

City of Potterville - Council Agenda

Thursday, July 16, 2020 – 7:00 p.m. – Potterville City Hall, 319 N. Nelson Street

- A. Call to Order:**
- B. Pledge of Allegiance:**
- C. Roll Call:**
- D. Approval of Agenda**
- E. Approval of Minutes**
 - a) Meeting minutes from June 18th 2020.
 - b) Meeting minutes from July 9th 2020.
- F. Approval of Bills**
 - a) General Bills: \$30,597.80
- G. Bank Reconciliations:**
 - a) June 2020 Accounts for General, Tax and Payroll.
- H. City Manager’s Report:** Manager’s report in the July 2020 packet.
- I. Public Comment on agenda items:**
- J. Commission/Committee Reports:** Reports in the July 2020 packet.
- K. Department Reports:** Administration- Department reports in the July 2020 packet.
- L. New Business:**
 - a. Water Well Exploration Test Results #2.
- M. Public Comment on non-agenda items:**
- N. Communication from the Mayor and Council:**
- O. Next Meeting:** Thursday, August 20th 2020 at 7:00 p.m.
- P. Excuse absent member(s):**
- Q. Motion to Adjourn:**

Member Nichols, Member Potter, Mayor Kring, Deputy Mayor Lenneman, Member Smalley, Member Pulda.
Nays: None. Motion carried (7-0-0).

- d) Resolution No. 20-0618-02 – Resolution Adopting a General Appropriations Act (Budget) and Establishing the Tax Millage Rate (decrease) for the 2020-2021 Fiscal Year. Motion by Mayor Kring to adopt Resolution No. 20-0618-02. Supported by Member Pulda. Roll call vote. Ayes: Mayor Kring, Member Pulda, Member Nichols, Member Twichell, Member Smalley, Deputy Mayor Lenneman, Member Potter. Nays: None. Motion carried (7-0-0).
- e) Public Hearing – Current TIFA Fiscal Year 2019-2020 Budget Amendments and TIFA Fiscal Year 2020-2021 Budget. Motion to open Public Hearing by Member Potter. Supported by Deputy Member Lenneman. Roll call vote. Ayes: Mayor Kring, Member Pulda, Member Nichols, Member Twichell, Member Smalley, Deputy Mayor Lenneman, Member Potter. Nays: None. Motion carried (7-0-0).

Public Hearing: None. City Council Discusses TIFA Budgets. Motion by Member Pulda to close Public Comment. Supported by Member Smalley. Roll call vote. Ayes: Member Smalley, Member Twichell, Member Nichols, Member Potter, Mayor Kring, Deputy Mayor Lenneman, Member Pulda. Nays: None. Motion carried (7-0-0).

- f) TIFA Fiscal Year 2019-2020 Budget Amendments and TIFA Fiscal Year 2020-2021 Budget. Motion to approve TIFA Fiscal Year 2019-2020 Budget Amendments and TIFA Fiscal Year 2020-2021 Budget by Member Pulda. Supported by Deputy Mayor Lenneman. City Council Discusses. Roll call vote. Ayes: Member Twichell, Member Smalley, Member Nichols, Member Potter, Mayor Kring, Deputy Mayor Lenneman, Member Pulda. Nays: None. Motion carried (7-0-0).
- g) Public Hearing regarding City Council Resolution No. 20-0618-03 – Resolution to Adopt TIFA Amended Development Plan and Tax Increment Financing Plan. Motion to open Public Hearing by Member Pulda. Supported by Member Potter. Roll call vote. Ayes: Member Pulda, Member Nichols, Mayor Kring, Member Smalley, Member Twichell, Deputy Mayor Lenneman, Member Potter. Nays: None. Motion carried (7-0-0).

Public Hearing: Jeff Bussard – 746 Brenneman Street has questions as to why the line item under commercial corridor for crosswalks is \$50,000 because that seems high for painting lines. City Manager discusses this line item includes bump outs, streetscape improvements and other items that includes more than just painting. Member Twichell states this also includes traffic calming measures. Motion by Member Pulda to close Public Comment. Supported by Member Potter. Roll call vote. Ayes: Member Smalley, Deputy Mayor Lenneman, Member Potter, Member Twichell, Member Nichols, Member Pulda, Mayor Kring. Nays: None. Motion carried (7-0-0).

- h) Resolution No. 20-0618-03 – Resolution to Adopt Potterville’s Tax Increment Finance Authority’s Amended Development Plan and Tax Increment Financing Plan. Motion to adopt Resolution No. 20-0618-03 by Mayor Kring. Supported by Member Smalley. Roll call vote. Ayes: Member Twichell, Member Nichols, Member Pulda, Mayor Kring, Member Potter, Member Smalley, Deputy Mayor Lenneman. Nays: None. Motion carried (7-0-0).
- i) Vredereld Haefner LLC Proposal for continued Public Audit Services. Motion to approve the 2-year engagement and authorize City Manager to begin audit process by Member Pulda. Supported by Member Twichell. City Council Discusses. Roll call vote. Ayes: Member Twichell, Member Pulda, Member Smalley, Deputy Mayor Lenneman, Member Potter, Mayor Kring, Member Nichols. Nays: None. Motion carried (7-0-0).

Public comment on non-agenda items: Travis Rae – 208 North Dunbar Street would like to replace the fence that currently exists on his property line. He would be placing this new fence inside the current fence so as to keep his dogs on his property. He has been getting conflicting information as to if he needs a permit or a boundary survey before beginning work. Council agrees this is a zoning issue, Mr. Ray should bring this issue to the Zoning Administrator, if he disagrees with the result then there are appeal options.

Jeff Bussard – 746 Brenneman Street would like to remind any public on the line that the next Planning Commission meeting will discuss future zoning plans of the Zoning Administrator. Public participation is needed, please attend.

Next Meeting: Thursday, July 16, 2020 at 7:00 p.m.

Excuse Absent Member(s): N/A

Motion to Adjourn: Motion by Member Pulda to adjourn the meeting. Supported by Member Potter. Roll call vote. Ayes: Member Nichols, Mayor Kring, Member Twichell, Member Pulda, Member Smalley, Member Potter, Deputy Mayor Lenneman. Nays: None. Motion carried (7-0-0).

Meeting adjourned at 8:25 p.m.

Respectfully submitted,

Kayla Schwartz, Recording Secretary

INVOICE NUMBER	DESCRIPTION	AMOUNT
VENDOR CODE: 0000011136 INTERSTATE BATTERIES		
BANK CODE: GEN		
60160203	HV CORE	209.95
TOTAL BANK CODE: GEN		209.95
TOTAL VENDOR 0000011136 INTERSTATE BATTERIES		209.95
VENDOR CODE: 0000011197 FALIN, TARENT		
BANK CODE: GEN		
PARKS	HELP PARKS DEPT- LAST MINUTE TOURNEY 6/2	288.00
TOTAL BANK CODE: GEN		288.00
TOTAL VENDOR 0000011197 FALIN, TARENT		288.00
VENDOR CODE: 0000011198 LIZ HARROW		
BANK CODE: GEN		
POLICE	DESIGN DRAWING AND SITE PLAN- NEW POLICE	900.00
TOTAL BANK CODE: GEN		900.00
TOTAL VENDOR 0000011198 LIZ HARROW		900.00
VENDOR CODE: 0000011199 COOPER, PETER		
BANK CODE: GEN		
MILEAGE	REIMBURSEMENT FOR MILEAGE FOR WASTEWATER	161.00
TOTAL BANK CODE: GEN		161.00
TOTAL VENDOR 0000011199 COOPER, PETER		161.00
VENDOR CODE: 00210 ACE HARDWARE-GRAND LEDGE		
BANK CODE: GEN		
JUNE 2020 STATEMENT	A765516/A765830/A769409/B18476	286.41
TOTAL BANK CODE: GEN		286.41
TOTAL VENDOR 00210 ACE HARDWARE-GRAND LEDGE		286.41
VENDOR CODE: 00570 AMERICAN RENTALS		
BANK CODE: GEN		
560932	PORTA POTTIES- BALLFIELD	294.40
561023	PORTA POTTY- WEEKEND TOURNEY	294.40
TOTAL BANK CODE: GEN		588.80
TOTAL VENDOR 00570 AMERICAN RENTALS		588.80
VENDOR CODE: 00790 BADER & SONS		
BANK CODE: GEN		
929366	A/C NOT WORKING ON JOHN DEERE	527.48
TOTAL BANK CODE: GEN		527.48
TOTAL VENDOR 00790 BADER & SONS		527.48
VENDOR CODE: 01050 BENTON-POTTERVILLE FIRE DEPT.		
BANK CODE: GEN		
MARKER	WWTP ADDRESS MARKER	15.00
TOTAL BANK CODE: GEN		15.00
TOTAL VENDOR 01050 BENTON-POTTERVILLE FIRE DEPT.		15.00
VENDOR CODE: 02060 CITY OF POTTERVILLE		
BANK CODE: GEN		
WTR/SWR 6/20	WATER.SEWER JUNE 2020	465.92
TOTAL BANK CODE: GEN		465.92
TOTAL VENDOR 02060 CITY OF POTTERVILLE		465.92
VENDOR CODE: 02260 CONSUMERS ENERGY		

INVOICE NUMBER	DESCRIPTION	AMOUNT
VENDOR CODE: 02260 CONSUMERS ENERGY		
BANK CODE: GEN		
06302020	ELECTRIC USE MONTH OF JUNE 2020	7.12
STREETLIGHTS 06/20	STREETLIGHTS 6/20	1,946.28
TOTAL BANK CODE: GEN		1,953.40
TOTAL VENDOR 02260 CONSUMERS ENERGY		1,953.40
VENDOR CODE: 02610 DELTA DENTAL		
BANK CODE: GEN		
RIS0002909160	DENTAL INSURANCE MONTH OF JULY 2020	880.74
TOTAL BANK CODE: GEN		880.74
TOTAL VENDOR 02610 DELTA DENTAL		880.74
VENDOR CODE: 03160 ELHORN ENGINEERING		
BANK CODE: GEN		
283678	CHLORINE	626.69
TOTAL BANK CODE: GEN		626.69
TOTAL VENDOR 03160 ELHORN ENGINEERING		626.69
VENDOR CODE: 03240 ETNA SUPPLY COMPANY		
BANK CODE: GEN		
S103575578.001	PARTS TO REPAIR TOILETS AT SOFTBALL FIEL	165.00
S103594365.001	SPRINKLER PUMP	50.58
TOTAL BANK CODE: GEN		215.58
TOTAL VENDOR 03240 ETNA SUPPLY COMPANY		215.58
VENDOR CODE: 03445 FOSTER SWIFT COLLINS & SMITH		
BANK CODE: GEN		
788890	LEGAL SERVICES MONTH OF JUNE 2020	1,127.50
TOTAL BANK CODE: GEN		1,127.50
TOTAL VENDOR 03445 FOSTER SWIFT COLLINS & SMITH		1,127.50
VENDOR CODE: 03720 GORDON'S FOOD SERVICE		
BANK CODE: GEN		
809215902	CONCESSIONS	565.46
809216265	CONCESSION SUPPLIES	570.94
TOTAL BANK CODE: GEN		1,136.40
TOTAL VENDOR 03720 GORDON'S FOOD SERVICE		1,136.40
VENDOR CODE: 04001 HASSEL FREE FUELS INC.		
BANK CODE: GEN		
147742	GAS	347.66
147255	GAS	320.72
TOTAL BANK CODE: GEN		668.38
TOTAL VENDOR 04001 HASSEL FREE FUELS INC.		668.38
VENDOR CODE: 04320 I.T. RIGHT		
BANK CODE: GEN		
20165007	DESKTOP SCANNER	593.74
TOTAL BANK CODE: GEN		593.74
TOTAL VENDOR 04320 I.T. RIGHT		593.74
VENDOR CODE: 04830 KENDAL ELECTRIC INC		
BANK CODE: GEN		
S1092900004.001	I MATIC PHOTO CONTROL PART- PARKS	16.65
TOTAL BANK CODE: GEN		16.65

