23 17:46	jh	8/2/23 13:19	jh	N	1.0
Sulfate as SO4	22	3.0	mg/L	8/1/23 17:46	jh	8/2/23 13:19	jh	N	250
Analysis Method: EPA 350.1 Rev. 2.0									
<i>Batch: T139756</i>									
Ammonia as N	0.35	0.010	mg/L	8/8/23 10:30	jlh	8/8/23 11:58	jlh	N	No MCL
Analysis Method: EPA OIA 1677									
<i>Batch: T139562</i>									
Cyanide (Free)	Not Detected	0.0050	mg/L	8/4/23 11:07	mr	8/4/23 13:07	mr	N	0.20
Analysis Method: SM 2320 B-11									
<i>Batch: T139719</i>									
Bicarbonate Alkalinity as CaCO3 at pH 4.5	300	10	mg/L	8/8/23 11:09	aeo	8/8/23 15:13	aeo	N	No MCL
Total Alkalinity as CaCO3 at pH 4.5	300	10	mg/L	8/8/23 11:09	aeo	8/8/23 15:13	aeo	N	No MCL
Analysis Method: SM 2540 C-15									
<i>Batch: T139628</i>									
Total Dissolved Solids	360	20	mg/L	8/7/23 10:06	mr	8/7/23 13:05	mr	N	500

CERTIFICATE OF ANALYSIS

STATE OF MICHIGAN LABORATORY ID: 8001

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ANALYTICAL RESULTS

Sample Location: Union Charter Twp.

Trace ID: 23H0087-01 Date Collected: 08/01/23 15:15
 Sample Point Description: CT23A Date Received: 08/02/23 09:30

PARAMETERS	RESULTS	RDL	UNITS	PREPARED	BY	ANALYZED	BY	NOTES	MCL
WET CHEMISTRY									
Analysis Method: SM 4500 S2D-11									
<i>Batch: T139675</i>									
Sulfide	Not Detected	10	mg/L	8/7/23 14:59	jlh	8/7/23 15:44	jlh	229, 404, N	No MCL
Analysis Method: SM 4500-H+ B-11									
<i>Batch: T139476</i>									
pH	7.28		pH Units	8/1/23 15:15	bsv	8/2/23 10:23	nc	pH	No MCL
Analysis Method: SM4500-CO2 B									
<i>Batch: T140088</i>									
Carbon dioxide	35	0.10	mg/L	8/15/23 11:44	lc	8/15/23 11:45	lc	N	No MCL

CERTIFICATE OF ANALYSIS

STATE OF MICHIGAN LABORATORY ID: 8001

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August 16, 2023

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673

RE: 23H0087

Order No.: 2308381

Dear Mr. Jon Mink:

[Guide to Reading Lab Result](#)

Prein&Newhof Laboratory received 1 sample(s) on 8/4/2023 on your behalf. Your test results are provided in your Prein&Newhof Laboratory analytical report. Please carefully review your analytical report, noting the following.

- You can be assured that the sample results meet the Safe Drinking Water Criteria as no analyte tested exceeds the EPA Maximum Contaminant Level unless indicated by an " * " in the "Qual" column.
- You can be assured that all samples were received and analyzed within required holding times unless noted by a "H" in the "Qual" column.
- You can be assured that all quality control data is within laboratory-defined or method-specified acceptance limits unless defined by the addition of an attached Case Narrative document.
- When testing for PFHxS, PFOA, PFOS, MeFOSAA, and EtFOSAA results include both branched and linear isotopes. We extract a Method Blank and analyze it with the preparation batch. Method Blank analytes are within the Reporting Limit (RL).

We use EPA Approved Methods for all regulated parameters. EPA Lab #: MI000014

We are certified by the State of Michigan for Drinking Water Analysis for: Coliform Bacteria, Metals, Cyanide, Minerals, Anions, Volatile Organics, THM's, Haloacetic Acids, and PFAS.
Michigan Lab ID#: 0020

To learn more about interpreting your Drinking Water Test Results and reading your Lab Report, follow the link above to view our "Guide to Reading Lab Results". If you have any concerns about your test results or need additional help, please call: 616-364-7600 or email me: sbylsma@preinnewhof.com.

Thank you for trusting Prein&Newhof with your testing needs.

Sincerely,



Steve Bylsma
Laboratory Manager

CLIENT: Trace Analytical Laboratories, Inc.
Project: 23H0087
Lab ID: 2308381-01
Client Sample ID: 23H0087-01
Location:

Collection Date: 8/1/2023 3:15:00 PM
Received Date: 8/4/2023 12:40:00 PM
Matrix: DRINKING WATER
Sampled By: PV

Analyses	Result	RL	Qual	Units	MCL	Date Analyzed
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PFAS, DRINKING WATER

EPA 537.1

Analyst: **JS**

PFBS	< 2.0	2.0		ng/L	420	8/16/2023 7:26:00 AM
PFHxA	< 2.0	2.0		ng/L	400000	8/16/2023 7:26:00 AM
HFPO-DA	< 2.0	2.0		ng/L	370	8/16/2023 7:26:00 AM
PFHxS	< 2.0	2.0		ng/L	51	8/16/2023 7:26:00 AM
PFHpA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
ADONA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
PFOA	< 2.0	2.0		ng/L	8.0	8/16/2023 7:26:00 AM
PFOS	< 2.0	2.0		ng/L	16	8/16/2023 7:26:00 AM
PFNA	< 2.0	2.0		ng/L	6.0	8/16/2023 7:26:00 AM
9CI-PF3ONS	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
PFDA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
NMeFOSAA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
NEtFOSAA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
PFUnA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
11CI-PF3OUdS	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
PFDaA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
PFTTrDA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
PFTA	< 2.0	2.0		ng/L		8/16/2023 7:26:00 AM
Surr: d5-N-EtFOSSA	90.6	70 - 130		%Rec		8/16/2023 7:26:00 AM
Surr: M3HFPO-DA	100	70 - 130		%Rec		8/16/2023 7:26:00 AM
Surr: MPFDA	99.0	70 - 130		%Rec		8/16/2023 7:26:00 AM
Surr: MPFHxA	98.7	70 - 130		%Rec		8/16/2023 7:26:00 AM

Qualifiers: < Not Detected at the Reporting Limit
MCL Maximum Contaminant Level
RL Reporting Limit

H Holding times for preparation or analysis exceeded
PL Permit Limit
S Spike Recovery outside accepted recovery limits

WO#: 2308381

8/16/2023

Client: Trace Analytical Laboratories, Inc.

Project: 23H0087

TestCode: PFAS-DW

Sample ID: MB-R2-5818	SampType: MBLK	TestCode: PFAS-DW	Units: ng/L	Prep Date: 8/4/2023	RunNo: 34164						
Client ID: PBW	Batch ID: 5818	TestNo: EPA 537.1		Analysis Date: 8/9/2023	SeqNo: 669586						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
PFBS	< 1.8	1.8									
PFHxA	< 1.8	1.8									
HFPO-DA	< 1.8	1.8									
PFHxS	< 1.8	1.8									
PFHpA	< 1.8	1.8									
ADONA	< 1.8	1.8									
PFOA	< 1.8	1.8									
PFOS	< 1.8	1.8									
PFNA	< 1.8	1.8									
9CI-PF3ONS	< 1.8	1.8									
PFDA	< 1.8	1.8									
NMeFOSAA	< 1.8	1.8									
NEtFOSAA	< 1.8	1.8									
PFUnA	< 1.8	1.8									
11CI-PF3OUdS	< 1.8	1.8									
PFDoA	< 1.8	1.8									
PFTTrDA	< 1.8	1.8									
PFTA	< 1.8	1.8									
Surr: d5-N-EtFOSSA	240		320.0		76.5	70	130				
Surr: M3HFPO-DA	250		200.0		127	70	130				
Surr: MPFDA	70		80.00		88.1	70	130				
Surr: MPFHxA	75		80.00		93.6	70	130				

Qualifiers: < Not Detected at the Reporting Limit
PL Permit Limit

H Holding times for preparation or analysis exceeded
RL Reporting Limit

MCL Maximum Contaminant Level
S Spike Recovery outside accepted recovery limits

Original
Page 3 of 8

WO#: 2308381

8/16/2023

Client: Trace Analytical Laboratories, Inc.

Project: 23H0087

TestCode: PFAS-DW

Sample ID: LCS-MID-5818 A	SampType: LCS-MID	TestCode: PFAS-DW	Units: ng/L	Prep Date: 8/4/2023	RunNo: 34164						
Client ID: BatchQC	Batch ID: 5818	TestNo: EPA 537.1	Analysis Date: 8/9/2023	SeqNo: 669587							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
PFBS	89	1.8	80.00	0	111	70	130				
PFHxA	89	1.8	80.00	0	111	70	130				
HFPO-DA	120	1.8	80.00	0	154	70	130				S
PFHxS	92	1.8	80.00	0	115	70	130				
PFHpA	110	1.8	80.00	0	132	70	130				S
ADONA	92	1.8	80.00	0	115	70	130				
PFOA	91	1.8	80.00	0	113	70	130				
PFOS	92	1.8	80.00	0	115	70	130				
PFNA	90	1.8	80.00	0	112	70	130				
9CI-PF3ONS	93	1.8	80.00	0	116	70	130				
PFDA	86	1.8	80.00	0	108	70	130				
NMeFOSAA	92	1.8	80.00	0	115	70	130				
NEtFOSAA	88	1.8	80.00	0	110	70	130				
PFUnA	83	1.8	80.00	0	104	70	130				
11CI-PF3OUdS	90	1.8	80.00	0	112	70	130				
PFDoA	77	1.8	80.00	0	96.2	70	130				
PFTTrDA	65	1.8	80.00	0	80.9	70	130				
PFTA	66	1.8	80.00	0	82.6	70	130				
Surr: d5-N-EtFOSSA	310		320.0		95.4	70	130				
Surr: M3HFPO-DA	260		200.0		129	70	130				
Surr: MPFDA	75		80.00		94.1	70	130				
Surr: MPFHxA	82		80.00		102	70	130				

Qualifiers: < Not Detected at the Reporting Limit
PL Permit Limit

H Holding times for preparation or analysis exceeded
RL Reporting Limit

MCL Maximum Contaminant Level
S Spike Recovery outside accepted recovery limits

WO#: 2308381

8/16/2023

Client: Trace Analytical Laboratories, Inc.

