| | | | | |
|---|---|---|---|---|
| | | **Amended Administrative Record Index of Final Permit** | | |
| | | **Muskegon Development Company, MI-035-2R-0034, Holcomb 1-22** | | |
| | | ***(*these documents are located within the permit folder)*** | | |
| **Doc.#** | **Name** | **Subject** | **Date** | |
| 1A | U.S. EPA-Region 5 | **Review of Geographic Factors and EJ Screen Data for Holcomb 1-22 well site** | 8/9/2016 | |
| 1 | Muskegon Development Company | ***Permit Application, received August 11, 2016** | 8/9/2016 | |
| 2 | U.S. EPA-Region 5 | **UIC Permit Application Completeness Review Checklist** | 8/19/2016 | |
| 3 | U.S. EPA-Region 5 | ***Completeness letter sent to permittee** | 10/13/2016 | |
| 4 | U.S. EPA-Region 5 | ***Request for Third Party Estimate of Plugging & Abandonment Costs** | 10/13/2016 | |
| 5 | Muskegon Development Company | *Permit additional information (reply with 3rd party P&A cost estimate), dated 10/19/16 | 10/26/2016 | |
| 6 | U.S. EPA-Region 5 | ***Fact Sheet/Statement Of Basis for issuance of UIC permit** | 10/28/2016 | |
| 7 | U.S. EPA-Region 5 | **Draft permit MI-035-2R-0034** | 10/28/2016 | |
| | | | | |
| | | **Documents cited for Statement of Basis:** | | |
| 8 | Muskegon Development Company | *List of residents within 1/4 mile radius Area Of Review | 8/9/2016 | |
| 9 | Muskegon Development Company | *Base of Underground Source Of Drinking Water | 8/9/2016 | |
| 10 | Muskegon Development Company | *Depth of injection zone (Dundee Formation and confining zone (Bell Shale) - Att. G | 8/9/2016 | |
| 11 | U.S. EPA-Region 5 | *Construction requirements & internal technical review | 9/16/2016 | |
| 12 | Muskegon Development Company | *Injection fluid and daily volume | 8/9/2016 | |
| 13 | U.S. EPA-Region 5 | *Maximum injection pressure (calculated by EPA) | 9/16/2016 | |
| 14 | U.S. EPA-Region 5 | *Monitoring and reporting requirements (Permit Attachment A) | 9/30/2016 | |
| 15 | Muskegon Development Company | *Plugging & Abandonment Plan (Permit Attachment B) | 8/9/2016 | |
| 16 | Muskegon Development Company | *Financial assurance of ability to plug and abandon well | 8/9/2016 | |
| | | | | |
| | | **Supporting documents for the draft permit:** | | |
| 17 | U.S. EPA-Region 5 | *Internal Technical Review Sheet | 8/26/2016 | |
| 18 | U.S. EPA-Region 5 | *Internal well construction analysis and diagram | 9/16/2016 | |
| 19 | Muskegon Development Company | Endangered Species Act compliance report (included with permit application) | 6/13/2016 | |
| 20 | U.S. EPA-Region 5 | *Internal review of Endangered Species Act compliance (memo to file) | 9/22/2016 | |
| 21 | Western Michigan University | Michigan Hydrologic Atlas, Part I (Hydrology for UIC in Michigan) | 1981 | |
| 22 | U.S. EPA-Region 5 | *National Historical Preservation Act impact of well project (memo to file) | 7/26/2016 | |
| 23 | U.S. EPA-Region 5 | *Seismic risk impact regarding well project (memo to file) | 9/28/2016 | |
| 24 | Michigan Dept. of Env. Quality | GeoWebFace maps and well reports of wells within the Area of Review | 9/28/2016 | |
| 25 | U.S. EPA-Region 5 | Draft Permit transmittal letter to Muskegon Development Company | 2/10/2017 | |
| 26 | U.S. EPA-Region 5 | Updated Fact Sheet, February 2017 | 2/10/2017 | |
| 27 | U.S. EPA-Region 5 | Transmittal letter: Public Notice and Comment Period, to ACHP | 2/10/2017 | |
| 28 | U.S. EPA-Region 5 | Transmittal letter: Public Notice and Comment Period, to MDNR, Forest Resources Div. | 2/10/2017 | |
| 29 | U.S. EPA-Region 5 | Transmittal letter: Public Notice and Comment Period, to MDNR, Fisheries Division | 2/10/2017 | |
| 30 | U.S. EPA-Region 5 | Transmittal letter: Public Notice and Comment Period, to MDNR, Wildlife Division | 2/10/2017 | |
| 31 | U.S. EPA-Region 5 | Transmittal letter: Public Notice and Comment Period, to Michigan SHPO | 2/10/2017 | |