INVOICE NUMBER	DESCRIPTION	AMOUNT
VENDOR CODE: 04830 KENDAL ELECTRIC INC		
TOTAL VENDOR 04830 KENDAL ELECTRIC INC		16.65
VENDOR CODE: 06060 MICHIGAN ELECTION RESOURCES		
BANK CODE: GEN		
12387	ABSENT VOTER ENVELOPES	113.28
TOTAL BANK CODE: GEN		113.28
TOTAL VENDOR 06060 MICHIGAN ELECTION RESOURCES		113.28
VENDOR CODE: 06240 MICHIGAN RURAL WATER		
BANK CODE: GEN		
MEMEBERSHIP DUES	MRWA ANNUAL MEMBERSHIP DUES 7/1-6/30/-21	735.00
TOTAL BANK CODE: GEN		735.00
TOTAL VENDOR 06240 MICHIGAN RURAL WATER		735.00
VENDOR CODE: 07190 PHP		
BANK CODE: GEN		
201672511	HEALTH INSURANCE MONTH OF JULY 2020	6,466.76
TOTAL BANK CODE: GEN		6,466.76
TOTAL VENDOR 07190 PHP		6,466.76
VENDOR CODE: 07490 QUILL CO		
BANK CODE: GEN		
1988746	DOOR HANGERS- UTILITY BILLING	84.99
1991896	OFFICE SUPPLIES	174.45
2111239	NAME PLATES- COUNCIL	91.14
2154634	SURGE PROTECTOR	45.52
2188908	OFFICE SUPPLIES/ CORRUGATED ROLL FILES	178.28
CM 847838	CREDIT MEMO FOR RETURN OF W2S	(46.98)
2111238	SIGN HOLDERS	29.01
TOTAL BANK CODE: GEN		556.41
TOTAL VENDOR 07490 QUILL CO		556.41
VENDOR CODE: 08790 COUNTY JOURNAL THE		
BANK CODE: GEN		
218663/218688/2191	JUNE 2020 STATEMENT- HIRING/BUDGET HEARI	473.62
TOTAL BANK CODE: GEN		473.62
TOTAL VENDOR 08790 COUNTY JOURNAL THE		473.62
VENDOR CODE: 09060 UNITED STATES POST OFFICE		
BANK CODE: GEN		
POSTAL PERMIT 20/2	POSTAL PERMIT 8/27-8/27/21	240.00
TOTAL BANK CODE: GEN		240.00
TOTAL VENDOR 09060 UNITED STATES POST OFFICE		240.00
VENDOR CODE: 09210 VERIZON WIRELESS		
BANK CODE: GEN		
9857730240	USAGE FEES MONTH OF JULY 2020	153.14
TOTAL BANK CODE: GEN		153.14
TOTAL VENDOR 09210 VERIZON WIRELESS		153.14
VENDOR CODE: 10097 UNUM LIFE INSURANCE		
BANK CODE: GEN		
EO355230 JULY 20	ADD/STD/LTD MONTH OF JULY 2020	234.15
TOTAL BANK CODE: GEN		234.15
TOTAL VENDOR 10097 UNUM LIFE INSURANCE		234.15
VENDOR CODE: 10171 LAWITZKE, LISA		
BANK CODE: GEN		

INVOICE NUMBER	DESCRIPTION	AMOUNT
VENDOR CODE: 10171 LAWITZKE, LISA		
BANK CODE: GEN		
ELECTION ADMIN	6/22-6/29/20	355.00
TOTAL BANK CODE: GEN		355.00
TOTAL VENDOR 10171 LAWITZKE, LISA		355.00
VENDOR CODE: 10403 CITY OF CHARLOTTE		
BANK CODE: GEN		
20-0000053	LABORATORY TESTING	840.00
TOTAL BANK CODE: GEN		840.00
TOTAL VENDOR 10403 CITY OF CHARLOTTE		840.00
VENDOR CODE: 10540 WILLIAMS & WORKS		
BANK CODE: GEN		
90523	LABORATORY FEES FOR TEST WELL #2	829.50
TOTAL BANK CODE: GEN		829.50
TOTAL VENDOR 10540 WILLIAMS & WORKS		829.50
VENDOR CODE: 10731 PRESTON COMMUNITY SERVICES LLC		
BANK CODE: GEN		
07022020	ASSESSING SERVICES MONTH OF JUNE 2020	1,333.33
TOTAL BANK CODE: GEN		1,333.33
TOTAL VENDOR 10731 PRESTON COMMUNITY SERVICES LLC		1,333.33
VENDOR CODE: 10808 BLEDSOE, MIKE		
BANK CODE: GEN		
MILEAGE	MILEAGE REIMBURSEMENT 142 MILES@ .575	81.65
TOTAL BANK CODE: GEN		81.65
TOTAL VENDOR 10808 BLEDSOE, MIKE		81.65
VENDOR CODE: 10995 CARDMEMBER SERVICE		
BANK CODE: GEN		
JUNE 2020 STATMENT	JUNE 2020 STATEMENT	3,746.85
JUNE 20 STATMENTS	2 TRANSACTIONS PLACED ON JUNE STATEMENT-	256.67
TOTAL BANK CODE: GEN		4,003.52
TOTAL VENDOR 10995 CARDMEMBER SERVICE		4,003.52
VENDOR CODE: 11101 VREDEVELD HAEFNER LLC		
BANK CODE: GEN		
4829	BUDGET AND ACCOUNTING ASSISTANCE	866.25
TOTAL BANK CODE: GEN		866.25
TOTAL VENDOR 11101 VREDEVELD HAEFNER LLC		866.25
VENDOR CODE: 11102 BOBCAT OF LANSING		
BANK CODE: GEN		
E04515	BOBCAT BUCKET-62" NEW FEATURE	800.00
TOTAL BANK CODE: GEN		800.00
TOTAL VENDOR 11102 BOBCAT OF LANSING		800.00
VENDOR CODE: 11113 MODERN DESIGN ELECTRICAL		
BANK CODE: GEN		
I200630523	REPAIR DOWNTOWN LIGHT	295.00
I200628522	DATA DROP - POLICE DEPT	225.00
TOTAL BANK CODE: GEN		520.00
TOTAL VENDOR 11113 MODERN DESIGN ELECTRICAL		520.00

07/10/2020 03:09 PM
User: JWest
DB: Pottersville

CUSTOM INVOICE REPORT FOR CITY OF POTTERVILLE
EXP CHECK RUN DATES 07/01/2020 - 07/31/2020
BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
BANK CODE: GEN

Page: 5/5

INVOICE NUMBER	DESCRIPTION	AMOUNT
VENDOR CODE: 11122 CMP DISTRIBUTORS		
BANK CODE: GEN		
63633	GLOCK TRIGGER SIGHTS	1,334.55
TOTAL BANK CODE: GEN		1,334.55
TOTAL VENDOR 11122 CMP DISTRIBUTORS		1,334.55
GRAND TOTAL:		30,597.80

07/01/2020 09:00 AM
User: JWest
DB: Potterville

BANK RECONCILIATION FOR CITY OF POTTERVILLE
Bank TAX (TAX ACCOUNT)
FROM 05/30/2020 TO 06/30/2020
Reconciliation Record ID: 48

GL Number	Description	Beginning Balance
703-000-001.000	CASH	422.53
Beginning GL Balance:		422.53
Add: Cash Receipts		1,364.85
Less: Cash Disbursements		(1,359.42)
Less: Journal Entries/Other		(4.16)
Ending GL Balance:		423.80

GL Number	Description	Ending Balance
703-000-001.000	CASH	423.80
Ending GL Balance:		423.80
Ending Bank Balance:		1,548.82
Add: Deposits in Transit		0.00
Less: 2 AP Outstanding Checks		1,125.02
Less: 0 PR Outstanding Checks		
Adjusted Bank Balance		423.80
Unreconciled Difference:		0.00



REVIEWED BY: _____

DATE: 7-10-2020

07/01/2020 09:08 AM
User: JWest
DB: Potterville

BANK RECONCILIATION FOR CITY OF POTTERVILLE
Bank PR (PAYROLL ACCOUNT)
FROM 05/30/2020 TO 06/30/2020
Reconciliation Record ID: 50

Page 1/1

GL Number	Description	Beginning Balance
750-000-001.000	CASH	22,275.30
Beginning GL Balance:		22,275.30
Less: Payroll Disbursements		(5,053.35)
Ending GL Balance:		17,221.95

GL Number	Description	Ending Balance
750-000-001.000	CASH	17,221.95
Ending GL Balance:		17,221.95
Ending Bank Balance:		24,155.43
Add: Deposits in Transit		0.00
Less: 0 AP Outstanding Checks		
Less: 6 PR Outstanding Checks		6,933.48
Adjusted Bank Balance		17,221.95
Unreconciled Difference:		0.00

REVIEWED BY: 

DATE: 7-10-2020

Beginning GL Balance:	2,431,949.13
Add: Cash Receipts	172,206.70
Less: Cash Disbursements	(209,612.01)
Less: Payroll Disbursements	(54,992.27)
Less: Journal Entries/Other	(52,166.03)
Ending GL Balance:	<u>2,287,385.52</u>

GL Number	Description	Ending Balance
101-000-001.000	CASH	416,904.98
202-000-001.000	CASH	164,791.34
203-000-001.000	CASH	209,856.97
208-000-001.000	CASH	16,060.16
370-000-001.000	CASH	
401-000-001.000	CASH	32,635.34
590-000-001.000	CASH	370,249.32
590-000-010.000	CASH IN BANK - BOND RESERVE	177,550.00
590-000-011.000	CASH IN BANK-REPLACEMENT FUND	88,398.25
591-000-001.000	CASH	450,641.17
591-000-010.000	CASH IN BANK - BOND RESERVE	100,330.00
591-000-011.000	CASH IN BANK-REPLACEMENT FUND	197,597.75
598-000-001.000	CASH	12,403.35
641-000-001.000	CASH	49,966.89
704-000-001.000	CASH	
708-000-001.000	CASH	
865-000-001.000	CASH	

Ending GL Balance: 2,287,385.52

Ending Bank Balance: 2,300,251.85

Add: Miscellaneous Transactions 2,212.36

Add: Deposits in Transit

07/01/2020 *Deposit ID: 246 168.92
 JULY 2019 CARRYOVER ISSUE (144.77)
 214 S CHURCH DOUBLE PAY 189.60
 MAY 2020 DISCREPANCY 100.00

313.75

Less: 10 AP Outstanding Checks 15,392.44

Less: 0 PR Outstanding Checks

Adjusted Bank Balance 2,287,385.52

Unreconciled Difference: 0.00

REVIEWED BY:  _____

DATE: 7-10-2020

PROJECT MEMORANDUM

To: **Aaron Sheridan, Don Stanley**
Date: April 10, 2020
From: Dan Whalen, P.E.
RE: Preliminary Groundwater Resource Evaluation for the Exploration/Test Well at MDOT Tract 1504



As you are aware, a 5-inch test well was recently completed at the proposed wellsite on the MDOT Tract 1504. The purpose of the new test well was to determine the viability of a new production well at the proposed site. The pumping test that followed the construction of the well was not an “official” pumping test in the same manner required for a larger production well, but was performed to provide a “go/no go” decision on the general capacity and water quality of the bedrock aquifer in that location. The discussion that follows provides a summary of the drilling and testing of this new test well.