Project: 23H0087

TestCode: PFAS-DW

Sample ID: 2308038-04ADUP	SampType: DUP	TestCode: PFAS-DW	Units: ng/L	Prep Date: 8/4/2023	RunNo: 34164						
Client ID: BatchQC	Batch ID: 5818	TestNo: EPA 537.1		Analysis Date: 8/9/2023	SeqNo: 669858						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
PFBS	< 1.6	1.6						0	0	30	
PFHxA	< 1.6	1.6						0	0	30	
HFPO-DA	< 1.6	1.6						0	0	30	
PFHxS	< 1.6	1.6						0	0	30	
PFHpA	< 1.6	1.6						0	0	30	
ADONA	< 1.6	1.6						0	0	30	
PFOA	< 1.6	1.6						0	0	30	
PFOS	< 1.6	1.6						0	0	30	
PFNA	< 1.6	1.6						0	0	30	
9CI-PF3ONS	< 1.6	1.6						0	0	30	
PFDA	< 1.6	1.6						0	0	30	
NMeFOSAA	< 1.6	1.6						0	0	30	
NEtFOSAA	< 1.6	1.6						0	0	30	
PFUnA	< 1.6	1.6						0	0	30	
11CI-PF3OUdS	< 1.6	1.6						0	0	30	
PFDoA	< 1.6	1.6						0	0	30	
PFTTrDA	< 1.6	1.6						0	0	30	
PFTA	< 1.6	1.6						0	0	30	
Surr: d5-N-EtFOSSA	260		290.9		88.8	70	130		0	0	
Surr: M3HFPO-DA	160		181.8		89.1	70	130		0	0	
Surr: MPFDA	60		72.73		82.2	70	130		0	0	
Surr: MPFHxA	63		72.73		86.9	70	130		0	0	

Qualifiers: < Not Detected at the Reporting Limit
PL Permit Limit

H Holding times for preparation or analysis exceeded
RL Reporting Limit

MCL Maximum Contaminant Level
S Spike Recovery outside accepted recovery limits

WO#: 2308381

8/16/2023

Client: Trace Analytical Laboratories, Inc.

Project: 23H0087

TestCode: PFAS-DW

Sample ID: 2307173-07AMS	SampType: MS-HIGH	TestCode: PFAS-DW	Units: ng/L	Prep Date: 8/4/2023	RunNo: 34164						
Client ID: BatchQC	Batch ID: 5818	TestNo: EPA 537.1		Analysis Date: 8/9/2023	SeqNo: 669863						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
PFBS	180	1.6	185.2	0	97.2	70	130				
PFHxA	150	1.6	185.2	0	83.0	70	130				
HFPO-DA	170	1.6	185.2	0	89.7	70	130				
PFHxS	180	1.6	185.2	0	97.1	70	130				
PFHpA	160	1.6	185.2	0	87.7	70	130				
ADONA	170	1.6	185.2	0	89.1	70	130				
PFOA	180	1.6	185.2	0	96.3	70	130				
PFOS	180	1.6	185.2	0	95.2	70	130				
PFNA	160	1.6	185.2	0	86.8	70	130				
9CI-PF3ONS	180	1.6	185.2	0	95.3	70	130				
PFDA	160	1.6	185.2	0	87.8	70	130				
NMeFOSAA	150	1.6	185.2	0	83.5	70	130				
NEtFOSAA	140	1.6	185.2	0	76.6	70	130				
PFUnA	220	1.6	185.2	0	117	70	130				
11CI-PF3OUdS	170	1.6	185.2	0	92.9	70	130				
PFDoA	270	1.6	185.2	0	144	70	130				S
PFTTrDA	210	1.6	185.2	0	112	70	130				
PFTA	170	1.6	185.2	0	90.0	70	130				
Surr: d5-N-EtFOSSA	160		296.3		55.6	70	130				S
Surr: M3HFPO-DA	150		185.2		82.4	70	130				
Surr: MPFDA	61		74.07		82.5	70	130				
Surr: MPFHxA	62		74.07		83.8	70	130				

Qualifiers: < Not Detected at the Reporting Limit
PL Permit Limit

H Holding times for preparation or analysis exceeded
RL Reporting Limit

MCL Maximum Contaminant Level
S Spike Recovery outside accepted recovery limits

WO#: 2308381

8/16/2023

Client: Trace Analytical Laboratories, Inc.

Project: 23H0087

TestCode: PFAS-DW

Sample ID: LCS-high-5841 A	SampType: LCS-HIGH	TestCode: PFAS-DW	Units: %Rec	Prep Date: 8/14/2023	RunNo: 34274						
Client ID: BatchQC	Batch ID: 5841	TestNo: EPA 537.1		Analysis Date: 8/16/2023	SeqNo: 672419						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: d5-N-EtFOSSA	230		320.0		70.4	70	130				
Surr: M3HFPO-DA	190		200.0		93.6	70	130				
Surr: MPFDA	77		80.00		96.8	70	130				
Surr: MPFHxA	75		80.00		93.9	70	130				

Qualifiers: < Not Detected at the Reporting Limit
PL Permit Limit

H Holding times for preparation or analysis exceeded
RL Reporting Limit

MCL Maximum Contaminant Level
S Spike Recovery outside accepted recovery limits

Original
Page 7 of 8

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com

SUBCONTRACT ORDER
23H0087

SENDING LABORATORY:

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444
Phone: 231.773.5998

RECEIVING LABORATORY:

Prein and Newhof
3260 Evergreen Drive NE
Grand Rapids, MI 49525
Phone :(616) 364-7600

8381-1

Project Manager: Drew Hilleary

Note Our New Email address: TraceSubOut@trace-labs.com

PO # 23H0087

Matrix: Drinking Water Sampled: 08/01/23 15:15 TAT: Standard

Sample ID: CT23A 23H0087-01

Sampled By: PV

Analysis Needed:

PFAS Drinking Water- EGLE List with Field Blank

	8/2/23	APB 8/14/23 12:40P	at
Released By	Date	Received By	Date

Released By	Date	Received By	Date
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ANALYTICAL REPORT

PREPARED FOR

Attn: Jon Mink
Trace Analytical Laboratories
2241 Black Creek Road
Muskegon, Michigan 49444

Generated 9/5/2023 10:48:22 AM

JOB DESCRIPTION

23H0087

JOB NUMBER

810-72398-1

Eurofins Eaton Analytical South Bend

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Authorization



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Authorized for release by
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Definitions/Glossary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Job ID: 810-72398-1

Laboratory: Eurofins Eaton Analytical South Bend

Narrative

Job Narrative 810-72398-1

Receipt

The sample was received on 8/3/2023 9:45 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C

GC/MS Semi VOA

Method 525.2_PREC: The low level laboratory control sample (LLCS) associated with sample 810-72398-1, for preparation batch 810-68357 and analytical batch 810-68473 recovered outside control limits (50-150%) for the following analytes: Heptachlor (163%) and Heptachlor epoxide (153%). These analytes were biased high in the LLCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Gas Flow Proportional Counter

Method 900.0: Gross Alpha and Gross Beta batch 623627Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.23H0087-01 CT23A (810-72398-1), (LCS 160-623627/2-A), (MB 160-623627/1-A), (280-179974-C-1-A), (280-179974-C-1-D DU) and (280-179974-C-1-B MS)

Method 903.0: Radium 226 batch 623455Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.23H0087-01 CT23A (810-72398-1), (LCS 160-623455/2-A), (MB 160-623455/1-A), (310-261947-C-6-A), (310-261947-C-6-B MS) and (310-261947-C-6-C MSD)

Method 904.0: Radium-228 batch 623456The LCS recovered at (130%). The limits in our LIMS system at 75-125 reflect the requirements of a regulatory agency that represents a large amount of our work. However the samples associated with this LCS are not from this agency and are therefore held to our in-house statistical limits of (63-150%) per method requirements. The LCS passes, no further action is required (LCS 160-623456/2-A)

Method 904.0: Radium 228 batch 623456Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.23H0087-01 CT23A (810-72398-1), (LCS 160-623456/2-A), (MB 160-623456/1-A), (310-261947-C-6-D), (310-261947-C-6-E MS) and (310-261947-C-6-F MSD)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Rad

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Client Sample ID: 23H0087-01 CT23A

Lab Sample ID: 810-72398-1

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical South Bend

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Client Sample ID: 23H0087-01 CT23A

Lab Sample ID: 810-72398-1

Date Collected: 08/01/23 15:15

Matrix: Drinking Water

Date Received: 08/03/23 09:45

Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlor epoxide	<0.011	*+	0.011	ug/L		08/04/23 07:09	08/06/23 00:16	1
Di(2-ethylhexyl)adipate	<0.65		0.65	ug/L		08/04/23 07:09	08/06/23 00:16	1
Di (2-ethylhexyl)phthalate	<0.65		0.65	ug/L		08/04/23 07:09	08/06/23 00:16	1
Hexachlorobenzene	<0.11		0.11	ug/L		08/04/23 07:09	08/06/23 00:16	1
Simazine	<0.076		0.076	ug/L		08/04/23 07:09	08/06/23 00:16	1
Alachlor	<0.11		0.11	ug/L		08/04/23 07:09	08/06/23 00:16	1
Atrazine	<0.11		0.11	ug/L		08/04/23 07:09	08/06/23 00:16	1
Benzo[a]pyrene	<0.022		0.022	ug/L		08/04/23 07:09	08/06/23 00:16	1
gamma-BHC (Lindane)	<0.022		0.022	ug/L		08/04/23 07:09	08/06/23 00:16	1
Endrin	<0.011		0.011	ug/L		08/04/23 07:09	08/06/23 00:16	1
Methoxychlor	<0.11		0.11	ug/L		08/04/23 07:09	08/06/23 00:16	1
Heptachlor	<0.011	*+	0.011	ug/L		08/04/23 07:09	08/06/23 00:16	1
Hexachlorocyclopentadiene	<0.11		0.11	ug/L		08/04/23 07:09	08/06/23 00:16	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
2-Nitro-m-xylene	97		70 - 130			08/04/23 07:09	08/06/23 00:16	1
Perylene-d12	102		70 - 130			08/04/23 07:09	08/06/23 00:16	1
Triphenylphosphate	112		70 - 130			08/04/23 07:09	08/06/23 00:16	1

Method: EPA 505 - Organochlorine Pesticides/PCBs (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	<0.080		0.080	ug/L		08/08/23 09:15	08/09/23 02:22	1
PCB-1221	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1
PCB-1232	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1
PCB-1242	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1
PCB-1248	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1
PCB-1254	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1
PCB-1260	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1
Chlordane (technical)	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1
Toxaphene	<0.50		0.50	ug/L		08/08/23 09:15	08/09/23 02:22	1
Total PCBs as DCB (Qualitative)	<0.10		0.10	ug/L		08/08/23 09:15	08/09/23 02:22	1

Method: EPA 515.3 - Herbicides (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	<0.50		0.50	ug/L		08/11/23 07:32	08/15/23 04:16	1
2,4,5-TP (Silvex)	<0.10		0.10	ug/L		08/11/23 07:32	08/15/23 04:16	1
2,4-D	<0.10		0.10	ug/L		08/11/23 07:32	08/15/23 04:16	1
Acifluorfen	<1.0		1.0	ug/L		08/11/23 07:32	08/15/23 04:16	1
Bentazon	<0.50		0.50	ug/L		08/11/23 07:32	08/15/23 04:16	1
DCPA (acid degradates)	<0.50		0.50	ug/L		08/11/23 07:32	08/15/23 04:16	1
Dalapon	<1.0		1.0	ug/L		08/11/23 07:32	08/15/23 04:16	1
Dicamba	<0.10		0.10	ug/L		08/11/23 07:32	08/15/23 04:16	1
Dinoseb	<0.10		0.10	ug/L		08/11/23 07:32	08/15/23 04:16	1
Pentachlorophenol	<0.040		0.040	ug/L		08/11/23 07:32	08/15/23 04:16	1
Picloram	<0.10		0.10	ug/L		08/11/23 07:32	08/15/23 04:16	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	101		70 - 130			08/11/23 07:32	08/15/23 04:16	1