| | | | | |
|---|---|---|---|---|
| 32 | U.S. EPA-Region 5 | Transmittal letter: Public Notice and Comment Period, to U.S. Fish & Wildlife Service | 2/10/2017 | |
| 33 | U.S. EPA-Region 5 | Transmittal letter: Public Notice and Comment Period, to Harrison District Library | 2/10/2017 | |
| 34 | Lilly Simmons | Transmittal letter: Public Notice and Comment Period, to Michigan DEQ (e-mail) | 2/10/2017 | |
| 35 | Lilly Simmons & Bill Tong | Certificate of Service and Mailing List for Public Notice and Fact Sheet | 2/10/2017 | |
| 36 | U.S. EPA-Region 5 | Hearing & Public Comment Advertisement sent to Clare County Review | 6/20/2017 | |
| 37 | U.S. EPA-Region 5 | Updated Fact Sheet, June 2017 | 6/20/2017 | |
| 38 | U.S. EPA-Region 5 | Second comment period notification letter, sent to Office of Fed. Agency Prog., ACHP | 6/21/2017 | |
| 39 | U.S. EPA-Region 5 | Second comment period notification letter, sent to U.S. Fish & Wildlife Service | 6/21/2017 | |
| 40 | U.S. EPA-Region 5 | Second comment period notification letter, sent to Michigan SHPO | 6/21/2017 | |
| 41 | U.S. EPA-Region 5 | Second comment period notification letter, sent to Michigan DNR, Forestry Resources | 6/21/2017 | |
| 42 | U.S. EPA-Region 5 | Second comment period notification letter, sent to Michigan DNR, Wildlife Division | 6/21/2017 | |
| 43 | U.S. EPA-Region 5 | Second comment period notification letter, sent to Michigan DNR, Fisheries Division | 6/21/2017 | |
| 44 | U.S. EPA-Region 5 | Second comment period notification letter, sent to Harrison District Library | 6/21/2017 | |
| 45 | U.S. EPA-Region 5 | Certificate of Service and Mailing List for second comment period notification | 6/21/2017 | |
| 46 | U.S. EPA-Region 5 | EPA advertisement of Public Hearing, Clare Country Review, June 23, 2017, Page 3B | 6/21/2017 | |
| 47 | U.S. EPA-Region 5 | Attendance sheet for July 25, 2017 EPA public hearing at Clare High School | 7/25/2017 | |
| 48 | Clare County Review | Article by Pat Maurer, "Injection well raises concerns" about July 25 public hearing | 7/27/2017 | |
| 49 | U.S. EPA-Region 5 | EPA Notification letter of extension of comment period to August 18, 2017 | 7/27/2017 | |
| 50 | Bill Tong & Lilly Simmons | Certificate of Service and Mailing List for extension of public comment to 8/18/17 | 7/28/2017 | |
| 51 | U.S. EPA-Region 5 | Notification of extension of comment period to August 18, 2017, to ACHP | 7/28/2017 | |
| 52 | U.S. EPA-Region 5 | Notification of extension of comment period to August 18, 2017, to USFWS | 7/28/2017 | |
| 53 | U.S. EPA-Region 5 | Notification of extension of comment period to August 18, 2017, to MDNR Forestry | 7/28/2017 | |
| 54 | U.S. EPA-Region 5 | Notification of extension of comment period to August 18, 2017, MDNR Wildlife | 7/28/2017 | |
| 55 | U.S. EPA-Region 5 | Notification of extension of comment period to August 18, 2017, MDNR Fisheries | 7/28/2017 | |
| 56 | U.S. EPA-Region 5 | Notification of extension of comment period to August 18, 2017, Michigan SHPO | 7/28/2017 | |
| 57 | U.S. EPA-Region 5 | Notification of extension of comment period to August 18, 2017, Harrison Dist. Library | 7/28/2017 | |
| 58 | Jane Rose Reporting | Official Transcript of July 25, 2017 Public Hearing on Draft Permit for Holcomb 1-22 Well | 8/8/2017 | |
| 59 | U.S. EPA-Region 5 | Chronological compilation of All Verbatim (Raw) Comments & Draft Responses (60 pg.) | 3/12/2018 | |
| 60 | U.S. EPA-Region 5 | Final Response to Comments on Draft Permit for Holcomb 1-22 Well (18 pg.) | 6/20/2018 | |
| | | | | |
| | | **Email Comments on Draft Permit** | | |
| | **From** | **Subject** | **Date Received** | **Size** |
| 61 | Kirby North Ancona | FW: UIC Class II Public Notice: MI-035-2R-0034 | 2/12/2017 0:00 | 236 KB |
| 62 | Tong, William | FW: UIC public notice per 124.10e MI-035-2R-0034 | 2/14/2017 0:00 | 9 KB |
| 63 | Jeffery Loman | Comments on Proposed Class II Permit MI-035-2R-0034 (Holcomb 1-22, Permit # MI-035 | 2/27/2017 0:00 | 40 KB |
| 64 | Wes Raymond | comments re: permit MI-035-2R-0034 | 3/15/2017 0:00 | 39 KB |
| 65 | Kirby North Ancona | Holcomb1-22 well permit issues | 7/17/2017 0:00 | 192 KB |
| 66 | Sheryl Judd | Public Comment: Proposed injection well in Clare County | 7/26/2017 0:00 | 69 KB |
| 67 | Deb Sherrod | Public Comment: Proposed Injection Well in Clare County | 7/27/2017 | 70 KB |
| 68 | Stephanie Terpening | Clare county, MI injection well comment | 7/27/2017 | 71 KB |