Local Geology (General)

The geology at the site consists mainly of clayey soils within the upper 80 feet of glacial drift to the top of bedrock; the top of bedrock in this location is about 80 feet from the surface. The bedrock consists mainly of sandstone from 80 feet to 192 feet below grade. Beneath the sandstone lie shales to an unknown depth (shale is not considered an aquifer). The test well was installed with 88 feet of 5-inch PVC well casing cemented in place, leaving an open borehole from 88 feet to 192 feet within the sandstone interval. Based on the geology and the static water level in the well, the aquifer exists under confined or semi-confined conditions in this location with a static water level approximately 43 feet below grade.

Test Well Construction

The exploration/test well is located roughly 125 feet south-southeast of the proposed test-production well location which will ultimately be located at the center of the property and allow 200 feet of isolation in all directions. The test well was constructed with the following characteristics;

1. Total depth of the well is 200 feet
2. The casing material is 5-inch PVC well casing. Total length of casing is about 88 feet which was grouted with neat cement grout from 88 feet to the surface.
3. The well is an open borehole in the bedrock from 88 feet to 200 feet.
4. The static water level in the well is about 43 feet below the top of casing.

Pumping Testing

At the conclusion of the well installation, the well was pumped at an average rate of 105 gpm for a four-hour period. The pumping water levels were monitored and recorded, and are plotted on a semi-log graph to show water level trends during the pumped interval (Figure 1, below).

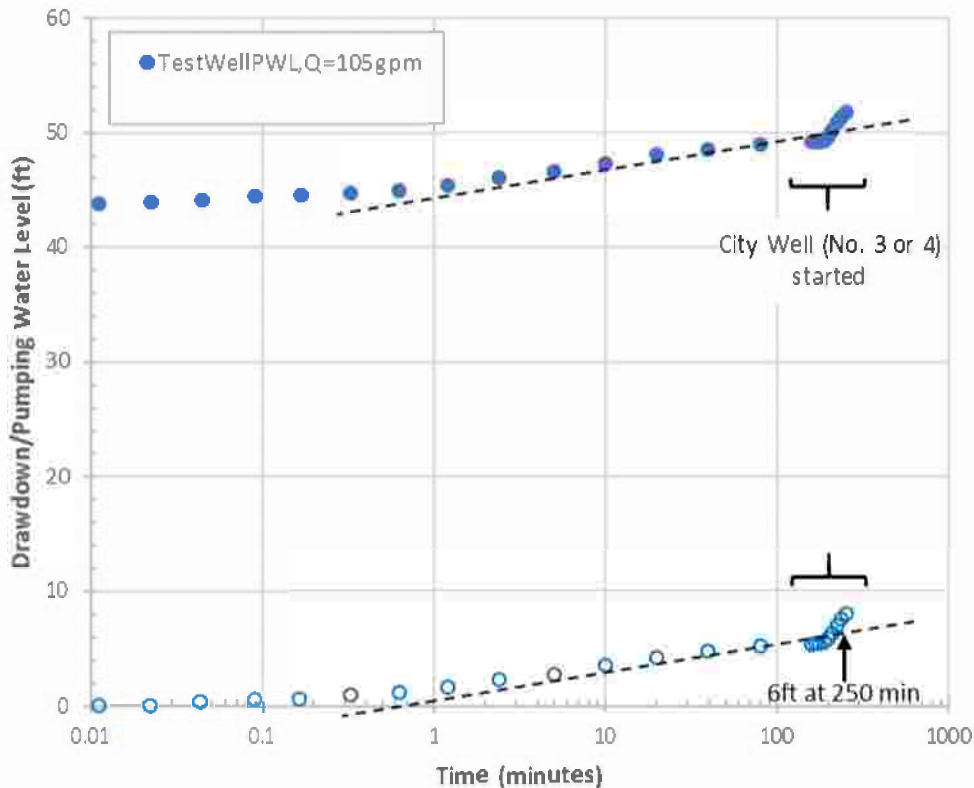


Figure 1. Pumping Test on Exploration/Test Well on MDOT Tract 1504, Q=105 gpm, February 28, 2020

The drawdowns follow a semi-log straight line which can be extrapolated to show the drawdowns that would occur over extended pumping periods (assuming no other wells are pumping from the same aquifer). The resultant four-hour drawdown in the pumping well is about 6 feet, resulting in a four-hour specific capacity of about 17.5 gpm/ft¹ (extrapolated beyond the drawdown interference from Well No. 3 or 4). This means (roughly) that for every incremental increase in pumpage of about 17.5 gpm, the water level in the well will decrease one additional foot over the course of 4-hours. As an example, if the well is pumped at 400 gpm, the water level in the well will change by about 23 feet² over four hours of pumping time. Since the well has about 45 feet of available drawdown³, this test well could *theoretically* be pumped at or near 400 gpm while keeping the pumping water level within the well casing (if possible, it is better to keep pumping water levels within the casing interval to avoid cascading water along the inside of the open borehole). Indeed, this is not possible with a 5-inch well, but it shows the potential pumping capacity for a larger diameter well built at this location.

After the pumping phase, the water levels in the test well were recorded for a period of three days to observe the background interference effects from the existing City Production Well Nos. 3 and 4. The background water levels are shown in Figure 2 below and illustrate approximately 5-6 feet of interfering drawdown will occur at this location due to the operation

¹ Specific Capacity (S_c) is the unit pumping capacity per foot of drawdown. $S_c=Q(\text{gpm})/\text{drawdown}(\text{ft})$;
 $S_c=105 \text{ gpm}/6 \text{ ft}=17.5 \text{ gpm/ft}$

² Drawdown(ft) = $Q(\text{gpm})/S_c$. Drawdown (ft) = $400 \text{ gpm}/17.5 \text{ gpm/ft} = 22.9 \text{ feet}$

³ Available drawdown is the difference between the depth to the bottom of the casing and the static water level. Available Drawdown (DD_a) = (depth to bottom of casing) - (static water level), or,
 $DD_a = (88\text{ft}) - (43\text{ft}) = 45\text{ft}$

of either Well No. 3 or 4. At this point we can tentatively comment; if a new production well at this location were operated simultaneously with either Well No. 3 or Well No. 4, the additional drawdown interference appears to be manageable (less than 10 feet). **The mutual interfering water levels between the existing Well Nos. 3 and 4, and the eventual new production well will be addressed more thoroughly after the test-production well has been built and a formal aquifer test has been completed.**

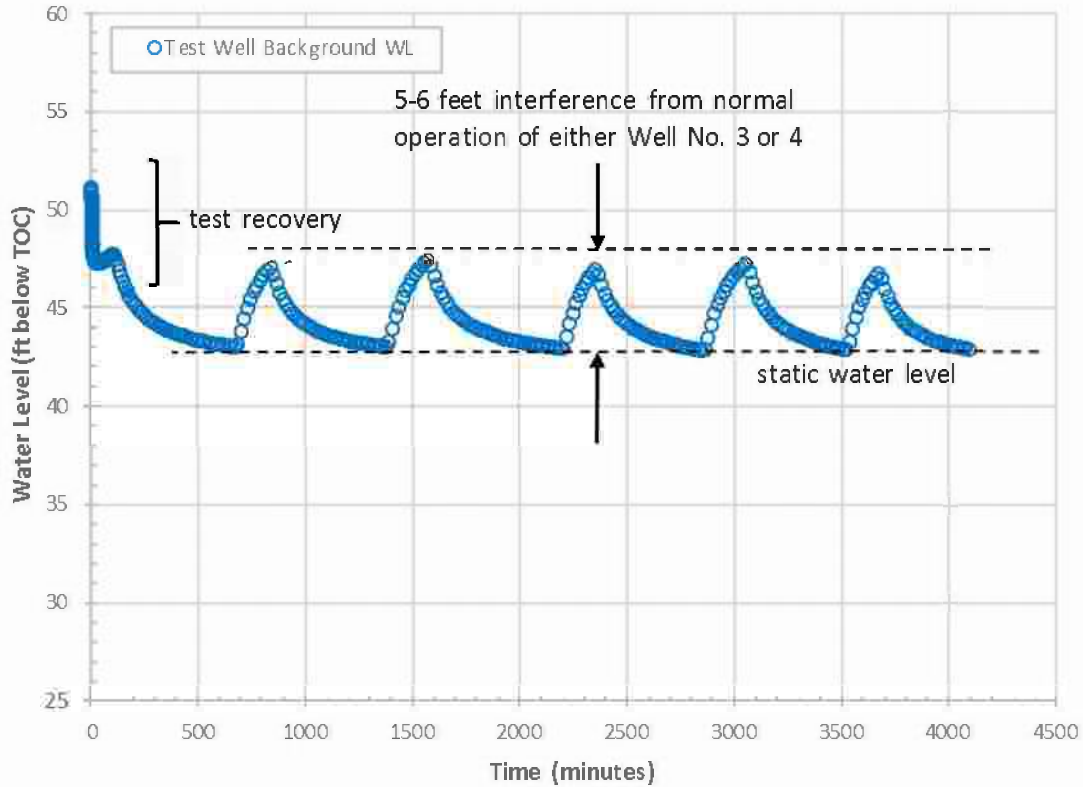


Figure 2. Background Static Water Levels at Exploration/Test Well on MDOT Tract 1504, February 28 - March 2, 2020

Groundwater Quality

At the end of the pumping testing, groundwater samples were collected and analyzed for aesthetic (general minerals) and regulated parameters (VOC, nitrates and nitrites, limited metals), along with radionuclides and PFAS compounds. The results of the water quality analyses are attached to this memo.

With the exception of arsenic, the groundwater quality results are roughly similar to the water quality from the existing Well Nos. 3 and 4; i.e., moderate to high hardness, low sodium and chloride, and elevated nuisance iron. All of the VOC and SOC compounds (volatile organic compounds, synthetic organic compounds) were non-detect. The arsenic concentration is at 10 ppb (the allowable limit is 10 ppb). The radionuclides; gross alpha (6.3 pCi/L), radium 226 (1.6 pCi/L) and radium 228 (1.8 pCi/L), and combined radium 226-228 are all below the allowable limits. There were three PFAS compounds detected; NETFOSAA at 2.7 ppt, NMeFOSAA at 2.3 ppt, and PFBA at 3.2 ppt. None of these three parameters have established health limits. EGLE treats the combined PFAS compound limit of 70 ppt as the maximum allowable limit regardless if it has an established health limit or not. This sample result represents a combined PFAS level of 8.2 ppt.

The following table shows the basic groundwater quality parameters from the new test well.

Parameter	Result	MCL
* Arsenic	0.010 mg/L	0.010 mg/L
Chloride	100 mg/L	objectionable over 250 mg/L
Hardness	486 mg/L	objectionable over 250 mg/L
Iron	0.6 mg/L	nuisance above 0.5
Sodium	33.8 mg/L	objectionable over 160 mg/L
Sulfate	102 mg/L	objectionable over 250 mg/L
* VOC/SOC parameters	All non-detect	MCL varies by parameter

Regarding the arsenic, the concentration in the groundwater from the test well is near the allowable limit of 0.010 mg/L, therefore, at this level we recommend treatment similar to the iron removal systems currently in operation at Well Nos. 3 and 4. Although arsenic can be removed through a similar process as the existing iron removal plant, it normally requires the addition of a chemical oxidant prior to passing the water through an adsorptive iron-based filter media (this is the most common method). Air oxidation can be used, but it is less effective and requires a long contact period. Therefore, the existing iron removal system may have the ability to remove some of the arsenic “as-is”, but its removal efficiency must be evaluated before going forward.