Client Sample Results

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Client Sample ID: 23H0087-01 CT23A

Lab Sample ID: 810-72398-1

Date Collected: 08/01/23 15:15

Matrix: Drinking Water

Date Received: 08/03/23 09:45

Method: EPA 531.2 - Carbamate Pesticides (HPLC) - Dissolved

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Aldicarb	<0.50		0.50	ug/L			08/09/23 18:16	1
Aldicarb sulfone	<0.70		0.70	ug/L			08/09/23 18:16	1
Aldicarb sulfoxide	<0.50		0.50	ug/L			08/09/23 18:16	1
Baygon (Propoxur)	<0.50		0.50	ug/L			08/09/23 18:16	1
Carbaryl	<0.50		0.50	ug/L			08/09/23 18:16	1
Carbofuran	<0.90		0.90	ug/L			08/09/23 18:16	1
3-Hydroxycarbofuran	<0.50		0.50	ug/L			08/09/23 18:16	1
Methiocarb	<1.0		1.0	ug/L			08/09/23 18:16	1
Methomyl	<0.50		0.50	ug/L			08/09/23 18:16	1
Oxamyl	<1.0		1.0	ug/L			08/09/23 18:16	1

Method: EPA 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	3.00		2.22	2.24	3.00	2.10	pCi/L	08/10/23 07:35	08/11/23 21:44	1

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.259		0.120	0.122	1.00	0.148	pCi/L	08/09/23 09:52	08/31/23 12:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.3		30 - 110					08/09/23 09:52	08/31/23 12:13	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.441	U	0.394	0.396	1.00	0.624	pCi/L	08/09/23 10:11	08/22/23 15:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.3		30 - 110					08/09/23 10:11	08/22/23 15:01	1
Y Carrier	80.4		30 - 110					08/09/23 10:11	08/22/23 15:01	1

Method: TAL-STL Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium 226 and 228	0.701		0.412	0.414	5.00	0.624	pCi/L		09/05/23 11:40	1

Surrogate Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		2NMX (70-130)	PRY (70-130)	TPP (70-130)
810-72398-1	23H0087-01 CT23A	97	102	112
LCS 810-68357/2-A	Lab Control Sample	103	106	108
LLCS 810-68357/3-A	Lab Control Sample	102	105	114
MB 810-68357/1-A	Method Blank	100	103	106

Surrogate Legend

2NMX = 2-Nitro-m-xylene
PRY = Perylene-d12
TPP = Triphenylphosphate

Method: 515.3 - Herbicides (GC)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		DCPAA2 (70-130)
810-72398-1	23H0087-01 CT23A	101
LLCS 810-68950/2-B	Lab Control Sample	101
MB 810-69283/1-B	Method Blank	101

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Tracer/Carrier Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
810-72398-1	23H0087-01 CT23A	86.3	
LCS 160-623455/2-A	Lab Control Sample	79.9	
MB 160-623455/1-A	Method Blank	86.5	

Tracer/Carrier Legend
Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
810-72398-1	23H0087-01 CT23A	86.3	80.4
LCS 160-623456/2-A	Lab Control Sample	79.9	78.9
MB 160-623456/1-A	Method Blank	86.5	78.9

Tracer/Carrier Legend
Ba = Ba Carrier
Y = Y Carrier

QC Sample Results

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 810-68357/1-A
Matrix: Drinking Water
Analysis Batch: 68473

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68357

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Heptachlor epoxide	<0.010		0.010	ug/L		08/04/23 07:09	08/05/23 13:57	1
Di(2-ethylhexyl)adipate	<0.60		0.60	ug/L		08/04/23 07:09	08/05/23 13:57	1
Di (2-ethylhexyl)phthalate	<0.60		0.60	ug/L		08/04/23 07:09	08/05/23 13:57	1
Hexachlorobenzene	<0.10		0.10	ug/L		08/04/23 07:09	08/05/23 13:57	1
Simazine	<0.070		0.070	ug/L		08/04/23 07:09	08/05/23 13:57	1
Alachlor	<0.10		0.10	ug/L		08/04/23 07:09	08/05/23 13:57	1
Atrazine	<0.10		0.10	ug/L		08/04/23 07:09	08/05/23 13:57	1
Benzo[a]pyrene	<0.020		0.020	ug/L		08/04/23 07:09	08/05/23 13:57	1
gamma-BHC (Lindane)	<0.020		0.020	ug/L		08/04/23 07:09	08/05/23 13:57	1
Endrin	<0.010		0.010	ug/L		08/04/23 07:09	08/05/23 13:57	1
Methoxychlor	<0.10		0.10	ug/L		08/04/23 07:09	08/05/23 13:57	1
Heptachlor	<0.010		0.010	ug/L		08/04/23 07:09	08/05/23 13:57	1
Hexachlorocyclopentadiene	<0.10		0.10	ug/L		08/04/23 07:09	08/05/23 13:57	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Nitro-m-xylene	100		70 - 130	08/04/23 07:09	08/05/23 13:57	1
Perylene-d12	103		70 - 130	08/04/23 07:09	08/05/23 13:57	1
Triphenylphosphate	106		70 - 130	08/04/23 07:09	08/05/23 13:57	1

Lab Sample ID: LCS 810-68357/2-A
Matrix: Drinking Water
Analysis Batch: 68473

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68357

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Heptachlor epoxide	1.99	2.41		ug/L		121	70 - 130
Di(2-ethylhexyl)adipate	1.99	2.13		ug/L		107	70 - 130
Di (2-ethylhexyl)phthalate	1.99	2.15		ug/L		108	70 - 130
Hexachlorobenzene	1.99	2.43		ug/L		123	70 - 130
Simazine	1.99	2.12		ug/L		107	70 - 130
gamma-BHC (Lindane)	1.99	2.40		ug/L		121	70 - 130
Endrin	1.99	2.48		ug/L		125	70 - 130
Methoxychlor	1.99	2.34		ug/L		118	70 - 130
Heptachlor	1.99	2.42		ug/L		122	70 - 130
Hexachlorocyclopentadiene	1.99	2.33		ug/L		117	70 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
2-Nitro-m-xylene	103		70 - 130
Perylene-d12	106		70 - 130
Triphenylphosphate	108		70 - 130

Lab Sample ID: LLCS 810-68357/3-A
Matrix: Drinking Water
Analysis Batch: 68473

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68357

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Heptachlor epoxide	0.00978	0.0149	*+	ug/L		153	50 - 150
Di(2-ethylhexyl)adipate	0.587	0.643		ug/L		110	50 - 150
Di (2-ethylhexyl)phthalate	0.587	0.651		ug/L		111	50 - 150

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LLCS 810-68357/3-A

Matrix: Drinking Water

Analysis Batch: 68473

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 68357

Analyte	Spike	LLCS	LLCS	Unit	D	%Rec	%Rec
	Added	Result	Qualifier				
Hexachlorobenzene	0.0978	0.107		ug/L		109	50 - 150
Simazine	0.0685	0.0570	J	ug/L		83	50 - 150
gamma-BHC (Lindane)	0.0196	0.0204		ug/L		104	50 - 150
Endrin	0.00978	0.0143		ug/L		147	50 - 150
Methoxychlor	0.0978	0.0750	J	ug/L		77	50 - 150
Heptachlor	0.00978	0.0160	*+	ug/L		163	50 - 150
Hexachlorocyclopentadiene	0.0978	0.104		ug/L		107	50 - 150

Surrogate	LLCS	LLCS	Limits
	%Recovery	Qualifier	
2-Nitro-m-xylene	102		70 - 130
Perylene-d12	105		70 - 130
Triphenylphosphate	114		70 - 130

Method: 505 - Organochlorine Pesticides/PCBs (GC)

Lab Sample ID: MB 810-68718/1-A

Matrix: Drinking Water

Analysis Batch: 68785

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 68718

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier							
PCB-1016	<0.080		0.080	ug/L		08/08/23 09:11	08/08/23 21:35	1	
PCB-1221	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	
PCB-1232	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	
PCB-1242	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	
PCB-1248	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	
PCB-1254	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	
PCB-1260	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	
Chlordane (technical)	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	
Toxaphene	<0.50		0.50	ug/L		08/08/23 09:11	08/08/23 21:35	1	
Total PCBs as DCB (Qualitative)	<0.10		0.10	ug/L		08/08/23 09:11	08/08/23 21:35	1	

Lab Sample ID: LLCS 810-68718/2-A

Matrix: Drinking Water

Analysis Batch: 68785

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 68718

Analyte	Spike	LLCS	LLCS	Unit	D	%Rec	%Rec
	Added	Result	Qualifier				
Chlordane (technical)	0.100	0.0750	J	ug/L		75	50 - 150

Lab Sample ID: LLCS 810-68718/3-A

Matrix: Drinking Water

Analysis Batch: 68785

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 68718

Analyte	Spike	LLCS	LLCS	Unit	D	%Rec	%Rec
	Added	Result	Qualifier				
Toxaphene	0.500	0.745		ug/L		149	50 - 150

QC Sample Results

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Method: 515.3 - Herbicides (GC)

Lab Sample ID: LLCS 810-68950/2-B
Matrix: Drinking Water
Analysis Batch: 69510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68950

Analyte	Spike Added	LLCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
2,4,5-TP (Silvex)	0.100	0.110		ug/L		110	48 - 148
2,4-D	0.200	0.164		ug/L		82	24 - 138
Dinoseb	0.200	0.220		ug/L		110	39 - 141
Pentachlorophenol	0.0400	0.0229	J	ug/L		57	30 - 171
Picloram	0.100	<0.10		ug/L		25	24 - 150

Surrogate	LLCS		Limits
	%Recovery	Qualifier	
2,4-Dichlorophenylacetic acid	101		70 - 130

Lab Sample ID: MB 810-69283/1-B
Matrix: Drinking Water
Analysis Batch: 69510

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 69283

Analyte	MB		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
2,4,5-T	<0.50		0.50	ug/L		08/11/23 07:32	08/14/23 15:38	1
2,4,5-TP (Silvex)	<0.10		0.10	ug/L		08/11/23 07:32	08/14/23 15:38	1
2,4-D	<0.10		0.10	ug/L		08/11/23 07:32	08/14/23 15:38	1
Acifluorfen	<1.0		1.0	ug/L		08/11/23 07:32	08/14/23 15:38	1
Bentazon	<0.50		0.50	ug/L		08/11/23 07:32	08/14/23 15:38	1
DCPA (acid degradates)	<0.50		0.50	ug/L		08/11/23 07:32	08/14/23 15:38	1
Dalapon	<1.0		1.0	ug/L		08/11/23 07:32	08/14/23 15:38	1
Dicamba	<0.10		0.10	ug/L		08/11/23 07:32	08/14/23 15:38	1
Dinoseb	<0.10		0.10	ug/L		08/11/23 07:32	08/14/23 15:38	1
Pentachlorophenol	<0.040		0.040	ug/L		08/11/23 07:32	08/14/23 15:38	1
Picloram	<0.10		0.10	ug/L		08/11/23 07:32	08/14/23 15:38	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2,4-Dichlorophenylacetic acid	101		70 - 130	08/11/23 07:32	08/14/23 15:38	1

Method: 531.2 - Carbamate Pesticides (HPLC)