| | | | | |
|---|---|---|---|---|
| 69 | Wayne Terpening | Holcomb #1-22 Injection Well Permit Application MI-035-2R-0034 | 7/27/2017 0:00 | 68 KB |
| 70 | Rep. Jason Wentworth (District 97) | RE: Clare county, MI injection well comment MI-035-2R-0034 | 7/27/2017 0:00 | 84 KB |
| 71 | Leigh Clarke | Letter for Public Comment Regarding Proposed Underground Injection Permit, Holcomb | 7/27/2017 0:00 | 252 KB |
| 72 | Sue Rees | Please do NOT vote for the injection well in Dodge City in Clare County | 7/31/2017 0:00 | 60 KB |
| 73 | Sue Rees | Injection in Dodge city | 7/31/2017 0:00 | 63 KB |
| 74 | Rebecca Terpening | Public Notice: Public Hearing for Draft Class II Permit MI-035-2R-0034 | 8/1/2017 0:00 | 63 KB |
| 75 | Tong, William | Transcriptions of post-hearing handwritten comments (includes PDF scans of original doc | 8/7/2017 0:00 | 1 MB |
| 76 | Snooks | public comment regarding Holcomb 1-22 injection well | 8/8/2017 0:00 | 49 KB |
| 77 | R5-R1605@epa.gov | PDF scan of post card comment from Matthew Stephenson | 8/10/2017 0:00 | 300 KB |
| 78 | Linda Secco | Townline and Athey Hamilton Township, mi | 8/10/2017 | 48 KB |
| 79 | R5-R1605@epa.gov | PDF scan of post card comment from Michael and Diane Prior | 8/11/2017 | 1 MB |
| 80 | terrynmic@charter.net | Holcomb 1-22 well | 8/14/2017 | 45 KB |
| 81 | Bryan Cummings | Objection Holcomb #1-22 well | 8/15/2017 | 69 KB |
| 82 | Andrew Verhage | Holcomb 1-22 well MI-035-2R-0034 | 8/15/2017 | 56 KB |
| 83 | Rick Fanslau | Holcomb 1-22 well,#MI-035-2R-0034 | 8/17/2017 | 46 KB |
| 84 | gxcube@verizon.net | Fwd: Holcomb 1-22 well, #MI-035-2R-0034 | 8/17/2017 | 52 KB |
| 85 | Emerson Addison | Holcomb 1-22 well, #MI-035-2R-0034 | 8/18/2017 | 125 KB |
| 86 | Letha Raymond | Public Comment - Permit Number: MI-035-2R-0034. Holcomb 1-22 well, Hamilton Twp, C | 8/18/2017 | 184 KB |
| 87 | Martin Johnson | Re: Holcomb 1-22 well, #MI-035-2R-0034 | 8/18/2017 | 49 KB |
| 88 | Stephanie Terpening | Holcomb 1-22 well, #MI-035-2R-0034 | 8/18/2017 | 58 KB |
| 89 | LuAnne Kozma | RE: Holcomb 1-22 weel, #MI035-2R-0034 | 8/18/2017 | 209 KB |
| 90 | Paul J. Mooradian | Holcomb Well | 8/19/2017 | 52 KB |
| | | | | |
| | | **Additional Supporting Documents Cited in Appeal Response** | | |
| **Doc.#** | **Author** | **Subject** | **Date** | |
| 91 | U.S. EPA-Region 5 | Final Permit MI-035-2R-0034 (appealed to EAB on August 10, 2018) | 7/3/2018 | |
| 92 | Executive Order 12898, 59FR 7629 | Federal Action to Address Environmental Justice in Minority & Low-Income Populations | 2/16/1994 | |
| 93 | Anthony Ingraffea | Fluid Migration Mechanisms Due to Faulty Well Design and/or Construction | 1/1/2016 | |
| 94 | Abraham Lustgarten, ProPublica | Injection Wells: The Poison Beneath Us | 6/21/2012 | |
| 95 | U.S. EPA | What is EJSCREEN? (https://www.epa.gov/ejscreen/what-ejscreen) | | |
| 96 | U.S. EPA-Region 5 | Response to Comments on Draft Class II Permit in Clare County, Michigan, | | |
| | | Issued to Muskegon Development Co.(Permit No. MI-035-2R-0034), Holcomb 1-22 Well | 7/3/2018 | |
| 97 | U.S. EPA-Region 5 | Revised Response to Comments on Draft Class II Permit in Clare County, Michigan, | 9/26/2019 | |
| | | Issued to Muskegon Development Co.(Permit No. MI-035-2R-0034), Holcomb 1-22 Well | | |
| 98 | U.S. EPA-Region 5 | Final Permit MI-035-2R-0034 (re-issued) | 9/26/2019 | |
| | | | | |
| | | | | |
| | | William K. Tong | Sept. 26, 2019 | |
| | | Permit Writer | Date Signed | |