Conclusions and Recommendations

The results of drilling and pumping testing show that the location of the test well has good to very good potential to support a new production well with an estimated capacity in the range between 300-400 gpm. The drawdown interference at this location from Well Nos. 3 or 4 has been observed, however, these additional drawdowns appear to be manageable.

With the exception of arsenic, the groundwater quality from the exploration/test well is similar to the existing production wells. Assuming the eventual new production well will require iron removal, the same treatment technology for iron removal will also remove arsenic in a similar manner.

Attachments Test Well Record (Wellogic ID 23000012506)
 Laboratory Analyses of Groundwater from the Exploration/Test Well



Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Eaton			Township: Benton	
Well ID: 23000012506		Town/Range: 03N 04W	Section: 23	Well Status: Active	WSSN: 5550	Source ID/Well No: TW-01-2020
		Distance and Direction from Road Intersection: 225 FT. WEST OF N. HARTEL RD. (M-100) & 225 FT. SOUTH OF SUNSET DR.				
		Well Owner: CITY OF POTTERVILLE				
Elevation:		Well Address:			Owner Address:	
Latitude: 42.63293		SUNSET DR.			319 N. NELSON ST.	
Longitude: -84.74004		POTTERVILLE, MI 48876			POTTERVILLE, MI 48876	
Method of Collection: GPS Std Positioning Svc SA Off						

Drilling Method: Rotary	Well Use: Test well	Pump Installed: No
Well Depth: 200.00 ft.	Date Completed: 2/28/2020	Pressure Tank Installed: No
Well Type: New	Height: 1.00 ft. above grade	Pressure Relief Valve Installed: No
Casing Type: PVC plastic		
Casing Joint: Solvent welded/glued		
Casing Fitting: Shale packer/trap, Rotary shoe, Centralizer		
Diameter: 5.00 in. to 88.00 ft. depth SDR: 21.00		
Borehole: 8.75 in. to 88.00 ft. depth 4.50 in. to 200.00 ft. depth		

Static Water Level: 43.00 ft. Below Grade	Well Yield Test: Pumping level 52.00 ft. after 4.00 hrs. at 105 GPM	Yield Test Method: Test pump	Formation Description	Thickness	Depth to Bottom
			Topsoil	1.00	1.00
Screen Installed: No Intake: Bedrock Well			Brown Clay & Stones	14.00	15.00
			Brown Clay & Stones Sandy	5.00	20.00
			Brown Clay & Stones	12.00	32.00
			Red Clay & Stones	3.00	35.00
			Gray Clay	2.00	37.00
			Conglomerate W/Limestone	1.00	38.00
			Gray Clay & Stones	7.00	45.00
			Gray Clay W/Sandstone	24.00	69.00
			Sand & Gravel	5.00	74.00
			Gray Sandstone W/Clay	6.00	80.00
			Blue Sandstone White	65.00	145.00
			White Sandstone	47.00	192.00
			Gray Shale	8.00	200.00

Well Grouted: Yes	Grouting Method: Grout pipe outside casing	Geology Remarks:
Grouting Material: Neat cement	Bags: 25.00	
Additives: None	Depth: 0.00 ft. to 88.00 ft.	

Wellhead Completion: 12 inches above grade	Drilling Machine Operator Name: B. LARSEN
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Nearest Source of Possible Contamination:	Employment: Employee
Type: None	
Distance:	
Direction:	

Contractor Type: Water Well Drilling Contractor	Reg No: 70-2055
Business Name: Raymer Company Inc	
Business Address: 1357 Comstock St, Marne, MI, 49435	

Water Well Contractor's Certification	
This well and/or pump installation was performed under my registration.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:

Collection Date: 2/28/2020 2:00:00 PM



Analytical Report

(consolidated)

WO#: 2002A54

Date Reported: 3/24/2020

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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METALS, DRINKING WATER

EPA 200.7

Analyst: DV

Iron	0.600	0.0400		mg/L	1	3/2/2020 3:00:00 PM
Sodium	33.8	0.100		mg/L	1	3/2/2020 3:00:00 PM

PFAS, AQUEOUS

EPA 533

Analyst: JS

11Cl-PF3OUdS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
4:2FTS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
6:2FTS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
8:2FTS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
9Cl-PF3ONS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
ADONA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
FOSA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
HFPO-DA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
NEtFOSAA	2.7	2.0		ng/L	1	3/4/2020 6:15:00 PM
NMeFOSAA	2.3	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFBA	3.2	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFBS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFDA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFDoA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFDS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHpA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHpS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHxA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHxS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFNA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFNS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFOA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFOS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFPeA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFPeS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFTeDA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFTrDA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFUdA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM

Qualifiers:

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PL Permit Limit

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

Original
Page 2 of 8

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: JS

1,1,1,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,1-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromo-3-chloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromoethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3,5-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,4-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2-Butanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
2-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Isopropyltoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Methyl-2-pentanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Benzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromodichloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromoform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Carbon tetrachloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM

Qualifiers: * Value exceeds Maximum Contaminant Level.
 H Holding times for preparation or analysis exceeded
 PL Permit Limit

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

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: JS

Chloroform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dichlorodifluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Ethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Hexachlorobutadiene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Isopropylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Methyl tert-butyl ether	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Methylene chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Naphthalene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Propylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
sec-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Styrene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
tert-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrachloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrahydrofuran	< 0.0500	0.0500		mg/L	1	3/5/2020 2:36:33 PM
Toluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichlorofluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Vinyl chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
m,p-Xylene	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
o-Xylene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trihalomethanes, Total	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Xylenes, Total	< 0.00150	0.00150		mg/L	1	3/5/2020 2:36:33 PM

MERCURY, DRINKING WATER

EPA 245.1

Analyst: SJ

Mercury	< 0.000200	0.000200		mg/L	1	3/5/2020 3:51:00 PM
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Qualifiers:
 * Value exceeds Maximum Contaminant Level.
 H Holding times for preparation or analysis exceeded
 PL Permit Limit

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

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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METALS, DRINKING WATER

EPA 200.8

Analyst: **KS**

Antimony	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Arsenic	0.0105	0.00100	*	mg/L	1	3/2/2020 7:03:15 PM
Barium	0.118	0.00100		mg/L	1	3/4/2020 3:46:51 PM
Beryllium	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Cadmium	< 0.000200	0.000200		mg/L	1	3/2/2020 7:03:15 PM
Chromium	0.00328	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Copper	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Lead	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Manganese	0.0375	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Nickel	0.00653	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Selenium	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Thallium	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Zinc	0.00976	0.00100		mg/L	1	3/4/2020 3:35:48 PM

ANIONS BY ION CHROMATOGRAPHY

EPA 300.0

Analyst: **KS**

Fluoride	0.208	0.100		mg/L	1	2/28/2020 8:41:00 PM
Chloride	100	0.200		mg/L	1	3/2/2020 12:55:00 PM
Nitrite	< 0.100	0.100		mg/L	1	2/28/2020 8:41:00 PM
Nitrate	< 0.100	0.100		mg/L	1	2/28/2020 8:41:00 PM
Sulfate	102	0.500		mg/L	1	3/2/2020 12:55:00 PM
Total Nitrate & Nitrite	< 0.100	0.100		mg/L	1	2/28/2020 8:41:00 PM

CYANIDE, DRINKING WATER

SM 4500-CN

Analyst: **TE**

Cyanide, Total	< 0.00600	0.00600		mg/L	1	3/4/2020 1:24:14 PM
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HARDNESS, TOTAL

EPA 130.1

Analyst: **AB**

Hardness (As CaCO3)	486	10.0		mg/L CaCO3	1	2/28/2020 5:00:00 PM
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HYDROGEN ION (PH)

SM 4500-H+B

Analyst: **AB**

pH	7.53	0		pH Units	1	2/28/2020 4:27:28 PM
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Qualifiers:

* Value exceeds Maximum Contaminant Level.
 H Holding times for preparation or analysis exceeded
 PL Permit Limit

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

Analytical Report

(consolidated)

WO#: **2002A54**

Date Reported: **3/24/2020**

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE

EPA 120.1

Analyst: **SD**

Specific Conductivity	954	1.00		µmhos/cm	1	2/28/2020 4:33:22 PM
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Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- H Holding times for preparation or analysis exceeded
- PL Permit Limit
- < Not Detected at the Reporting Limit
- MCL Maximum Contaminant Level
- RL Reporting Limit

Original
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CLIENT:	Williams & Works	Collection Date:	
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-02	Matrix:	TRIP BLANK
Client Sample ID:	Trip Blank	Sampled By:	

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: JS

1,1,1,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,1-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromo-3-chloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromoethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3,5-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,4-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2-Butanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
2-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Isopropyltoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Methyl-2-pentanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Benzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromodichloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromoform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Carbon tetrachloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM

Qualifiers: * Value exceeds Maximum Contaminant Level.
 H Holding times for preparation or analysis exceeded
 PL Permit Limit

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

CLIENT:	Williams & Works	Collection Date:	
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-02	Matrix:	TRIP BLANK
Client Sample ID:	Trip Blank	Sampled By:	

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: JS

Chloroform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dichlorodifluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Ethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Hexachlorobutadiene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Isopropylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Methyl tert-butyl ether	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Methylene chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Naphthalene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Propylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
sec-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Styrene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
tert-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrachloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrahydrofuran	< 0.0500	0.0500		mg/L	1	3/5/2020 2:36:33 PM
Toluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichlorofluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Vinyl chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
m,p-Xylene	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
o-Xylene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trihalomethanes, Total	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Xylenes, Total	< 0.00150	0.00150		mg/L	1	3/5/2020 2:36:33 PM

Qualifiers: * Value exceeds Maximum Contaminant Level. < Not Detected at the Reporting Limit
 H Holding times for preparation or analysis exceeded MCL Maximum Contaminant Level
 PL Permit Limit RL Reporting Limit



ANALYTICAL RESULTS

Workorder: 360462 PREIN&NEWHOF 030320

Lab ID: **3604620001** Date Received: 3/3/2020 12:56 Matrix: Drinking Water (Potable)
 Sample ID: 2002A54-01A Date Collected: 2/28/2020 14:00
 Sample Desc: Pottersville Test Well PO:

Parameters	Qualifier	Result	Units	Reporting Limit	Dilution Factor	Result Qualifier		Analyzed	By
						Min	Max		

Sample Preparation

Analysis Desc: EPA 515.4

Liquid-Liquid Extr. Herbicides	Complete				1			3/12/2020 09:30	GFM
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SOC Herbicides

Analysis Desc: EPA 515.4

2,4-D	<2.0	µg/L	2.0	1	70			3/12/2020 21:35	GFM
Dalapon	<1.0	µg/L	1.0	1	200			3/12/2020 21:35	GFM
Dicamba	<2.0	µg/L	2.0	1				3/12/2020 21:35	GFM
Dinoseb	<1.0	µg/L	1.0	1	7			3/12/2020 21:35	GFM
Pentachlorophenol	<0.040	µg/L	0.040	1	1			3/12/2020 21:35	GFM
Picloram	<1.0	µg/L	1.0	1	500			3/12/2020 21:35	GFM
2,4,5-TP (Silvex)	<0.20	µg/L	0.20	1	50			3/12/2020 21:35	GFM