Lab Sample ID: MBL 810-68725/1-A
Matrix: Drinking Water
Analysis Batch: 68948

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MBL		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Aldicarb	<0.20		0.50	ug/L		08/09/23 15:09	08/09/23 15:09	1
Aldicarb sulfone	<0.20		0.70	ug/L		08/09/23 15:09	08/09/23 15:09	1
Aldicarb sulfoxide	<0.20		0.50	ug/L		08/09/23 15:09	08/09/23 15:09	1
Baygon (Propoxur)	<0.20		0.50	ug/L		08/09/23 15:09	08/09/23 15:09	1
Carbaryl	<0.20		0.50	ug/L		08/09/23 15:09	08/09/23 15:09	1
Carbofuran	<0.30		0.90	ug/L		08/09/23 15:09	08/09/23 15:09	1
3-Hydroxycarbofuran	<0.20		0.50	ug/L		08/09/23 15:09	08/09/23 15:09	1
Methiocarb	<0.40		1.0	ug/L		08/09/23 15:09	08/09/23 15:09	1
Methomyl	<0.30		0.50	ug/L		08/09/23 15:09	08/09/23 15:09	1
Oxamyl	<0.30		1.0	ug/L		08/09/23 15:09	08/09/23 15:09	1

QC Sample Results

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-623627/1-A
Matrix: Drinking Water
Analysis Batch: 623916

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 623627

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.7990	U	0.686	0.692	3.00	1.07	pCi/L	08/10/23 07:35	08/11/23 20:30	1

Lab Sample ID: LCS 160-623627/2-A
Matrix: Drinking Water
Analysis Batch: 623932

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 623627

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.6	62.15		9.22	3.00	2.76	pCi/L	125	70 - 130

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-623455/1-A
Matrix: Drinking Water
Analysis Batch: 626304

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 623455

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.0000	U	0.0740	0.0740	1.00	0.147	pCi/L	08/09/23 09:52	08/31/23 12:12	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.5		30 - 110					08/09/23 09:52	08/31/23 12:12	1

Lab Sample ID: LCS 160-623455/2-A
Matrix: Drinking Water
Analysis Batch: 626304

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 623455

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	11.3	10.25		1.09	1.00	0.116	pCi/L	90	90 - 110
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	79.9		30 - 110						

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-623456/1-A
Matrix: Drinking Water
Analysis Batch: 625104

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 623456

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.4438	U	0.365	0.368	1.00	0.567	pCi/L	08/09/23 10:11	08/22/23 15:01	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.5		30 - 110					08/09/23 10:11	08/22/23 15:01	1
Y Carrier	78.9		30 - 110					08/09/23 10:11	08/22/23 15:01	1

Eurofins Eaton Analytical South Bend

QC Sample Results

Client: Trace Analytical Laboratories
 Project/Site: 23H0087

Job ID: 810-72398-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-623456/2-A
Matrix: Drinking Water
Analysis Batch: 625104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 623456

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228	7.94	10.35		1.45	1.00	0.596	pCi/L	130	80 - 120
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	79.9		30 - 110						
Y Carrier	78.9		30 - 110						

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

QC Association Summary

Client: Trace Analytical Laboratories
 Project/Site: 23H0087

Job ID: 810-72398-1

GC/MS Semi VOA

Prep Batch: 68357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	525.2	
MB 810-68357/1-A	Method Blank	Total/NA	Drinking Water	525.2	
LCS 810-68357/2-A	Lab Control Sample	Total/NA	Drinking Water	525.2	
LLCS 810-68357/3-A	Lab Control Sample	Total/NA	Drinking Water	525.2	

Analysis Batch: 68473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	525.2	68357
MB 810-68357/1-A	Method Blank	Total/NA	Drinking Water	525.2	68357
LCS 810-68357/2-A	Lab Control Sample	Total/NA	Drinking Water	525.2	68357
LLCS 810-68357/3-A	Lab Control Sample	Total/NA	Drinking Water	525.2	68357

GC Semi VOA

Prep Batch: 68718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	505	
MB 810-68718/1-A	Method Blank	Total/NA	Drinking Water	505	
LLCS 810-68718/2-A	Lab Control Sample	Total/NA	Drinking Water	505	
LLCS 810-68718/3-A	Lab Control Sample	Total/NA	Drinking Water	505	

Analysis Batch: 68785

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	505	68718
MB 810-68718/1-A	Method Blank	Total/NA	Drinking Water	505	68718
LLCS 810-68718/2-A	Lab Control Sample	Total/NA	Drinking Water	505	68718
LLCS 810-68718/3-A	Lab Control Sample	Total/NA	Drinking Water	505	68718

Prep Batch: 68950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-68950/2-B	Lab Control Sample	Total/NA	Drinking Water	515.3	

Cleanup Batch: 68972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-68950/2-B	Lab Control Sample	Total/NA	Drinking Water	Aliquot	68950

Prep Batch: 69283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	515.3	
MB 810-69283/1-B	Method Blank	Total/NA	Drinking Water	515.3	

Cleanup Batch: 69305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	Aliquot	69283
MB 810-69283/1-B	Method Blank	Total/NA	Drinking Water	Aliquot	69283

Analysis Batch: 69510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	515.3	69305
MB 810-69283/1-B	Method Blank	Total/NA	Drinking Water	515.3	69305
LLCS 810-68950/2-B	Lab Control Sample	Total/NA	Drinking Water	515.3	68972

QC Association Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

HPLC/IC

Filtration Batch: 68725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Dissolved	Drinking Water	Filtration	
MBL 810-68725/1-A	Method Blank	Dissolved	Drinking Water	Filtration	

Analysis Batch: 68948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Dissolved	Drinking Water	531.2	68725
MBL 810-68725/1-A	Method Blank	Dissolved	Drinking Water	531.2	68725

Rad

Prep Batch: 623455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	PrecSep-21	
MB 160-623455/1-A	Method Blank	Total/NA	Drinking Water	PrecSep-21	
LCS 160-623455/2-A	Lab Control Sample	Total/NA	Drinking Water	PrecSep-21	

Prep Batch: 623456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	PrecSep_0	
MB 160-623456/1-A	Method Blank	Total/NA	Drinking Water	PrecSep_0	
LCS 160-623456/2-A	Lab Control Sample	Total/NA	Drinking Water	PrecSep_0	

Prep Batch: 623627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-72398-1	23H0087-01 CT23A	Total/NA	Drinking Water	Evaporation	
MB 160-623627/1-A	Method Blank	Total/NA	Drinking Water	Evaporation	
LCS 160-623627/2-A	Lab Control Sample	Total/NA	Drinking Water	Evaporation	

Lab Chronicle

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Client Sample ID: 23H0087-01 CT23A

Lab Sample ID: 810-72398-1

Date Collected: 08/01/23 15:15

Matrix: Drinking Water

Date Received: 08/03/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	525.2			68357	MR	EA SB	08/04/23 07:09
Total/NA	Analysis	525.2		1	68473	TD	EA SB	08/06/23 00:16
Total/NA	Prep	505			68718	KB	EA SB	08/08/23 09:15 - 08/08/23 16:11 ¹
Total/NA	Analysis	505		1	68785	JV	EA SB	08/09/23 02:22
Total/NA	Prep	515.3			69283	GL	EA SB	08/11/23 07:32
Total/NA	Cleanup	Aliquot			69305	GL	EA SB	08/11/23 10:07
Total/NA	Analysis	515.3		1	69510	CM	EA SB	08/15/23 04:16
Dissolved	Filtration	Filtration			68725	HB	EA SB	08/08/23 10:17
Dissolved	Analysis	531.2		1	68948	RS	EA SB	08/09/23 18:16
Total/NA	Prep	Evaporation			623627	MST	EET SL	08/10/23 07:35
Total/NA	Analysis	900.0		1	623931	FLC	EET SL	08/11/23 21:44
Total/NA	Prep	PrecSep-21			623455	KAC	EET SL	08/09/23 09:52
Total/NA	Analysis	903.0		1	626304	FLC	EET SL	08/31/23 12:13
Total/NA	Prep	PrecSep_0			623456	KAC	EET SL	08/09/23 10:11
Total/NA	Analysis	904.0		1	625104	FLC	EET SL	08/22/23 15:01
Total/NA	Analysis	Ra226_Ra228 Pos		1	626554	EMH	EET SL	09/05/23 11:40

¹ This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Laboratory: Eurofins Eaton Analytical South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	06-30-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
505	505	Drinking Water	Total PCBs as DCB (Qualitative)
515.3	515.3	Drinking Water	2,4,5-T
515.3	515.3	Drinking Water	Acifluorfen
515.3	515.3	Drinking Water	Bentazon
515.3	515.3	Drinking Water	DCCA (acid degradates)
531.2		Drinking Water	Baygon (Propoxur)
531.2		Drinking Water	Methiocarb

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-23
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-24
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-24
HI - RadChem Recognition	State	n/a	06-30-24
Illinois	NELAP	200023	11-30-23
Iowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-23
Kentucky (DW)	State	KY90125	12-31-23
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-23
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-24
Louisiana (DW)	State	LA011	12-31-23
Maryland	State	310	09-30-24
Massachusetts	State	M-MO054	06-30-24
MI - RadChem Recognition	State	9005	06-30-24
Missouri	State	780	06-30-25
Nevada	State	MO000542020-1	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-24
North Carolina (DW)	State	29700	07-31-24
North Dakota	State	R-207	06-30-24
Oregon	NELAP	4157	09-01-24
Pennsylvania	NELAP	68-00540	02-28-24
South Carolina	State	85002001	06-30-23 *
Texas	NELAP	T104704193	07-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Laboratory: Eurofins St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
US Fish & Wildlife	US Federal Programs	058448	07-31-24
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO000542021-14	07-31-23 *
Virginia	NELAP	10310	06-15-25
West Virginia DEP	State	381	10-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Method Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

Job ID: 810-72398-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	EA SB
505	Organochlorine Pesticides/PCBs (GC)	EPA	EA SB
515.3	Herbicides (GC)	EPA	EA SB
531.2	Carbamate Pesticides (HPLC)	EPA	EA SB
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	EET SL
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
Pos			
505	Extraction, Organochlorine Pesticides/PCBs	EPA	EA SB
515.3	Extraction of Chlorinated Acids	EPA-DW	EA SB
525.2	Extraction of Semivolatile Compounds	EPA	EA SB
Aliquot	Preparation, Extract aliquot	None	EA SB
Evaporation	Preparation, Evaporation	None	EET SL
Filtration	Sample Filtration	None	EA SB
PrecSep_0	Preparation, Precipitate Separation	None	EET SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	EET SL

Protocol References:

- EPA = US Environmental Protection Agency
- EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.
- None = None
- TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

- EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
- EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Trace Analytical Laboratories
Project/Site: 23H0087

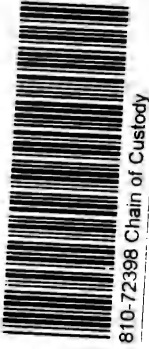
Job ID: 810-72398-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-72398-1	23H0087-01 CT23A	Drinking Water	08/01/23 15:15	08/03/23 09:45

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

South Bend, IN
 110 S Hill Street
 South Bend, IN 46617
 Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record



