Appendix A:

*Data Reports and Maps*
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The Time of Sale or Transfer (TOST) program requires that properties in Barry and Eaton counties with wells or sewage systems be checked when sold or transferred to ensure that the well and sewage system have not failed and do not need important maintenance. Data in this report cover 2008 through June 2017. For more information, visit https://goo.gl/QnoEsP.

Corrective action required:
- 2320 (20%) of wells
- 2566 (27%) of sewage systems

Wells Passing Evaluation and Requiring Corrective Action, Barry and Eaton Counties, 2008-2017*

- 11,823 individual sites evaluated
- 11,440 wells evaluated
- 9,443 sewage systems evaluated

Above: The number of well evaluations has steadily increased from 2008 to 2016. The percentage of wells requiring corrective action peaked in 2012 at 24.3%.

Below: There are a variety of reasons why wells do not pass their evaluations. The most common reason is a substantial construction deficiency.

Reasons for Wells Requiring Corrective Action, Barry and Eaton Counties, 2008-2017*

Sewage Systems Passing Evaluation and Requiring Corrective Action, Barry and Eaton Counties, 2008-2017*

- 11,440 wells evaluated

Above: The number of sewage system evaluations has steadily increased from 2008 to 2016. The percentage of sewage systems requiring corrective action peaked in 2012 at 32.0%.

Below: There are a variety of reasons why sewage systems do not pass their evaluations. The most common reason is a problem with the structure of the septic tank.

Reasons for Sewage Systems Requiring Corrective Action, Barry and Eaton Counties, 2008-2017*

Note: Well and sewage systems may have more than one corrective action.
**TOST at 10 Years: Sewage Systems**

This report covers data from sewage system evaluations through the Time of Sale or Transfer (TOST) program from 2008 through June 2017. For more information, visit [https://goo.gl/QnoEsP](https://goo.gl/QnoEsP).

**Issues Found with Septic Tanks Structure Requiring Corrective Action, Barry and Eaton Counties, 2008-2017**

- **9,443 individual sites evaluated for sewage systems**
- **2,566 (27%) of sewage systems required corrective action**
- **10,861 septic tanks evaluated**
- **3,486 (32%) of septic tanks required pumping**

**Septic Tank Failures**

- **All Tanks**
  - 24.4 years
  - Average age
  - 1,021 gallons
  - Average capacity

- **Failed Tanks**
  - 29.2 years
  - Average age
  - 887 gallons
  - Average capacity

Septic tanks with a problem are, on average, older and have smaller tank capacities than all tanks.

For reference, an average 3 bedroom house is recommended to have a minimum tank capacity of 1000 gallons.

For the systems with a septic tank structure problem, there could be several issues that caused the problem, which are graphed above. Note: Tanks may have more than one issue. *2017 data is through June 30, 2017.

**Examples of Septic Tank Problems**

- **Above**: This outlet pipe has a missing outlet baffle. Without an outlet baffle, solid waste and oils will flow into and block the drainfield.
- **Left**: This septic tank is in poor repair, with many cracks and crumbling areas (orange arrows).

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Septic tanks with a problem are, on average, older and have smaller tank capacities than all tanks.

For reference, an average 3 bedroom house is recommended to have a minimum tank capacity of 1000 gallons.

Left: This septic tank is in poor repair, with many cracks and crumbling areas (orange arrows).

Above: This outlet pipe has a missing outlet baffle. Without an outlet baffle, solid waste and oils will flow into and block the drainfield.

Photo credit: Charles West, RE
What is well diameter?
Wells can be divided into two groups: large diameter (those with casings larger than 2 inches) and small diameter (casings smaller or equal to 2 inches).

What is a well casing?
Casing provides support for the well wall so that rocks, sand, or gravel do not collapse into the well. Casings have another pipe inside of them to bring water up from below the water table and into the house.

What does a well casing do to keep water safe?
The casing along with an outer grout seal provides a barrier to keep pollution such as bacteria or fertilizers from traveling down the well and into stored ground water.

Large diameter wells tend to be professionally installed
It is important that wells be professionally drilled to ensure proper installation and protection from contamination.

What happens when a well casing is 2" or less?
See a detailed explanation on the next page —>

Since 2008, nearly 12,000 wells have been examined through the TOST program. Most wells (81%) are 4 inches or 5 inches in diameter. Only 1,655 (14%) of wells had a small diameter casing.

Note: 6-inch, 8-inch, dug wells, and wells with an undetermined diameter were not included (262 wells total).

*C2017 data is through June 30, 2017  September 26, 2017*
So, how many small diameter wells have we identified?
Relatively few wells examined through the TOST program have been small diameter wells: 1,655 out of nearly 12,000 wells.

Can a small diameter well be approved?
In 2010, BEDHD changed the policy that previously required that all small 1.25” diameter wells be failed. The current rule is that a small diameter well under direct suction may be passed if it is deep enough (deeper than 25 feet) and there are no other problems with the well.

How many small diameter wells under direct suction needed a depth measurement?
Since 2010, we have measured the depth of 55 wells that were 1.25” and 91 wells that were 2”, for a total of 146 wells. The results of these evaluations are displayed below.

For those small diameter wells undergoing additional evaluation to measure depth, more wells with 1.25” casings failed evaluation than those with 2” casings.
Sewage Observed at the Ground Surface
Between November 2007 and August 2017
Barry and Eaton Counties, Michigan

*Sewage Observed at the Ground Surface - Condition where sewage is present on the ground surface.
Illicit Discharges Identified Between November 2007 and August 2017
Barry and Eaton Counties, Michigan

*Illicit Discharge - Illegal discharge of sewage that does not reach an absorption system and/or is connected to a field tile, county drain, river, lake, or other water body.
No Sewage System Identified
Between November 2007 and August 2017
Barry and Eaton Counties, Michigan

*No Sewage System Identified - No soil absorption system found.*
Unrecognizable Systems Identified
Between November 2007 and August 2017
Barry and Eaton Counties, Michigan

August 2017

*Unrecognizable Systems Identified - Refers to a "system" that is not recognized under any standard, rule, or law to provide proper treatment and disposal, i.e., 55 gallon drums, old fuel oil tanks, seepage pits, rock piles, debris/rock/cobble filled pits, single tiles without any stone, car body, dug well, etc.
Septic Tank Failures Identified
Between November 2007 and August 2017
Barry and Eaton Counties, Michigan

*Septic Tank Failures Identified - Septic tanks with missing or damaged outlet baffles, leaking tanks (not watertight), and damaged tanks that represent a safety hazard.
E. coli Impairment Status -
Total Body Contact Designated Use -
2016 Integrated Report

For more information, please visit
www.michigan.gov/ecolitmdl
Substantial Well Construction Deficiencies Identified Between November 2007 and August 2017 Barry and Eaton Counties, Michigan

*Substantial Well Construction Deficiencies Identified - Wells subject to contamination due to construction deficiency(s) such as damaged wells, open wells, wells less than 25' deep, dug wells, crog wells, etc.
Nitrate Well Failures Identified Between November 2007 and August 2017
Barry and Eaton Counties, Michigan

*Nitrate Well Failures Identified - Wells where the sample results for nitrate are above the drinking water standard of 10 mg/L present a risk to human health especially pregnant women and young children.
Abandoned Unplugged Wells Identified Between November 2007 and August 2017
Barry and Eaton Counties, Michigan

*Abandoned Unplugged Wells Identified - Old, unused wells found that create contamination risk of our groundwater.*
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