SOC Carbamates

Analysis Desc: EPA 531.2

Aldicarb	<0.50	µg/L	0.50	1	3			3/13/2020 14:29	DTM
Aldicarb Sulfone	<0.50	µg/L	0.50	1	2			3/13/2020 14:29	DTM
Aldicarb Sulfoxide	<0.50	µg/L	0.50	1	4			3/13/2020 14:29	DTM
Carbaryl (Sevin)	<0.50	µg/L	0.50	1				3/13/2020 14:29	DTM
Carbofuran	<0.50	µg/L	0.50	1	40			3/13/2020 14:29	DTM
3-Hydroxycarbofuran	<0.50	µg/L	0.50	1				3/13/2020 14:29	DTM
Methiocarb	<0.50	µg/L	0.50	1				3/13/2020 14:29	DTM
Methomyl	<0.50	µg/L	0.50	1				3/13/2020 14:29	DTM
Oxamyl (Vydate)	<0.50	µg/L	0.50	1	200			3/13/2020 14:29	DTM
Propoxur	<0.50	µg/L	0.50	1				3/13/2020 14:29	DTM

Sample Preparation

Analysis Desc: EPA 525.2

Liquid-Solid Extr. Pests+Inds	Complete				1			3/4/2020 07:45	TSD
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SOC Pesticides and Industrials

Analysis Desc: EPA 525.2

Alachlor	<0.20	µg/L	0.20	1	2			3/5/2020 14:29	DTM
Aldrin	<0.40	µg/L	0.40	1				3/5/2020 14:29	DTM
Atrazine	<0.20	µg/L	0.20	1	3			3/5/2020 14:29	DTM

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ANALYTICAL RESULTS

Workorder: 360462 PREIN&NEWHOF 030320

Lab ID: **3604620001**

Date Received: 3/3/2020 12:56

Matrix: Drinking Water (Potable)

Sample ID: 2002A54-01A

Date Collected: 2/28/2020 14:00

Sample Desc: Potterville Test Well

PO:

Parameters	Qualifier	Result	Units	Reporting Limit	Dilution Factor	Result Qualifier		Analyzed	By
						Min	Max		
Benzo(a)pyrene		<0.050	µg/L	0.050	1		200	3/5/2020 14:29	DTM
Butachlor		<2.0	µg/L	2.0	1			3/5/2020 14:29	DTM
Chlordane, Technical, as sum		<0.20	µg/L	0.20	1		2	3/5/2020 14:29	DTM
alpha-Chlordane		<0.050	µg/L	0.050	1			3/5/2020 14:29	DTM
gamma-Chlordane		<0.050	µg/L	0.050	1			3/5/2020 14:29	DTM
trans-Nonachlor		<0.050	µg/L	0.050	1			3/5/2020 14:29	DTM
Di(2-ethylhexyl)adipate		<0.60	µg/L	0.60	1		400	3/5/2020 14:29	DTM
Di(2-ethylhexyl)phthalate		<0.60	µg/L	0.60	1		6	3/5/2020 14:29	DTM
Dieldrin		<0.50	µg/L	0.50	1			3/5/2020 14:29	DTM
Endrin		<0.10	µg/L	0.10	1		2	3/5/2020 14:29	DTM
Heptachlor		<0.050	µg/L	0.050	1		400	3/5/2020 14:29	DTM
Heptachlor epoxide		<0.10	µg/L	0.10	1		200	3/5/2020 14:29	DTM
Hexachlorobenzene (HCB)		<0.10	µg/L	0.10	1		1	3/5/2020 14:29	DTM
Hexachlorocyclopentadiene		<0.20	µg/L	0.20	1		50	3/5/2020 14:29	DTM
Lindane (gamma-BHC)		<0.050	µg/L	0.050	1		200	3/5/2020 14:29	DTM
Methoxychlor		<0.10	µg/L	0.10	1		40	3/5/2020 14:29	DTM
Metolachlor		<1.0	µg/L	1.0	1			3/5/2020 14:29	DTM
Metribuzin		<1.0	µg/L	1.0	1			3/5/2020 14:29	DTM
Propachlor		<1.0	µg/L	1.0	1			3/5/2020 14:29	DTM
Simazine		<0.20	µg/L	0.20	1		4	3/5/2020 14:29	DTM
Toxaphene		<1.0	µg/L	1.0	1		3	3/5/2020 14:29	DTM
PCB Aroclor 1016		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1221		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1232		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1242		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1248		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1254		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1260		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM

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Sampling Point: 2002A54-01A

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
---	Gross Alpha	7110 B	15 *	2.2	3.0	6.3 ± 3.0	pCi/L	03/05/20 11:02	03/13/20 16:37	4577705
13982-63-3	Radium-226	7500-Ra B	---	0.36	1.0	1.6 ± 0.9	pCi/L	03/04/20 11:15	03/16/20 12:55	4577706
15262-20-1	Radium-228	7500-Ra D	---	0.50	1.0	1.8 ± 0.6	pCi/L	03/04/20 11:15	03/13/20 14:17	4577706
---	Combined Radium	calc.	5 *	0.50	1.0	3.4 ± 1.0	pCi/L	03/04/20 11:15	03/16/20 12:55	4577706

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

July 8, 2020

To: City Council
From: Aaron Sheridan, City Manager
Subject: Manager's Report

Please see report items for this month and let me know if you have questions or comments. Thank you.

1. Public Hearings, reviews and approvals regarding the new Amended TIFA Development Plan & Tax Increment Finance Plan are complete, and new Plan(s) have been submitted to the State Department of Treasury in accordance with Act 57 of the Public Acts of Michigan of 2018.
2. The City has completed the testing and sampling of two small diameter exploration/test wells on the proposed test-production well property located at the southwest corner of Sunset Drive and Hartel Road (M-100). City Engineer, Dan Whalen has reported that both exploratory well tests reveal good production potential, low radionuclides, with moderate iron and arsenic being present. Both iron and arsenic require water treatment that is comparable with existing wells #3 and #4. Owing to the importance of avoiding radionuclides in this area, and the anomalous presence of arsenic in the first groundwater sample from the first test, the City performed a seconded exploration/test well to confirm the findings. The second attached report (June 25th) discusses the results of Test Well No. 2 which confirms low radionuclides, and presence of arsenic and iron. Overall, both tests reveal good potential for capacity on this site, however, treatment will be necessary for the arsenic and iron as performed at existing production Wells 3 & 4. With direction from City Council the Manager has requested review from MDOT to being the process of possibly purchasing the land area and test sites currently owned by the State Department of Transportation. MDOT is currently reviewing the City's request and will keep the City apprised of the next step in their process that may involve a land sale.
3. City's Public Audit for Fiscal Year 2020 has begun early, and the Manager and Treasurer have already begun submitting necessary "internal control documents" as of this week to Vredeveld Haefner LLC Audit firm. The audit is expected to go much smoother this year as a result of improvements made in City's cash receipting, bank reconciliations and deposits of receipts. Vredeveld Haefner LLC Auditor have been engaged by City Council for the FY 2020 and FY 2021 years.
4. City's sidewalk reconstruction project started this week along Vermontville Highway for about 625 linear feet from Dunbar Street to Church Street thence Church Street to Cottage Street. Work is weather dependent and should take no more than a couple weeks from start to finish. Also, Crack sealant maintenance is scheduled to begin next week at Lockview Meadows Subdivision with a follow up Fog and Chip Seal emulsion sometime around mid-August. A resident letter providing notice and contact information has been provided to all residents of Lockview Meadows Subdivision. The Sunset Drive Guardrail project has been awarded but is not anticipated to start until late July.
5. The TIFA funded "Welcome to Potterville Sign" has been permitted, installed and inspected at 4249 E. Vermontville Highway. This is the sister sign to the replaced sign along Lansing Road near the end of the Nelson Street. Plans have been made to remove an unused consumers energy pole and line at new signs site then landscape with boulders and pre-annual flowers.
6. City Park Basketball Court should start next week (weather dependent). Maroon & Gold concrete stain has been purchased to be applied after concrete pad is installed and cured for 28 days.

Parks & Recreation Department July 2020

Parks:

- Parks have been continuing to get improvements done.
- Tree Cutting crew is scheduled this month out at Lake Alliance. This is part of the beautification project.
- Lake Alliance playground is getting a makeover. It has been power wash, will be painted, new swings.
- In the process of purchasing mats that go under the swings, so playground goers don't dig such a big hole to where we're spending a lot of time, replacing the hole with more woodchips. The goal is to limit the amount of buying woodchips and so there is less time filling in holes and spending less money.
- Swings have been ordered for the Lake Alliance playground
- Gravel was put on the roads and parking lots out at Lake Alliance to where there are no more deep holes and driving is not so rough anymore. The gravel will get sprayed soon to keep the dust done.
- The Parks Committee held their meeting this month regarding a Farmers Market. It is in the process, and discussion is still on going. But in the meantime, we're starting the process.

Recreation:

- Ball fields are being utilized with a filled scheduled. Again, this year, it's a different season and everyone is doing their part and practicing social distancing and staying safe.
- In the process of purchasing mats for the right-hand batter's box as batters like to dig their feet while it's their turn to bat. Batters do their own thing, and it creates a very deep hole that is hard to fill and level every time. By placing these mats, it will stop the batters from digging so deep and limit the digging that they can do.
- In process of ordering more diamond dust for the ball fields, as the fields that did not get it last time are in desperate need of the infield dirt to build the fields back up.
- Paint has been ordered for the basketball court at City Park.
- In the process of basketball hoops for the basketball court at City Park.

Respectfully Submitted by,

Tiffani Schaner, Parks & Recreation Director

July 8, 2020

To: City of Pottersville Council Members

From: Brandy Hatt, Zoning Administrator

Re: Current Projects

Below is a list of the projects I am currently working on for the City of Pottersville. Please keep in mind, these projects do not include the day to day commutations or projects with property owners located in the City of Pottersville.

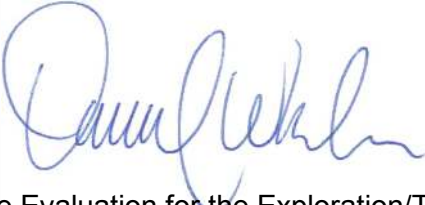
- All request for Zoning Referrals are caught up. I issued nine Zoning Referral's during the months of May and June. In addition, three Poultry Permits were issued.
- Enforcements: I have several open enforcements that involve the length of grass, blight, signs, and storage bins.
- Gizzard Fest 2021 update: While Gizzard Fest 2020 was cancelled due to Covid-19, the Gizzard Fest Committee has set dates of June 17th, 18th, and 19th for 2021. The Gizzard Fest Committee is hopeful we will be able to co-host a fundraising event for Gizzard Fest 2021 in September, but that will depend on Executive Orders and the state of Covid-19.
- Recodification of City of Pottersville Code of Ordinances: All documents have been sent to Municode for codification. Municode is currently in the process of reformatting our Code of Ordinances.
- DDA Pavilion: A portion of the property the DDA Pavilion sits on is not owned by the City of Pottersville. I attended a Masonic Lodge Meeting to discuss the transfer of the property to the City of Pottersville. They are willing to deed the property to the City of Pottersville. I will meet with the Secretary of the Masonic Lodge once I have the deed complete.
- Zoning Ordinance Update: Our Zoning Ordinance has been set to Williams and Works. This process is a very public process and will not commence until the Planning Commission is able to hold an in person public meeting.
- Capital Improvement Plan (CIP) Update: The Williams and Works Proposal has been signed and returned to Williams and Works. Williams and Works will update the CIP and send to the Planning Commission for review and comments. The Planning Commission will involve Mr. Don Stanley, Director of DPW in the discussion of the CIP update.
- City of Pottersville Sign (corner of Lansing Road and Hartel): The City of Pottersville hopes to acquire a property owned by the Fry family for the purpose of moving our city sign. Prior to Covid-19 I had several phone conversations with the property owner's family members; however, Covid-19 has delayed this project. I have left a message for the property owner in the hopes of getting this project in the works again. If we are successful in obtaining the property, I will work with the TIFA Board to facilitate the project.
- Zoning Board of Appeals: Due to Covid-19 the Zoning Board of Appeals has not yet met. I may conduct a training only for the Zoning Board of Appeals Members in August. This training will not be held at City Hall if City Hall is not open to the public.
- Planning Commission: Due to Covid-19 the July meeting has been cancelled.