Client Information		Sampler: Fullmer, Karen	Lab PM: Fullmer, Karen	Carrier Tracking
Client Contact: Jon Mink		Phone:	E-Mail: karen.fullmer@eurofinsat.com	State of Origin:
Company: Trace Analytical Laboratories		PWSID:		
Address: 2241 Black Creek Road		Due Date Requested:		
City: Muskegon		TAT Requested (days):		
State, Zip: MI, 49444		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Phone: 231-773-5998(Tel)		PO #: 23H0087	Sample Date	Sample Time
Email: jmink@trace-labs.com		WO #: 23H0087	8/1/23	15:15
Project Name: EGLE SOCs		Project #: 23H0087		G
Site:		SSOW#:		Drinking Water
Sample Identification		Sample Type (C=Comp, G=grab)	Matrix (Water, Soil, Organics, etc.)	
23H0087-01 CT23A				
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological				
Deliverable Requested: I, II, III, IV, Other (specify)				
Empty Kit Relinquished by:				
Relinquished by: Natalie Cooper				
Relinquished by:				
Relinquished by:				
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Custody Seal No.:				
Date/Time: 8/2/23 17:00 Date/Time: 8/2/23 17:00 Date/Time: 8/2/23 17:00 Date/Time: 8/2/23 17:00 Date/Time: 8/2/23 17:00				
Received by: [Signature] Received by: [Signature] Received by: [Signature]				
Company: Trace Company: Trace Company: Trace				
Method of Shipment: Date/Time: 8/2/23 17:00 Date/Time: 8/2/23 17:00 Date/Time: 8/2/23 17:00 Date/Time: 8/2/23 17:00				
Return To Client: <input type="checkbox"/> Disposal By Lab: <input type="checkbox"/> Archive For: _____ Months				
Special Instructions/QC Requirements:				
All Acceptable - RADs O. G. [Signature] A. [Signature]				
Analysis Requested: EPA 505 - PCB, Toxaphene & Chlordane EPA 515.3 - Chlorinated Acids Extended EPA 525.2 - Semivolatiles EPA 531.2 - Carbamate Pesticides Radium 226/228 Gross Alpha				
Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: Preservative Mix				
Special Instructions/Note:				



110 S Hill Street
 South Bend, IN 46617
 Phone: 574-233-4777 Fax: 574-233-8207

Chain of Custody Record



Client Information (Sub Contract Lab)
 Client Contact: **Samplers:** Fulmer, Karen
 Shipping/Receiving: **Phone:** Karen.Fulmer@et.eurofins.com
 Company: **TestAmerica Laboratories, Inc.** State of Origin: Michigan
 Address: **13715 Rider Trail North,** City: **9/6/2023** TAT Requested (days):
 Earth City: **MO, 63045** PO #:
 State Zip: **314-298-8566 (Tel) 314-298-8757 (Fax)** W/O #:
 Phone: **23H0087** Project #: **81000263**
 Email: **SSOW#:**

Analysis Requested
 Field Filtered Sample (Yes or No)
 Perform MS/MSD (Yes or No)
 900.0/Evaporation EPA 900.0 - Gross Alpha (St. Louis)
 903.0/PrecSep_21 EPA 903.0 - Radium 226 (St. Louis)
 904.0/PrecSep_0 EPA 904.0 - Radium 228 (St. Louis)
 Ra226_228GFPC_P/ Combined Ra226 & Ra228 Calc (St. Louis)
 Total Number of Containers: 5
 Special Instructions/Note:
 SDWA - RL must be met, extend count time to meet RL. If RL is not met, contact PM to

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (G=Comp, B=Trace, A=Al)	Matrix (W=Water, S=Soil, O=Organic, A=Air)	Preservation Code:	Carrier Tracking No(s)	COC No:
23H0087-01 CT23A (810-72398-1)	8/1/23	15:15 Eastern		Drinking Water		810-72398-1	810-28786-1

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (Specify): **Primary Deliverable Rank: 2**
 Empty Kit Relinquished by: **Date:**
 Relinquished by: **Company:**
 Relinquished by: **Date/Time:**
 Relinquished by: **Company:**
 Relinquished by: **Date/Time:**
 Relinquished by: **Company:**
 Custody Seals Intact: **Δ Yes Δ No** Custody Seal No.:
 Cooler Temperature(s) °C and Other Remarks:

Chain of Custody Record



Environment Testing



Client Information (Sub Contract Lab)		Lab PM: Fullimer, Karen		Carrier Tracking No(s): 810-28766.1	
Shipping/Receiving		E-Mail: Karen.Fullimer@et.eurofins.com		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State - Michigan		Job #: 810-72398-1	
Address: 13715 Rider Trail North, City: Earth City State, Zip: MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email:		Due Date Requested: 9/6/2023 TAT Requested (days):		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify) Other:	
PO #: WO #: Project #: 81000263 SSOW#:		Analysis Requested		Special Instructions/Note:	
Sample Identification - Client ID (Lab ID) 23H0087-01 CT23A (810-72398-1)		Field Filtered Sample (Yes or No)		Total Number of containers	
Sample Date 8/1/23		Sample Time 15:15 Eastern		5	
Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=water/oi, BT=Tissue, AA=)		SDWA - RL must be met, extend count time to meet RL. If RL is not met, contact PM to	
Sample Date		Preservation Code:			
Sample Time		Drinking Water			
Sample Date		900/EVaporation EPA 900.0 - Gross Alpha (St. Louis)		X	
Sample Time		903.0/PrecSep_21 EPA 903.0 - Radium 226 (St. Louis)		X	
Sample Date		904.0/PrecSep_0 EPA 904.0 - Radium 228 & Ra228 Calc (St. Louis)		X	
Sample Time		Ra226, 228GFP_C_P/ Combined Ra226 & Ra228 Calc (St. Louis)		X	
Sample Date		Perform MS/MSD (Yes or No)		X	
Sample Time		Field Filtered Sample (Yes or No)		X	

Note: Since laboratory accreditations are subject to change, Eurofins Eaton Analytical, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins Eaton Analytical, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Eaton Analytical, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Eaton Analytical, LLC.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: *Phyllis Dehlylight* Date/Time: *08/07/23 1400* Company: *ECA*
 Relinquished by: *FED EX* Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No Δ No Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks: _____

Received by: _____ Date/Time: _____
 Received by: *Suma Weedington* Date/Time: *AUG 08 2023* Company: _____
 Received by: _____ Date/Time: _____ Company: _____

Method of Shipment: _____
 Return To Client Disposal By Lab Archive For _____ Months
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)



Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-72398-1

Login Number: 72398

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Blackburn, Kelly

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Login Sample Receipt Checklist

Client: Trace Analytical Laboratories

Job Number: 810-72398-1

Login Number: 72398

List Number: 2

Creator: Pinette, Meadow L

List Source: Eurofins St. Louis

List Creation: 08/08/23 02:01 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673



231-773-5998 Phone
888-979-4469 Fax
www.trace-labs.com



Trace Analytical Laboratories, Inc.
2241 Black Creek Road
Muskegon, MI 49444-2673

CHAIN-OF-CUSTODY RECORD

Phone 231.773.5998
Fax 888.979.4469
www.trace-labs.com

Page ___ of ___

Trace ID No. **23H0087**

Report Results To:

Company Name: Peetless Midwest
 Report To:
 Mailing Address: 505 Apple Tree Dr.
 City, State, Zip Code: Ionia, MI 48846
 Office Phone: 574-252-4142 Cell Phone:
 Email Address:
 Billing Address: 55860 Russell Industrial Parkway
 City, State, Zip Code: Mishawaka, IN 46545
 Phone Number: 574-254-9650
 Billing Email Address: accountspayable@peetlessmidwest.com

Trace Use:

Logged By: *MP*
 Checked By: *SR*
 Soil Volatiles Preserved (circle if applicable):
 MeOH Low Level Lab
 Sampling Time:

Bill To:

PO #:
 Contact Name: Tia

Turnaround Requirements:

- Standard: 5-10 Days
 3 Day*
 1 Day*

Matrix Key:

- S = Soil / Solid W = Water LW = Liquid Waste
 SL = Sludge A = Air
 OI = Oil D = Drinking Water

*Results provided end of business day, requires prior approval.

Project Name: *Dwight Charles Topf*
 Sampled By: *Patrice Westbrook*

Trace No.	Date Collected	Time Collected	Client Sample ID	Metals Field Filtered (Y / N)	Matrix	Number of Containers	Preservation							Analysis Requested					Remarks	Possible Health Hazards?					
							Cool	HCl	HNO ₃	H ₂ SO ₄	NaOH	Other	Total Alk, Conductance	Ammonia, CO2 Bundle	Free CN, Type 1 Metals	Partial Chem	VOC	Gross Alpha, Rad 226/228			SOC - EGLE List	PFAS	Low Level Sulfide		
1	08/01	3:15 PM	CF 23A		D	20	X	X	X	X	X	X												Field pH = 7.3 Field Temp = 50.3	
3)																									
4)																									

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads.

CERTIFICATE OF ANALYSIS

STATE OF MICHIGAN LABORATORY ID: 8001

The Reg level for all analytes with the exception of Lead and Copper is the MCL, for Lead and Copper it is the AL.

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23H0087
 Peerless Midwest Inc.
 Project Manager: Drew Hilleary

Sample Log In Checklist

Date: 8/2/23	Original Observation	Corrected Temperature	IR-9 (CF: -0.4°C)	IR-10 (CF: +0.2°C)	IR-12 (CF: -0.4°C)	SR1 (CF: -0.2°C)	SR2 (CF: -0.1°C)	Temp Blank	Client Sample
Time: 9:30									
Logged by: NC									
Package Description: Cooler									
Package Temp °C	0.8	0.4							
Representative Sample Temp °C	2.0	1.9							

Sample Receipt

- Yes No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier Client Drop-off
- Yes No Custody seals intact (if applicable)
- UPS Fed Ex US Mail Other

Sample Condition

- Yes No N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC201854) pH 11.0-13.0 (Lot: HC022540) Other
- Air bubbles absent from VOAs

Chain of Custody (COC)

- Yes No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

Notes:

CERTIFICATE OF ANALYSIS

STATE OF MICHIGAN LABORATORY ID: 8001

The Reg level for all analytes with the exception of Lead and Copper is the MCL, for Lead and Copper it is the AL.

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REQUEST FOR PROPOSALS
EGLE DRINKING WATER STATE REVOLVING FUND (DWSRF): DW-7705A
2024 WATER SYSTEM UPGRADES
DIVISION A: TYPE I WATER WELL
Union Township, Isabella County

Proposals Due:

4:00 P.M., Friday July 19, 2024

Address Proposals to (mail and/or email):

Engineer :

Attention: Jennifer Graham, P.E.
Gourdie-Fraser, Inc.
123 West Front Street
Traverse City, MI 49684
231-946-5874
jennifer@gfa.tc

Scope of Services:

We have been asked by our client, Union Township to solicit proposals from qualified Type 1 well drillers to investigate and evaluate a new groundwater source to meet the growing demands of the community. The Township recently completed initial aquifer investigation at the proposed well site by constructing a 6-inch test well that demonstrated potential to produce 300-600 gpm. The intent of this project is to proceed with next steps of constructing a 12-inch test well including aquifer and water quality analysis capable of producing up to 800 GPM including the installation of one (1) monitoring well. The information contained below are the specific qualifications each well driller must meet in order to provide an accurate proposal.