Please feel free to contact me directly with any questions or concerns. I can be reached by calling (517) 281-5659 or e-mail Zoning@pottersvillemi.org.

"City of Helping Hands"

PROJECT MEMORANDUM

To: **Aaron Sheridan, Don Stanley**
Date: June 25, 2020
From: Dan Whalen, P.E.
RE: Preliminary Groundwater Resource Evaluation for the Exploration/Test Well Work at MDOT Tract 1504



As you are aware, we recently completed the installation and testing of the second 5-inch test well (Test Well No. 2) at the proposed wellsite on the MDOT Tract 1504. The purpose of the second test well was to confirm our earlier findings from Test Well No. 1 at the proposed site; namely, to verify that the site offers reasonable withdrawal capacity and the groundwater quality meets drinking water standards for radium and gross alpha. The results of Test Well No. 1 indicated good to very good potential to support a new production well, however, the groundwater has elevated iron and arsenic concentrations, but low radionuclide levels (below allowable limits).

The results of Test Well No. 2 have confirmed the production capability of the site, and has also confirmed the groundwater quality; the iron and arsenic concentrations are elevated, and the radionuclide parameters are below the allowable limits for drinking water. As with Well Nos. 3 and 4, the groundwater will require treatment to eliminate the nuisance properties of elevated iron. The elevated arsenic concentration in the groundwater will also be removed using the same or similar treatment process.

The discussion that follows provides a summary of the site conditions.

Local Geology (General)

The geology at the site consists mainly of clayey soils from the surface to the top of bedrock; the bedrock in this location is the Saginaw Formation and lies about 80 feet from the surface. The Saginaw Formation consists of interbedded sandstones and shales, with a main sandstone layer that lies at the top between about 80 feet to 192 feet below grade. The groundwater resides within this main sandstone layer.

Test Well Construction

Both test wells were installed with 5-inch PVC well casing cemented into the upper part of the bedrock, leaving an open borehole below the PVC casing open to the entire main sandstone interval. Based on the geology and the static water level in the well, the sandstone bedrock aquifer exists under confined or semi-confined conditions in this location with a static water level approximately 43 feet below grade. Test Well No. 1 is located south-southeast of the proposed test-production well location, and Test Well 2 is located east of the proposed test-production well location (see Figure 1). The proposed test-production well will ultimately be located at the center of the property to allow 200 feet of isolation in all directions.



Figure 1 Well Location Map

Preliminary pumping testing of both test wells indicate that the bedrock aquifer at this location has the ability to support pumping capacities similar to the existing City production wells.

Earlier, we recorded water levels in Test Well 1 over a period of three days to observe the background interference effects from the existing City Production Well Nos. 3 and 4. The background water levels are shown in Figure 2 below and illustrate approximately 5-6 feet of interfering drawdown will occur at this location due to the operation of either Well No. 3 or 4. If a new production well at this location were operated simultaneously with either Well No. 3 or Well No. 4, the additional drawdown interference appears to be manageable. Note, the mutual interfering water levels between the existing Well Nos. 3 and 4, and the eventual new production well will be addressed more thoroughly after the test-production well has been built and a formal aquifer test has been completed.

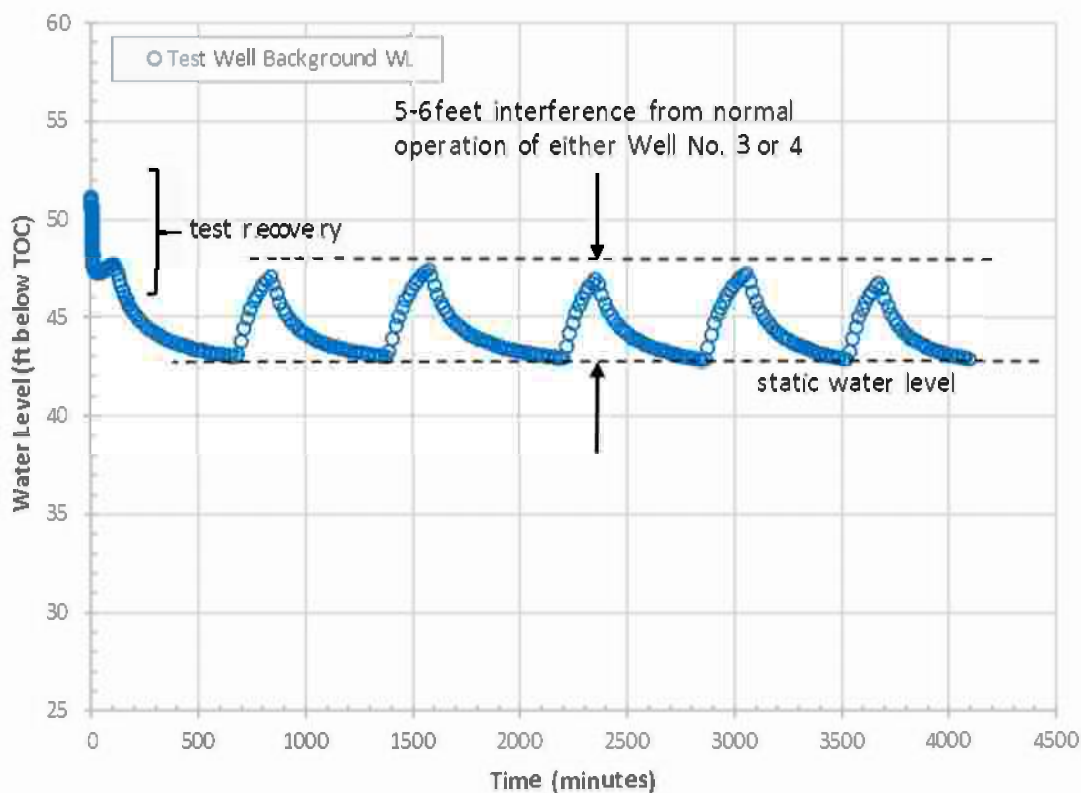


Figure 2. Background Static Water Levels at Exploration/Test Well on MDOT Tract 1504, February 28 - March 2, 2020

Groundwater Quality

Groundwater samples were collected and analyzed from Test Well 1 for aesthetic (general minerals) and regulated parameters (VOC, nitrates and nitrites, limited metals), along with radionuclides and PFAS compounds. Groundwater samples were collected and analyzed from Test Well 2 for aesthetic (general minerals) and regulated parameters (nitrates, nitrites, limited metals), along with radionuclides and PFAS compounds. The results of the water quality analyses are attached to this memo.

With the exception of arsenic, the groundwater quality at the test wells is roughly similar to the water quality from the existing Well Nos. 3 and 4; i.e., moderate to high hardness, low sodium and chloride, and elevated nuisance iron. All of the VOC and SOC compounds (volatile organic compounds, synthetic organic compounds) were non-detect. The arsenic concentration is at or slightly above 10 ppb (the allowable limit is 10 ppb). The radionuclides; gross alpha, radium 226 and radium 228, and combined radium 226-228 are all below the allowable limits. There were three PFAS compounds detected in Test Well 1 (NEtFOSAA at 2.7 ppt, NMeFOSAA at 2.3 ppt, and PFBA at 3.2 ppt), however, none of these three parameters have established health limits. EGLE treats the combined PFAS compound limit of 70 ppt as the maximum allowable limit regardless if it has an established health limit or not (this sample result represents a combined PFAS level of 8.2 ppt). There were no detectable PFAS compounds in Test Well 2.

The following table shows the basic groundwater quality parameters from both test wells.

Parameter	Test Well 1	Test Well 2	MCL
Arsenic	0.010 mg/L	0.0106 mg/L	0.010 mg/L
Chloride	100 mg/L	31.7 mg/L	objectionable over 250 mg/L
Hardness	486 mg/L	402 mg/L	objectionable over 250 mg/L
Iron	0.6 mg/L	0.672 mg/L	nuisance above 0.5
Sodium	33.8 mg/L	13.8 mg/L	objectionable over 160 mg/L
Sulfate	102 mg/L	76.9 mg/L	objectionable over 250 mg/L
Total Nitrate/Nitrite	non-detect	non-detect	0.10 mg/L
VOC/SOC	all non-detect	not analyzed	MCL varies by parameter
Gross Alpha	6.3 pCi/L	1.7 pCi/L	15 pCi/L
Radium-226	1.6 pCi/L	0.94 pCi/L	
Radium-228	1.8 pCi/L	2.4 pCi/L	
Combined Radium	3.4 pCi/L	3.34 pCi/L	5 pCi/L

Regarding the arsenic, the concentration in the groundwater from both test wells is at or slightly above the allowable limit of 0.010 mg/L, therefore, at this level we recommend treatment similar to the iron removal systems currently in operation at Well Nos. 3 and 4. Although arsenic can be removed through a similar process as the existing iron removal plant, it normally requires the addition of a chemical oxidant prior to passing the water through an adsorptive iron-based filter media (this is the most common method). Air oxidation can be used, but it is less effective and requires a longer contact period. Therefore, the existing iron removal system may have the ability to remove some of the arsenic “as-is”, but its removal efficiency must be evaluated before going forward.

Conclusions and Next Steps

The results of drilling and pumping testing show that the location of the proposed production well has good to very good potential to support a new production well with an estimated capacity in the range between 300-400 gpm. The drawdown interference at this location from Well Nos. 3 or 4 has been observed, however, these additional drawdowns appear to be manageable.

With the exception of arsenic, the groundwater quality from the exploration/test wells is similar to the existing production wells. Assuming the eventual new production well will require iron removal, the same treatment technology for iron removal will also remove arsenic in a similar manner.

The MDOT Tract 1504 site, therefore, is a suitable site for the City to pursue the development and testing of a new test-production well.

At this point, our next steps toward developing the wellsite are as follows;

1. The City can begin negotiating with MDOT for the purchase of the property.
2. This memo should be sent to Mark Joseph at EGLE so he is kept up to date on our progress. I have called Mark Joseph and updated him from time to time as we have progressed.
3. Regarding our March 12, 2019 proposal letter, we are about to begin Step 4; development of a test-production well. This step will require bidding; therefore, our next work task will proceed with the preparation of bidding documents for the construction and testing of the new test-production well.

4. Once we receive and award the test-production well bid, the construction can begin. Testing on the completed well will consist of an official aquifer test which will be 24-hours in duration. A report will follow which will address the EGLE aquifer testing and analysis requirements. Ultimately, the capacity of the new well will be rated at this time and will be based on the pumping testing results.