A preliminary site layout is attached for reference illustrating the approximate proposed well location, access drive and existing monitoring well. In addition, the 6-inch test well investigation report is also attached for reference.

Background Information:

The existing East Side Iron Removal Facility (Isabella Facility) is owned and operated by Union Township and provides municipal water service to the customers within the Township. The facility operates on two (2) 400 gpm and one (1) 700 gpm production wells (Wells #7, #10 and #11) all located at the facility, which provides iron removal treatment utilizing two (2) 750 gpm pressure filters and then distributes water out to system. Well #7, #10 and #11 are all located within the same aquifer.

With limited aquifer capacity at the Isabella Facility, the Township has investigated locations for a new well site to supplement future demand needs of the East Side Pressure District. The proposed well site is a 14-acre township owned parcel located at 5076 South Mission Road, approximately 1.7 miles west of the existing Isabella WTP. It is the intent of this work to demonstrate that a proposed well can be developed at the proposed well site in an aquifer that will be capable of meeting the proposed capacity requirements described previously. The well driller will be responsible to determine the best location and depth of the proposed well that will be able to provide the most flow capacity without impeding any surrounding wells in the area or regional water levels.

Requirements - General:

- This project is funded through the Michigan Clean Water State Revolving Fund Grant (DW-7705A), all state and/or federal funding requirements shall apply.
 - The following waivers apply to this Contract:
 - Certification Regarding Debarment, Suspension & Other Responsibility Matters
 - Davis-Bacon Act Compliance Certification
 - Davis–Bacon Act, as amended (40 U.S.C. 3141–3148) and Contract Work Hours and Safety Standards Act (40 U.S.C. 3701–3708) will be required. In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the U.S. Secretary of Labor.
- All labor and materials shall be installed compliant with Township, DPW, EGLE, EPA and manufacturer's recommendations.
- Contractor shall be responsible for obtaining all local regulatory permits, completing inspections and payment of all associated fees which include but are not limited to plumbing, mechanical, electrical.
- The site can be accessed by an existing temporary access drive, entrance off of E Deerfield Rd. Contractor shall be responsible to perform any additional clearing / drive improvements to accommodate equipment access as needed. Provide a one (1) year full labor and material warranty on all workmanship, material and equipment furnished for this project.
- It is strongly recommended that you make a site visit and perform an evaluation of the existing conditions and proposed scope of work. Coordinate with the DPW for site access:
 - Kim Smith, Public Services Director (989) 772-4600, Ext 224
 - Shawn McBride, Water Operator (989) 621-1361

Terms of Agreement:

General:

- To hold bid open for 90 consecutive calendar days from the bid due date
 - To enter into and execute a contract with the Charter Township of Union
- Insurance:
- Contractor will have Worker's Compensation Insurance in limits required by state law and Comprehensive General Liability Insurance coverage in force for all of its operations under this contract.
 - Insurance shall list Charter Township of Union and Gourdie Fraser as additional insureds.

Bonds:

- The Contractor shall include in the proposal price the cost to provide the following:
 - Maintenance and Guarantee Bond in the amount of 50% of the proposal amount, guarantying for a period of one (1) year from final acceptance of the project work
 - Letter of Surety, licensed to business in the State of Michigan, stating ability to obtain a Performance Bond, and Labor and Material Bond for 100% of the proposal amount.

Shop Drawings/O&M Submittals:

- Provide four (4) copies of material specification sheets and warranty information to Engineer. Do not proceed until written approval is received.
- Coordinate all work with Engineer

Schedule:

- To be completed by October 1, 2024

- All work must be completed within thirty (30) calendar days from the beginning of removal to final clean up. Delays by inclement weather shall be approved by the Engineer.

Drilling and Aquifer Testing

Test Well Construction

Installation of one (1) test well capable of producing up to 800 GPM and installation of one (1) monitoring well. The contractor shall be responsible for coordinating final location with engineer and DPW. The test well shall be used to verify water quality and aquifer capacity to meet proposed operation conditions for facility. This well shall be converted to a production well upon demonstrating satisfactory aquifer results as coordinated with the Township, Engineer and approved by EGLE.

The well shall be constructed in accordance with the State of Michigan Well Construction Code (Rules to Part 127 of Act 368 of the Public Acts of 1978, as amended). All materials in contact with drinking water shall meet ANSI/NSF approval and shall include the following:

Monitoring Well

- 2-inch Schedule 80 Steel casing and be installed in the following manner:
 - Total depth of the well is to be approximately 100 to 200 feet
 - Total length of casing not to exceed 190 feet +/-
 - The annulus is grouted with neat cement grout from the top of the gravel pack to the surface.
 - The static water level in the well is expected to be roughly 3 feet.
- Stainless steel screen
 - Length to be 10 feet +/-
 - Driller shall be responsible for determining sizing and submit to owner for review prior to installation
- Well seal, cap and vent

Test Well

- 12-inch Schedule 80 Steel casing and be installed in the following manner:
 - Total depth of the well is to be approximately 100 to 200 feet
 - Total length of casing not to exceed 180 feet +/-
 - The annulus is grouted with neat cement grout from the top of the gravel pack to the surface.
 - The static water level in the well is expected to be roughly 3 feet.
- Stainless steel screen
 - Length to be 20 feet +/-.
 - Driller shall be responsible for determining sizing and submit to owner for review prior to installation.
- Well shall be equipped with a means to measure the water level.
- Well seal, cap and vent.

Duties

Well Driller shall be responsible for performing the following, in addition to the work outlined above in the Well Construction section. Testing shall be completed compliant with High-capacity wells are subject to DWEHD policy and procedure ODWMA-399-003, "Aquifer Test Requirements for Public Water Supply Wells," under Act 399:

- Mobilization

- Performance of well construction log and static water including documentation provided to owner in accordance with the state EGLE Well Code.
- Development of well including conducting a well capacity test at various discharge rates to determine available aquifer capacity for a future production and determine potential influence on adjacent and regional water levels (Mount Pleasant City Wells and Wells #8 / #9 are approximately a quarter mile north of the intersection of Mission / Deerfield Road) as required by EGLE.
 - Driller shall be responsible for monitoring static water levels in proposed well and surrounding existing wells with respect to capacity test.
 - DPW and Engineer will assist driller with communication and coordination with existing well owners.
 - Documentation of all testing and water level observations shall be provided to owner
 - Driller shall be responsible for discharging water to acceptable location that will not cause any soil erosion or sedimentation
- Chemical and radiological water quality sampling shall be performed for proposed well in accordance the state EGLE Well Code including documentation of results to owner including a full Unit 36 Scan, Radiological and PFAS samples, and all sampling required by EGLE for new Type I Water Supply Well.
 - All costs incurred with the sampling and testing shall be the drillers' responsibility
- Well driller shall provide site clean-up upon completion of duties including restoration and/or repair.
- Complete Aquifer Test Analysis and report by a professional Geologist per EGLE Aquifer Testing requirements.

Equipment

Driller shall provide all equipment and materials necessary to complete the work outlined above in the Well Construction and Duties to provide for the well installation, development, yield and drawdown testing, disinfection, water quality sampling, mobilization, and clean-up. They shall include, but are not limited to, the following not stated previously:

- Site access including tree clearing and temporary access drive.
- Temporary Pumping and means of operation.
- Temporary Water and Power Supply
- Flow monitoring and water level measuring devices (pressure transducers accurate to 1/100th) with data logging capabilities.
- Piping, valving and appurtenances
- Discharge hose

Services / Materials Not To Be Included:

The proposal shall not include providing and/or installation of the following items:


- Permanent Pumps / Motors
- Site Electrical
- Distribution Piping
- Drop Pipe

Contractors Proposal Form

Bidders are instructed to submit bids for this project on a unit cost basis as stated in the Proposal. All labor, materials and equipment are considered incidental and to be included in total bid price. All work shall be in compliance with specifications and terms identified in the RFP and applicable laws.

No.	Item	Unit	Est. Qty.	Unit Price	Item Cost
1	Mobilization, Max 5%	LS	1	\$8,640	\$8,640
2	Monitoring Well, 2-inch	LF	200	\$60.00	\$12,000
3	Test Well, 12-inch	LF	200	\$622.20	\$12,4440
4	Aquifer Analysis	LS	1	\$17,740	\$17,740
5	Water Quality Analytics	EA	1	\$5,100	\$5,100
6	Site Cleanup and Restoration	LS	1	\$10,000	\$10,000
TOTAL BID					\$177,920

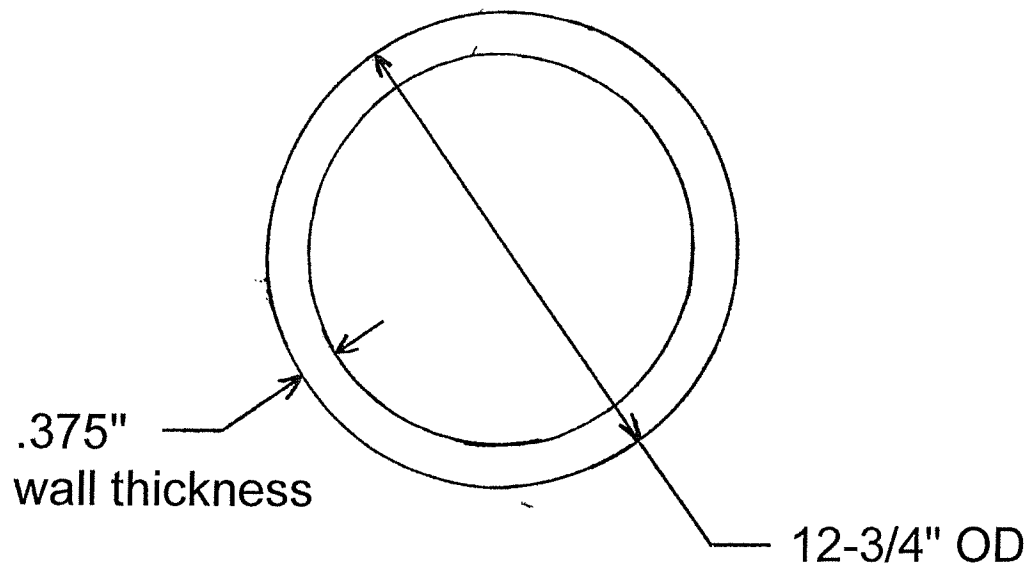
Schedule 40- 12 inch ASTM-A53 Grade B Casing, seamless casing

Bidders Signature Dale Stewart	
Printed Name: Northern Pump & Well	
Business Name: 6837 W Grand River Ave, Lansing MI 48906	
Address: 19-2285	
Contractor / Well Driller License No.: (517)322-0219	
Telephone: Dstewart@northernpwco.com	
Email:	

The Owner may make such investigations as deemed necessary to determine the ability of the Bidder to perform the Work and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any / all bids if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the work as requested.

Charter Township of Union reserves the right to accept or reject any or all proposals.