Attachments Test Well Records (Welllogic ID Nos. 23000012506, and 23000012515)
Laboratory Analyses of Groundwater from Test Well Nos. 1 and 2



Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Eaton			Township: Benton	
Well ID: 23000012506		Town/Range: 03N 04W	Section: 23	Well Status: Active	WSSN: 5550	Source ID/Well No: TW-01-2020
		Distance and Direction from Road Intersection: 225 FT. WEST OF N. HARTEL RD. (M-100) & 225 FT. SOUTH OF SUNSET DR.				
		Well Owner: CITY OF POTTERVILLE				
Elevation:		Well Address:			Owner Address:	
Latitude: 42.63293		SUNSET DR.			319 N. NELSON ST.	
Longitude: -84.74004		POTTERVILLE, MI 48876			POTTERVILLE, MI 48876	
Method of Collection: GPS Std Positioning Svc SA Off						

Drilling Method: Rotary	Well Use: Test well	Pump Installed: No
Well Depth: 200.00 ft.	Date Completed: 2/28/2020	Pressure Tank Installed: No
Well Type: New	Height: 1.00 ft. above grade	Pressure Relief Valve Installed: No
Casing Type: PVC plastic		
Casing Joint: Solvent welded/glued		
Casing Fitting: Shale packer/trap, Rotary shoe, Centralizer		
Diameter: 5.00 in. to 88.00 ft. depth SDR: 21.00		
Borehole: 8.75 in. to 88.00 ft. depth 4.50 in. to 200.00 ft. depth		

Static Water Level: 43.00 ft. Below Grade	Well Yield Test: Pumping level 52.00 ft. after 4.00 hrs. at 105 GPM	Yield Test Method: Test pump	Formation Description	Thickness	Depth to Bottom
			Topsoil	1.00	1.00
Screen Installed: No Intake: Bedrock Well			Brown Clay & Stones	14.00	15.00
			Brown Clay & Stones Sandy	5.00	20.00
			Brown Clay & Stones	12.00	32.00
			Red Clay & Stones	3.00	35.00
			Gray Clay	2.00	37.00
			Conglomerate W/Limestone	1.00	38.00
			Gray Clay & Stones	7.00	45.00
			Gray Clay W/Sandstone	24.00	69.00
			Sand & Gravel	5.00	74.00
			Gray Sandstone W/Clay	6.00	80.00
			Blue Sandstone White	65.00	145.00
			White Sandstone	47.00	192.00
			Gray Shale	8.00	200.00

Well Grouted: Yes	Grouting Method: Grout pipe outside casing	Geology Remarks:
Grouting Material: Neat cement	Bags: 25.00 Additives: None Depth: 0.00 ft. to 88.00 ft.	

Wellhead Completion: 12 inches above grade	Drilling Machine Operator Name: B. LARSEN
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Nearest Source of Possible Contamination:	Employment: Employee
Type: None	
Distance:	
Direction:	

Contractor Type: Water Well Drilling Contractor	Reg No: 70-2055
Business Name: Raymer Company Inc	
Business Address: 1357 Comstock St, Marne, MI, 49435	

Water Well Contractor's Certification	
This well and/or pump installation was performed under my registration.	
Signature of Registered Contractor	Date

General Remarks:

Other Remarks:



Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

Tax No:	Permit No:	County: Eaton	Township: Benton			
Well ID: 23000012515		Town/Range: 03N 04W	Section: 23	Well Status: Active	WSSN: 5550	Source ID/Well No: TW-02-2020
		Distance and Direction from Road Intersection: 100 FT. WEST OF N. HARTEL RD. (M-100 HWY.) & 400 FT. SOUTH OF SUNSET DR.				
Elevation:		Well Owner: CITY OF POTTERVILLE				
Latitude: 42.63328		Well Address: SUNSET DR. POTTERVILLE, MI 48876			Owner Address: 319 N. NELSON ST. POTTERVILLE, MI 48876	
Longitude: -84.73976						
Method of Collection: Interpolation-Map						

Drilling Method: Rotary	Well Use: Test well	Pump Installed: No
Well Depth: 200.00 ft.	Well Type: New	Pressure Tank Installed: No
Well Type: New	Date Completed: 5/15/2020	Pressure Relief Valve Installed: No
Casing Type: PVC plastic	Height: 1.00 ft. above grade	
Casing Joint: Solvent welded/glued		
Casing Fitting: Shale packer/trap, Rotary shoe, Centralizer		
Diameter: 5.00 in. to 77.00 ft. depth SDR: 21.00		
Borehole: 8.75 in. to 77.00 ft. depth 4.50 in. to 200.00 ft. depth		

Static Water Level: 46.00 ft. Below Grade	Yield Test Method: Test pump	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Pumping level 55.00 ft. after 2.00 hrs. at 110 GPM		Topsoil	1.00	1.00
		Brown Clay & Stones	27.00	28.00
		Boulders	2.00	30.00
Screen Installed: No	Intake: Bedrock Well	Brown Gravel Sand Clay	5.00	35.00
		Gray Clay Red	5.00	40.00
		Gray Clay & Gravel W/Sandstone	28.00	68.00
		Sandstone & Shale	10.00	78.00
		Gray Shale	1.00	79.00
		Blue Sandstone	56.00	135.00
		Gray Shale	2.00	137.00
		White Sandstone	61.00	198.00
		Gray Shale	2.00	200.00

Well Grouted: Yes	Grouting Method: Grout pipe outside casing	Geology Remarks:
Grouting Material: Neat cement	Bags: 20.00	
Additives: None	Depth: 0.00 ft. to 77.00 ft.	

Wellhead Completion: 12 inches above grade	Drilling Machine Operator Name: B. LARSEN
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Nearest Source of Possible Contamination:	Employment: Employee
Type: None	
Distance:	
Direction:	

Contractor Type: Water Well Drilling Contractor	Reg No: 70-2055
Business Name: Raymer Company Inc	
Business Address: 1357 Comstock St, Marne, MI, 49435	

Water Well Contractor's Certification	
This well and/or pump installation was performed under my registration.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:

(consolidated)

WO#: 2002A54

Date Reported: 3/24/2020

Test Well No. 1

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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METALS, DRINKING WATER

EPA 200.7

Analyst: DV

Iron	0.600	0.0400		mg/L	1	3/2/2020 3:00:00 PM
Sodium	33.8	0.100		mg/L	1	3/2/2020 3:00:00 PM

PFAS, AQUEOUS

EPA 533

Analyst: JS

11Cl-PF3OUdS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
4:2FTS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
6:2FTS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
8:2FTS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
9Cl-PF3ONS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
ADONA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
FOSA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
HFPO-DA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
NEtFOSAA	2.7	2.0		ng/L	1	3/4/2020 6:15:00 PM
NMeFOSAA	2.3	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFBA	3.2	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFBS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFDA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFDoA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFDS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHpA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHpS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHxA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFHxS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFNA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFNS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFOA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFOS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFPeA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFPeS	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFTeDA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFTrDA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM
PFUdA	< 2.0	2.0		ng/L	1	3/4/2020 6:15:00 PM

Qualifiers: * Value exceeds Maximum Contaminant Level. < Not Detected at the Reporting Limit
 H Holding times for preparation or analysis exceeded MCL Maximum Contaminant Level
 PL Permit Limit RL Reporting Limit

Test Well No. 1

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: JS

1,1,1,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,1-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromo-3-chloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromoethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3,5-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,4-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2-Butanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
2-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Isopropyltoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Methyl-2-pentanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Benzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromodichloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromoform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Carbon tetrachloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM

Qualifiers:	* Value exceeds Maximum Contaminant Level.	< Not Detected at the Reporting Limit
H	Holding times for preparation or analysis exceeded	MCL Maximum Contaminant Level
PL	Permit Limit	RL Reporting Limit

Test Well No. 1

WO#: 2002A54

Date Reported: 3/24/2020

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: JS

Chloroform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dichlorodifluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Ethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Hexachlorobutadiene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Isopropylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Methyl tert-butyl ether	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Methylene chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Naphthalene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Propylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
sec-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Styrene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
tert-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrachloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrahydrofuran	< 0.0500	0.0500		mg/L	1	3/5/2020 2:36:33 PM
Toluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichlorofluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Vinyl chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
m,p-Xylene	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
o-Xylene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trihalomethanes, Total	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Xylenes, Total	< 0.00150	0.00150		mg/L	1	3/5/2020 2:36:33 PM

MERCURY, DRINKING WATER

EPA 245.1

Analyst: SJ

Mercury	< 0.000200	0.000200		mg/L	1	3/5/2020 3:51:00 PM
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Qualifiers:

* Value exceeds Maximum Contaminant Level.
 H Holding times for preparation or analysis exceeded
 PL Permit Limit

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

Test Well No. 1

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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METALS, DRINKING WATER

EPA 200.8

Analyst: **KS**

Antimony	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Arsenic	0.0105	0.00100	*	mg/L	1	3/2/2020 7:03:15 PM
Barium	0.118	0.00100		mg/L	1	3/4/2020 3:46:51 PM
Beryllium	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Cadmium	< 0.000200	0.000200		mg/L	1	3/2/2020 7:03:15 PM
Chromium	0.00328	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Copper	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Lead	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Manganese	0.0375	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Nickel	0.00653	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Selenium	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Thallium	< 0.00100	0.00100		mg/L	1	3/2/2020 7:03:15 PM
Zinc	0.00976	0.00100		mg/L	1	3/4/2020 3:35:48 PM

ANIONS BY ION CHROMATOGRAPHY

EPA 300.0

Analyst: **KS**

Fluoride	0.208	0.100		mg/L	1	2/28/2020 8:41:00 PM
Chloride	100	0.200		mg/L	1	3/2/2020 12:55:00 PM
Nitrite	< 0.100	0.100		mg/L	1	2/28/2020 8:41:00 PM
Nitrate	< 0.100	0.100		mg/L	1	2/28/2020 8:41:00 PM
Sulfate	102	0.500		mg/L	1	3/2/2020 12:55:00 PM
Total Nitrate & Nitrite	< 0.100	0.100		mg/L	1	2/28/2020 8:41:00 PM

CYANIDE, DRINKING WATER

SM 4500-CN

Analyst: **TE**

Cyanide, Total	< 0.00600	0.00600		mg/L	1	3/4/2020 1:24:14 PM
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HARDNESS, TOTAL

EPA 130.1

Analyst: **AB**

Hardness (As CaCO3)	486	10.0		mg/L CaCO3	1	2/28/2020 5:00:00 PM
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HYDROGEN ION (PH)

SM 4500-H+B

Analyst: **AB**

pH	7.53	0		pH Units	1	2/28/2020 4:27:28 PM
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Qualifiers:	* Value exceeds Maximum Contaminant Level.	< Not Detected at the Reporting Limit
H	Holding times for preparation or analysis exceeded	MCL Maximum Contaminant Level
PL	Permit Limit	RL Reporting Limit

Test Well No. 1

CLIENT:	Williams & Works	Collection Date:	2/28/2020 2:00:00 PM
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-01	Matrix:	DRINKING WATER
Client Sample ID:	Potterville Test Well	Sampled By:	Dan Whalen

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE

EPA 120.1

Analyst: **SD**

Specific Conductivity	954	1.00		µmhos/cm	1	2/28/2020 4:33:22 PM
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Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- H Holding times for preparation or analysis exceeded
- PL Permit Limit
- < Not Detected at the Reporting Limit
- MCL Maximum Contaminant Level
- RL Reporting Limit

Test Well No. 1

WO#: **2002A54**

Date Reported: **3/24/2020**

CLIENT:	Williams & Works	Collection Date:	
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-02	Matrix:	TRIP BLANK
Client Sample ID:	Trip Blank	Sampled By:	

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: **JS**

1,1,1,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,1-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2,2-Tetrachloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1,2-Trichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,1-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,3-Trichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2,4-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromo-3-chloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dibromoethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3,5-Trimethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,3-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
1,4-Dichlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2,2-Dichloropropane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
2-Butanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
2-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Chlorotoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Isopropyltoluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
4-Methyl-2-pentanone	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Benzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromodichloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromoform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Bromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Carbon tetrachloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chlorobenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloroethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM

Qualifiers:	* Value exceeds Maximum Contaminant Level.	< Not Detected at the Reporting Limit
H	Holding times for preparation or analysis exceeded	MCL Maximum Contaminant Level
PL	Permit Limit	RL Reporting Limit