SHOP DRAWING



Mat'l: Carbon steel pipe ERW per
ASTM A53, Grade B
Material is Melted & Made in the USA



Proposed Site Plan

Charter Township
of **UNION**



Technical Specifications

Charter Township
of UNION

SECTION 02520 – WATER WELLS AND TESTING

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. This section encompasses all the work required for water wells including well performance testing. The general scope of the drilling and testing will be as follows;
 1. **Construction of one (1) 2-inch diameter observation wells** at an assumed depth of up to 200 feet. The construction will consist of approximately 2-inch steel casing with up to 10 feet of 2-inch PVC filter packed well screen.
 2. **Construction of one (1) 12-inch diameter production well** at an assumed depth of up to 200 feet. The construction will consist of approximately of steel casing with up to 20 feet of SSWW filter packed well screen.
 3. **Performance testing** consisting of a constant rate well performance test of 24-hours in duration.
 4. **Plumbness and Alignment Testing.**

1.02 REFERENCES:

- A. Groundwater Quality Control - Act 368 of the Public Acts of 1978, Part 127. Water Supply and Sewer Systems
- B. American Water Works Association (AWWA) Section A100 Deep Wells.
- C. AWS D1.1 Structural Welding Code
- D. ASTM specification A589-89a, Standard Specification for Seamless and Welded Carbon Steel water well pipe
- E. ASTM F480 – 14 - Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80
- F. American Petroleum Institute (API) Specification 5L
- G. Part 127 of the Public Health Code Act 368 of 1978, Water Supply and Sewer Systems, and Administrative Rules, which are collectively known as the "Michigan Water Well Construction and Pump Installation Code."
- H. Grouting of Community Water Supply Wells, ODWMA- Public Water Supply Program, ODWMA-399-016

1.03 QUALITY ASSURANCE

- A. Contractor shall provide at least 3 different references of successful well drilling projects of similar nature/size in the State of Michigan for Municipal Type I Systems.
- B. Contractor must have been in the pump and well business for a minimum of ten (10) years and must be a licensed well driller in good standing and current certification with the state of Michigan.
- C. Safety is of the highest importance, therefore all crew members working on site must be OSHA 40 hour trained and current on certification. Documentation must be provided prior to starting any work.

- D. All well construction shall conform to the **Michigan Water Well Construction and Pump Installation Code (Part 127, Act 368, PA 1978 and Administrative Rules)**.
- E. Materials:
 - 1. Shall bear label, stamp, or other markings of specified testing agency.
 - 2. Comply with NSF 14 for plastic potable-water-service piping. Include marking “NSF-pw” on piping.
 - 3. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.
- F. Well Testing shall conform to EGLE Policy and Procedure WD-03-003: **AQUIFER TEST REQUIREMENTS FOR PUBLIC WATER SUPPLY WELLS**

1.04 SUBMITTALS:

- A. Well Casing: Mill certificates required, or mill markings shall be clearly visible on all casing sections.
- B. Well screen: provide sieve analysis and screen selection basis.
- C. Drilling Logs: 1 set to ENGINEER.
- D. Well Performance Tests: Report raw data only.

1.05 JOB CONDITIONS:

- A. Contamination: Cap well using threaded, flanged or compression seal when unattended. Prevent contamination of existing water system.
- B. Cleanup: Promptly following well installation. Fill pits and return jobsite to original grade. Ground immediately surrounding casing shall be sloped away from well to prevent surface runoff from ponding around completed well.

1.06 SCHEDULES

A. Details:

- 1. Site Location Map/Site Map
- 2. Existing 6-inch well analysis
- 3. EGLE Test Well approval

1.07 GUARANTEE

- A. The Contractor shall provide a guarantee for their work according to the specifications.

PART 2 - PRODUCTS

2.01 CASING (2-inch Observation Well):

- A. Diameter-2-inches, AWWA A100, Section 4.3 Table 3, and ASTM Specification A-589 - heaviest new black steel pipe. Mill stencils shall be clearly visible on all pipe sections.

- B. Joints: Standard solvent weld couplings and fittings.
- C. The casing shall extend from two feet above finished grade to depth of up to 300 feet. Casing shall be placed to provide unobstructed, uniform placement of grout.

CASING (12-inch Test Well):

- A. Conform to AWWA A100, Section 4.3 Table 3, and ASTM Specification A-589 - heaviest new black steel pipe. Mill stencils shall be clearly visible on all pipe sections.
- B. Joints: Standard threaded couplings or standard AWS butt welding. Conform to AWWA C206.
- C. The casing shall extend from two feet above finished grade to depth of up to 300 feet.

2.02 GROUT:

- A. **Neat Cement Grout for all wells.** Proportioning: Conform to AWWA A100, Section 7, and Grouting of Community Water Supply Wells, ODWMA- Public Water Supply Program, ODWMA-399-016

2.03 CENTRALIZERS:

- A. Material: PVC or stainless steel placed at the bottom and top of the screened section, and at every 40 feet of casing from the top of the screened section to the surface.

2.04 SCREEN:

- A. Continuous slot, wire wound design. Johnson Screen Company or equal.
- B. Material: AISI Type, 304 Stainless Steel with threaded, recessed couplings or welded connections.
- C. End fittings: Provided with screen, shall be type 304 stainless steel, threaded or welded.
- D. Screen Fittings: Same material as the screen. Shall be welded or threaded, watertight, and straight.
- E. Screen slot size: Screen shall be designed based upon the results of the grain size analyses.
- F. Length:
 - a. **Monitoring Well:** 10 feet
 - b. **Test Well:** 20 feet but may be field adjusted according to encountered conditions.
- G. Depth Interval: The approximate screen setting will be from 170 to 190 feet below existing grade for Test Well.
- H. Diameter: twelve (12)-inch diameter pipe size for test Well
- I. CONTRACTOR shall ensure that the screen has adequate collapse and tensile strengths.
- J. Centralizers shall be securely attached to the top and bottom of the screen section.
- K. **Submit sieve analyses results to ENGINEER for final selection of slot opening.**

2.05 GRAVEL PACK:

- A. Selection: In accordance with screen manufacturer's recommendations based on sieve analyses of the formation, and AWWA A100, Section 6.

2.06 CAP, VENT, & SEAL

- A. Shall be watertight and tightly secured to casing. Vent shall be screened.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install permanent casing plumb enabling discharge column, bowl assembly, and fittings to hang free of contact with permanent casing. Seat and seal permanent casing to prevent infiltration of sand, silt and water.
- B. Pressure Grouting Method: Force grout using the tremie method from the bottom of the casing toward the surface continuously in one operation while keeping tremie pipe submerged in grout at all times during the operation.
- C. Well Development Method: Yield maximum water per foot of available draw down and extract maximum practical quantity of sand from water bearing formation such that water produced under normal operating conditions is free of sand.
- D. After completion, cap well with screwed, flanged, or compression seal cap.
- E. Plugging or abandonment requires review by the ENGINEER.

3.02 TESTING AND INSPECTION:

A. General:

- 1. Complete, develop, clean and arrange with ENGINEER for required inspections and tests.
- 2. Provide all equipment, power, water supply and assistance necessary to conduct the performance tests, including suitable gate valve, orifice, pressure gauge, water sample tap, and at least 200 feet of discharge piping and splash pan.

B. Drillers Log: Provide all information as applicable and in accordance with EGLE Wellogic Water Well and Pump Record Submittals

C. Bore Hole Surveys:

- 1. General: The completed well shall be constructed round, plumb, and true to line as defined in this section of the standard. Test for plumbness and alignment will be required by ENGINEER after completed construction of the well. The well must meet AWWA Standards for plumbness and alignment. Testing shall be performed in accordance with AWWA A100-Appendix D.
- 2. Tolerances: The following tolerances shall be maintained by the CONTRACTOR:
 - a. Plumbness: The maximum allowable horizontal deviation (drift) of the well from the vertical shall not exceed two thirds of the smallest inside diameter of that part of the well being tested per 100 ft of depth.
 - b. Alignment: The alignment must be satisfactory for the successful installation and operation of the permanent pumping equipment such that pump and column hangs freely without contact with permanent casing.

3. Departures from the above tolerances shall be corrected by CONTRACTOR at CONTRACTOR'S expense.

E. Aquifer Testing:

1. Test Procedure:

- a. Water levels readings will be measured by ENGINEER.
- b. Pumping rate will be established by ENGINEER, however, the test pump shall be capable of producing up to 800 gpm.
- c. The pumping duration will be 24 hours with a 24 hour recovery period. The pump shall remain in the production well throughout the recovery period.

3.03.1 ADJUST AND CLEAN:

A. Chlorination:

1. All well disinfection shall be in accordance with AWWA C654 latest edition.
2. Chlorinate immediately following pumping testing work. Chlorine gas will not be permitted on job site.
3. Procedure: prepare and apply chlorine solution to produce chlorine concentration of 100 ppm residual free chlorine in all parts of the well.

B. Fill, stabilize and grade all pits and well spoils.

C. The discharge from all test pumping shall not cause any soil erosion or sedimentation. Location to be coordinated with owner.

D. Contractor shall be responsible for all site cleanup including restoration.

END OF SECTION 02520



DWSRF Certification Forms

Charter Township
of **UNION**

**Certification Regarding
Debarment, Suspension, and Other Responsibility Matters**

The prospective participant certifies, to the best of its knowledge and belief, that it and its principals:

- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in transactions under federal nonprocurement programs by any federal department or agency;
- (2) Have not, within the three year period preceding the proposal, had one or more public transactions (federal, state, or local) terminated for cause or default; and
- (3) Are not presently indicted or otherwise criminally or civilly charged by a government entity (federal, state, or local) and have not, within the three year period preceding the proposal, been convicted of or had a civil judgment rendered against it:
 - (a) For the commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public transaction (federal, state, or local) or a procurement contract under such a public transaction;
 - (b) For the violation of federal or state antitrust statutes, including those proscribing price fixing between competitors, the allocation of customers between competitors, or bid rigging; or
 - (c) For the commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

I understand that a false statement on this certification may be grounds for the rejection of this proposal or the termination of the award. In addition, under 18 U.S.C. §1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to five years, or both.

Dale Stewart, President

Name and Title of Authorized Representative

Northern Pump & Well

Name of Participant Agency or Firm



Signature of Authorized Representative

07/19/2024

Date

I am unable to certify to the above statement. Attached is my explanation.



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Project Number: 2024-1C22

Period From: _____ To: _____

Davis-Bacon Act Compliance CERTIFICATION

I certify to the best of my knowledge and belief that the above referenced project:

Complies with Davis-Bacon and Related Acts and U.S. Environmental Protection Agency policy memo dated March 2, 2012, and the Fiscal Year 2012 Consolidated Appropriations Act (P.L.112-74) and that all laborers and mechanics employed by contractors and subcontractors during the above referenced period were paid wages at rates not less than those listed on the prevailing wage rate contained in the contract documents and that all applicable provisions of the Davis-Bacon and Related Acts have been met.

Name of Loan Recipient Date

Signature of Authorized Representative

Print Name and Title of Authorized Representative

DATE AND ATTACH TO ORIGINAL BOND
AUTO-OWNERS INSURANCE COMPANY

LANSING, MICHIGAN
POWER OF ATTORNEY

NO. BD160085

KNOW ALL MEN BY THESE PRESENTS: That the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN, a Michigan Corporation, having its principal office at Lansing, County of Eaton, State of Michigan, adopted the following Resolution by the directors of the Company on January 27, 1971, to wit:

"RESOLVED, That the President or any Vice President or Secretary or Assistant Secretary of the Company shall have the power and authority to appoint Attorneys-in-fact, and to authorize them to execute on behalf of the Company, and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity, and other writings obligatory in the nature thereof. Signatures of officers and seal of Company imprinted on such powers of attorney by facsimile shall have same force and effect as if manually affixed. Said officers may at any time remove and revoke the authority of any such appointee."

Does hereby constitute and appoint Niki Conway

its true and lawful attorney(s)-in-fact, to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and the execution of such instrument(s) shall be as binding upon the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal office.

IN WITNESS WHEREOF, the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN, has caused this to be signed by its authorized officer this 22nd day of December, 2023.

Brandi Holly

Brandi Holly Senior Vice President

STATE OF MICHIGAN } ss.
COUNTY OF EATON }

On this 22nd day of December, 2023, before me personally came Brandi Holly, to me known, who being duly sworn, did depose and say that they are Brandi Holly, Senior Vice President of AUTO-OWNERS INSURANCE COMPANY, the corporation described in and which executed the above instrument, that they know the seal of said corporation, that the seal affixed to said instrument is such Corporate Seal, and that they received said instrument on behalf of the corporation by authority of their office pursuant to a Resolution of the Board of Directors of said corporation.



My commission expires January 26th, 2029.

Jeffrey P. Many

Jeffrey P. Many

Notary Public

STATE OF MICHIGAN } ss.
COUNTY OF EATON }

I, the undersigned First Vice President, Secretary and General Counsel of AUTO-OWNERS INSURANCE COMPANY, do hereby certify that the authority to issue a power of attorney as outlined in the above board of directors resolution remains in full force and effect as written and has not been revoked and the resolution as set forth is now in force.

Signed and sealed at Lansing, Michigan. Dated this 11th day of July, 2024.



William F. Woodbury

William F. Woodbury, First Vice President, Secretary and General Counsel

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, NORTHERN PUMP & WELL INC 6837 W GRAND RIVER AVE LANSING, MI 48906-9145 as Principal, hereinafter called the Principal, and Auto-Owners Insurance Company as Surety, hereinafter called the Surety, are held and firmly bound unto UNION TOWNSHIP 2010 S LINCOLN RD, MT PLEASANT MI 48858-9036 as Obligee, hereinafter called the Obligee, in the penal sum of Five percent of bid dollars (5% of attached bid) for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that WHEREAS, the Principal has submitted or is about to submit a proposal to the Obligee on a contract for DRILL A 12 IN TEST WELL

NOW, THEREFORE, if the said contract be timely awarded to the Principal and the Principal shall, within such time as may be specified, enter into the contract in writing, and give bond, if bond is required, with surety acceptable to the Obligee for the faithful performance of the said contract, then this obligation shall be void; otherwise to remain in full force and effect.

SIGNED AND SEALED this 11TH day of JULY, 2024.

NORTHERN PUMP & WELL INC

Principal

David Finkbeiner

Witness

By Dale Stewart



Auto-Owners Insurance Company

Surety

Susan E. Theisen

Susan E. Theisen

Witness

By Niki Conway
Niki Conway

Attorney-in-Fact



ACKNOWLEDGEMENT BY SURETY

STATE OF MICHIGAN

County of Eaton

On this 11TH day of JULY, 2024, before me personally appeared Niki Conway, known to me to be the Attorney-in-Fact of Auto-Owners Insurance Company, the corporation that executed the within instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and year in this certificate first above written.



Jeffrey P. Many

Jeffrey P. Many

Notary Public in the State of Michigan
County of Ingham

JEFFREY P MANY
NOTARY PUBLIC-STATE OF MICHIGAN
COUNTY INGHAM
My Commission Expires Jan 26, 2029
Acting in the County of



REQUEST FOR BOARD ACTION

To: Board of Trustees	DATE: August 8, 2024
FROM: Mark Stuhldreher, Township Manager	DATE FOR CONSIDERATION: 8/14/2024
ACTION REQUESTED: Consider approving a Participation Agreement with the City Mt. Pleasant to formalize the prior commitment to provide up to \$375,000 in funding for the Mid-Michigan/GKB Pathway North Connection Project.	

Current Action Emergency

Funds Budgeted: If Yes _____ Account # _____ If No _____

BACKGROUND INFORMATION

The City of Mount Pleasant is planning to link City parks by adding a one-mile paved pathway connecting the GKB Riverwalk Trail to Mission Creek Park, in part through land within the Township’s boundaries along N. Harris Street/Crawford Road north of W. Pickard Road. The city is responsible for project execution.

In 2022, the Township provided \$9,000.00 to support City preparation of the preliminary pathway design plans. On January 25, 2023, the Board of Trustees adopted a Resolution of Intent to collaborate as a funding partner with the City of Mount Pleasant to fund this pathway project (See attached Resolution).

The following is a summary of anticipated project funding amounts and sources:

MDOT Transportation Alternatives Program Grant:	\$400,000.00
City of Mount Pleasant Funding Commitment:	\$525,000.00
Charter Township of Union:	Up to \$375,000.00
Estimated Total Project Cost to Mission Creek Park:	\$1,300,000.00

SCOPE OF ACTIVITY

The Participation Agreement commits the Township as a funding partner and will meet the requirement that American Rescue Plan Act (ARPA) funds be committed by December 31, 2024.

JUSTIFICATION

The scope and location of the pathway is consistent with the Township Master Plan and the Greater Mt. Pleasant Area Non-Motorized Plan for development of a regional pathway system.

BOARD OF TRUSTEES GOALS ADDRESSED

Board of Trustees goals addressed (From Policy 1.0: Global End):

- 1. Community well-being and common good
- 2. Prosperity through economic diversity, cultural diversity, and social diversity
- 3. Health and safety

Construction of the pathway will help residents and visitors to engage in a vibrant community life and take pride in their community. Expansion of the Mid-Michigan regional pathway system can further enhance the quality of life in this community that is attractive to a diverse population.

The new pathway will help to provide safe, accessible routes for pedestrians and bicyclists and enhanced access to Mission Creek Park facilities, including Hannah's Bark Park.

COSTS

The Township’s obligation to support completion of the portions of this pathway project in the Township would be \$375,000.00 with funding provided by the American Rescue Plan Act (ARPA)

TIMETABLE

Final design plans are in the process of being completed. The city plans to complete construction of the pathway in 2025.

RESOLUTION

To approve the Participation Agreement with the City Mt. Pleasant to formalize the prior commitment to provide up to \$375,000 in funding for the Mid-Michigan/GKB Pathway North Connection Project.

Resolved by _____ Seconded by _____

- Yes:
- No:
- Absent:

**CHARTER TOWNSHIP OF UNION
ISABELLA COUNTY, MICHIGAN**

**RESOLUTION OF INTENT OF THE BOARD OF TRUSTEES TO
COLLABORATE WITH THE CITY OF MOUNT PLEASANT TO FUND THE
2023 MID-MICHIGAN/GKB PATHWAY NORTH CONNECTION PROJECT**

At a regular meeting of the Board of Trustees for the Charter Township of Union, Isabella County, Michigan held on the 25th day of January, 2023:

WHEREAS, in collaboration with the Charter Township of Union (Township), the City of Mount Pleasant, Michigan (City) has initiated a project to link City parks by adding a one-mile paved pathway connecting the GKB Riverwalk Trail to Mission Creek Park that would extend along N. Harris Street/Crawford Road in part through land within the boundaries of the Charter Township of Union (Township); and

WHEREAS, in collaboration with the City, the Township has further proposed to extend this paved pathway north of Mission Creek Park along Crawford Road through land in the Township to establish a new northerly connection point for the Mid-Michigan regional pathway system at or near the Crawford. Road - E. River Road intersection; and

WHEREAS, the City will be responsible for hiring of a professional engineering consultant, preliminary pathway design, and pathway engineering and construction; and

WHEREAS, the City plans to apply for a Transportation Alternatives Program (TAP) Grant from the Michigan Department of Transportation for to help fund this pathway project; and

WHEREAS, this pathway project is consistent with the Township's Master Plan and the Greater Mt. Pleasant Area Non-Motorized Plan for development of a regional pathway system.

NOW, THEREFORE, LET IT BE RESOLVED that the Charter Township of Union Board of Trustees fully supports completion of a paved pathway through land in the Township along N. Harris Street/Crawford Road to Mission Creek Park and further north along Crawford Road to establish a new northerly connection point for the Mid-Michigan regional pathway system at or near the Crawford. Road - E. River Road intersection.

BE IT FURTHER RESOLVED that the Board of Trustees fully supports the City's application for a Transportation Alternatives Program (TAP) Grant from the Michigan Department of Transportation to help fund this pathway project.

BE IT FURTHER RESOLVED that the Board of Trustees commits to the inclusion of an amount not to exceed \$375,000.00 in the Township budget to support completion of the portions of this pathway project in the Township, subject to an annual appropriation action and to a cost allocation plan approved by the Township Manager.

The foregoing resolution was offered by Cody and supported by Brown.

Upon roll call vote, the following voted:

<u>Board of Trustees</u>	<u>Aye</u>	<u>Nay</u>	<u>Absent</u>	<u>Abstain</u>
Supervisor Bryan Mielke	<u>X</u>	<u> </u>	<u> </u>	<u> </u>
Clerk Lisa Cody	<u>X</u>	<u> </u>	<u> </u>	<u> </u>
Treasurer Kim Rice	<u> </u>	<u> </u>	<u>X</u>	<u> </u>
Trustee Connie Bills	<u> </u>	<u> </u>	<u>X</u>	<u> </u>
Trustee Jeff Brown	<u>X</u>	<u> </u>	<u> </u>	<u> </u>
Trustee James Thering	<u>X</u>	<u> </u>	<u> </u>	<u> </u>

RESOLUTION DECLARED ADOPTED.

Bryan Mielke
Bryan Mielke, Supervisor

27 JAN 2023
Date

CERTIFICATION

I, Lisa Cody, Clerk for the Charter Township of Union, do hereby certify that the foregoing is a true and complete copy of the action taken by the Board of Trustees at a regular meeting held on the 25th day of January, 2023. I further certify that public notice was given and the meeting was conducted in full compliance with the Open Meetings Act (Public Act 267 of 1976, as amended).

Lisa Cody
Lisa Cody, Clerk

1-26-23
Certification Date

Charter Township of Union Participation Contract

This Agreement is made and entered into by and between the Charter Township of Union Board of Trustees, County of Isabella, hereinafter referred to as the “**Township Board,**” and the City of Mt. Pleasant, County of Isabella, hereinafter referred to as the “**City,**” for the following improvements:

Pathway installation between N. Harris St./Crawford Rd. and Mission Creek Park and installation of a crosswalk into the Park across N. Harris St./Crawford Rd.

Funding commitment not to exceed: \$375,000

Payment to the City in the amount stated above will be made upon receipt of the invoice following completion of the work.

The undersigned City Commission official, by executing this agreement, certifies they are authorized to enter into this agreement on behalf of the City Commission.

City

Township

By: _____
Amy Perschbacher, Mayor

By: _____
Bryan Mielke, Supervisor

City Approval on: _____

Board Approval on: _____