Test Well No. 1

CLIENT:	Williams & Works	Collection Date:	
Project:	Potterville Test Well MDOT Tract 1504	Received Date:	2/28/2020 2:55:00 PM
Lab ID:	2002A54-02	Matrix:	TRIP BLANK
Client Sample ID:	Trip Blank	Sampled By:	

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANICS, DRINKING WATER

EPA 524.2

Analyst: JS

Chloroform	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Chloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
cis-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromochloromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dibromomethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Dichlorodifluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Ethylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Hexachlorobutadiene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Isopropylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Methyl tert-butyl ether	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
Methylene chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Naphthalene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
n-Propylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
sec-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Styrene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
tert-Butylbenzene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrachloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Tetrahydrofuran	< 0.0500	0.0500		mg/L	1	3/5/2020 2:36:33 PM
Toluene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,2-Dichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
trans-1,3-Dichloropropene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichloroethene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trichlorofluoromethane	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Vinyl chloride	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
m,p-Xylene	< 0.00100	0.00100		mg/L	1	3/5/2020 2:36:33 PM
o-Xylene	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Trihalomethanes, Total	< 0.000500	0.000500		mg/L	1	3/5/2020 2:36:33 PM
Xylenes, Total	< 0.00150	0.00150		mg/L	1	3/5/2020 2:36:33 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level.	< Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded	MCL Maximum Contaminant Level
PL Permit Limit	RL Reporting Limit



ANALYTICAL RESULTS

Test Well No. 1

Workorder: 360462 PREIN&NEWHOF 030320

Lab ID: **3604620001** Date Received: 3/3/2020 12:56 Matrix: Drinking Water (Potable)
 Sample ID: 2002A54-01A Date Collected: 2/28/2020 14:00
 Sample Desc: Pottersville Test Well PO:

Parameters	Qualifier	Result	Units	Reporting Limit	Dilution Factor	Result Qualifier		Analyzed	By
						Min	Max		

Sample Preparation

Analysis Desc: EPA 515.4									
Liquid-Liquid Extr. Herbicides		Complete			1			3/12/2020 09:30	GFM

SOC Herbicides

Analysis Desc: EPA 515.4									
2,4-D		<2.0	µg/L	2.0	1	70		3/12/2020 21:35	GFM
Dalapon		<1.0	µg/L	1.0	1	200		3/12/2020 21:35	GFM
Dicamba		<2.0	µg/L	2.0	1			3/12/2020 21:35	GFM
Dinoseb		<1.0	µg/L	1.0	1	7		3/12/2020 21:35	GFM
Pentachlorophenol		<0.040	µg/L	0.040	1	1		3/12/2020 21:35	GFM
Picloram		<1.0	µg/L	1.0	1	500		3/12/2020 21:35	GFM
2,4,5-TP (Silvex)		<0.20	µg/L	0.20	1	50		3/12/2020 21:35	GFM

SOC Carbamates

Analysis Desc: EPA 531.2									
Aldicarb		<0.50	µg/L	0.50	1	3		3/13/2020 14:29	DTM
Aldicarb Sulfone		<0.50	µg/L	0.50	1	2		3/13/2020 14:29	DTM
Aldicarb Sulfoxide		<0.50	µg/L	0.50	1	4		3/13/2020 14:29	DTM
Carbaryl (Sevin)		<0.50	µg/L	0.50	1			3/13/2020 14:29	DTM
Carbofuran		<0.50	µg/L	0.50	1	40		3/13/2020 14:29	DTM
3-Hydroxycarbofuran		<0.50	µg/L	0.50	1			3/13/2020 14:29	DTM
Methiocarb		<0.50	µg/L	0.50	1			3/13/2020 14:29	DTM
Methomyl		<0.50	µg/L	0.50	1			3/13/2020 14:29	DTM
Oxamyl (Vydate)		<0.50	µg/L	0.50	1	200		3/13/2020 14:29	DTM
Propoxur		<0.50	µg/L	0.50	1			3/13/2020 14:29	DTM

Sample Preparation

Analysis Desc: EPA 525.2									
Liquid-Solid Extr. Pests+Inds		Complete			1			3/4/2020 07:45	TSD

SOC Pesticides and Industrials

Analysis Desc: EPA 525.2									
Alachlor		<0.20	µg/L	0.20	1	2		3/5/2020 14:29	DTM
Aldrin		<0.40	µg/L	0.40	1			3/5/2020 14:29	DTM
Atrazine		<0.20	µg/L	0.20	1	3		3/5/2020 14:29	DTM

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ANALYTICAL RESULTS

Test Well No. 1

Workorder: 360462 PREIN&NEWHOF 030320

Lab ID: 3604620001

Date Received: 3/3/2020 12:56

Matrix: Drinking Water (Potable)

Sample ID: 2002A54-01A

Date Collected: 2/28/2020 14:00

Sample Desc: Pottersville Test Well

PO:

Parameters	Qualifier	Result	Units	Reporting Limit	Dilution Factor	Result Qualifier		Analyzed	By
						Min	Max		
Benzo(a)pyrene		<0.050	µg/L	0.050	1		200	3/5/2020 14:29	DTM
Butachlor		<2.0	µg/L	2.0	1			3/5/2020 14:29	DTM
Chlordane, Technical, as sum		<0.20	µg/L	0.20	1		2	3/5/2020 14:29	DTM
alpha-Chlordane		<0.050	µg/L	0.050	1			3/5/2020 14:29	DTM
gamma-Chlordane		<0.050	µg/L	0.050	1			3/5/2020 14:29	DTM
trans-Nonachlor		<0.050	µg/L	0.050	1			3/5/2020 14:29	DTM
Di(2-ethylhexyl)adipate		<0.60	µg/L	0.60	1		400	3/5/2020 14:29	DTM
Di(2-ethylhexyl)phthalate		<0.60	µg/L	0.60	1		6	3/5/2020 14:29	DTM
Dieldrin		<0.50	µg/L	0.50	1			3/5/2020 14:29	DTM
Endrin		<0.10	µg/L	0.10	1		2	3/5/2020 14:29	DTM
Heptachlor		<0.050	µg/L	0.050	1		400	3/5/2020 14:29	DTM
Heptachlor epoxide		<0.10	µg/L	0.10	1		200	3/5/2020 14:29	DTM
Hexachlorobenzene (HCB)		<0.10	µg/L	0.10	1		1	3/5/2020 14:29	DTM
Hexachlorocyclopentadiene		<0.20	µg/L	0.20	1		50	3/5/2020 14:29	DTM
Lindane (gamma-BHC)		<0.050	µg/L	0.050	1		200	3/5/2020 14:29	DTM
Methoxychlor		<0.10	µg/L	0.10	1		40	3/5/2020 14:29	DTM
Metolachlor		<1.0	µg/L	1.0	1			3/5/2020 14:29	DTM
Metribuzin		<1.0	µg/L	1.0	1			3/5/2020 14:29	DTM
Propachlor		<1.0	µg/L	1.0	1			3/5/2020 14:29	DTM
Simazine		<0.20	µg/L	0.20	1		4	3/5/2020 14:29	DTM
Toxaphene		<1.0	µg/L	1.0	1		3	3/5/2020 14:29	DTM
PCB Aroclor 1016		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1221		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1232		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1242		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1248		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1254		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM
PCB Aroclor 1260		<0.10	µg/L	0.10	1		0.5	3/5/2020 14:29	DTM

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Test Well No. 1

Sampling Point: 2002A54-01A

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
---	Gross Alpha	7110 B	15 *	2.2	3.0	6.3 ± 3.0	pCi/L	03/05/20 11:02	03/13/20 16:37	4577705
13982-63-3	Radium-226	7500-Ra B	---	0.36	1.0	1.6 ± 0.9	pCi/L	03/04/20 11:15	03/16/20 12:55	4577706
15262-20-1	Radium-228	7500-Ra D	---	0.50	1.0	1.8 ± 0.6	pCi/L	03/04/20 11:15	03/13/20 14:17	4577706
---	Combined Radium	calc.	5 *	0.50	1.0	3.4 ± 1.0	pCi/L	03/04/20 11:15	03/16/20 12:55	4577706

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Test Well No. 2

WO#: 2005582

Date Reported: 6/19/2020

CLIENT:	Williams & Works	Collection Date:	5/14/2020 3:00:00 PM
Project:	City of Pottersville	Received Date:	5/15/2020 8:30:00 AM
Lab ID:	2005582-01	Matrix:	DRINKING WATER
Client Sample ID:	Test Well #2	Sampled By:	Dan W.

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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METALS, DRINKING WATER

EPA 200.7

Analyst: DV

Iron	0.672	0.0400		mg/L	1	5/19/2020 3:00:00 PM
Sodium	13.8	2.00		mg/L	1	5/19/2020 3:00:00 PM

ARSENIC, DRINKING WATER

EPA 200.8

Analyst: KS

Arsenic	0.0106	0.00100	*	mg/L	1	5/22/2020 10:55:59 AM
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PFAS, DRINKING WATER

EPA 537.1

Analyst: JS

PFBS	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFHxA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
HFPO-DA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFHxS	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFHpA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
ADONA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFOA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFOS	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFNA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
9Cl-PF3ONS	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFDA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
NMeFOSAA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
NEtFOSAA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFUnA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
11Cl-PF3OUdS	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFDoA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFTTrDA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM
PFTA	< 1.8	1.8		ng/L	1	5/21/2020 5:09:31 PM

ANIONS BY ION CHROMATOGRAPHY

EPA 300.0

Analyst: KS

Fluoride	0.259	0.100		mg/L	1	5/15/2020 2:59:00 PM
Chloride	31.7	0.200		mg/L	1	5/15/2020 2:59:00 PM
Nitrite	< 0.100	0.100		mg/L	1	5/15/2020 2:59:00 PM
Nitrate	< 0.100	0.100		mg/L	1	5/15/2020 2:59:00 PM
Sulfate	76.9	0.500		mg/L	1	5/15/2020 9:41:00 PM
Total Nitrate & Nitrite	< 0.100	0.100		mg/L	1	5/15/2020 2:59:00 PM

Qualifiers:	* Value exceeds Maximum Contaminant Level.	< Not Detected at the Reporting Limit
H	Holding times for preparation or analysis exceeded	MCL Maximum Contaminant Level
PL	Permit Limit	RL Reporting Limit

Test Well No. 2

CLIENT:	Williams & Works	Collection Date:	5/14/2020 3:00:00 PM
Project:	City of Potterville	Received Date:	5/15/2020 8:30:00 AM
Lab ID:	2005582-01	Matrix:	DRINKING WATER
Client Sample ID:	Test Well #2	Sampled By:	Dan W.

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HARDNESS, TOTAL				EPA 130.1		Analyst: KF
Hardness (As CaCO3)	402	10.0		mg/L CaCO3	1	5/18/2020 10:12:18 AM

Qualifiers:
 * Value exceeds Maximum Contaminant Level.
 H Holding times for preparation or analysis exceeded
 PL Permit Limit

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

Test Well No. 2

Sampling Point: 2005582-01A/Test Well #2

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
---	Gross Alpha	7110 C	15 *	1.2	3.0	1.7 ± 1.4	pCi/L	06/15/20 08:50	06/17/20 10:04	4629322
13982-63-3	Radium-226	7500-Ra B	---	0.26	1.0	0.94 ± 0.68	pCi/L	05/21/20 13:48	06/15/20 10:37	4629323
15262-20-1	Radium-228	7500-Ra D	---	0.66	1.0	2.4 ± 0.8	pCi/L	05/21/20 13:48	06/03/20 15:42	4629323
---	Combined Radium	calc.	5 *	0.66	1.0	3.34 ± 1.05	pCi/L	05/21/20 13:48	06/15/20 10:37	4629323

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!