21

Administrative Record Document #21

EPA Permit No. MI-035-2D-0034

Muskegon Development Company, Holcomb 1-22 well

Michigan Hydrologic Atlas, Part I (Hydrology for Underground Injection Control in Michigan), Department of Geology, Western Michigan University, Kalamazoo, Michigan, 1981,

Excerpt: Pages II-66 through II-68

Characteristics as an Aquifer. The Amherstburg is not an aquifer.

Characteristics as a Confining Layer. Except where dolomitized, the Amherstburg is an aquiclude and could be used as a confining layer, in the central portion of the Michigan Basin.

Porosity. The effective porosity of the Amherstburg is low where it is dolomite and very low where it is limestone.

Permeability. The Amherstburg has very low permeability where it is dolomite and is virtually impermeable in those areas where it is a limestone.

Oil and Gas Potential. Very low.

Filer Sandstone Member

The Filer Sandstone is best developed along the western margin of the Southern Peninsula in the area of Manistee. The Filer is a fine to medium grained, quartz sandstone that appears to have been deposited as coastal dunes. Local lenticular sandstone bodies in the central part of the basin appear to be roughly correlative with this unit, and one such unit has been named the Freer Sandstone after a well that penetrated it.

Characteristics as an Aquifer. The Filer Sandstone has excellent aquifer characteristics, but it contains brine.

Characteristics as a Confining Layer. The Filer is far too porous and permeable to be used as a confining layer.

Characteristics as an Injection Formation. The Filer has excellent injection formation characteristics and is used as an injection formation in Michigan.

Porosity. The formation has up to 25 percent effective porosity.

Permeability. Very high.

Oil, Gas and Brine Potential. The Filer has been explored for oil and gas, but to date no sustained production has been developed. The Freer Sandstone had a "one-well" field developed in it. The Filer is a source of brine in the Manistee area.

Detroit River

Although the Bois Blanc Formation, Sylvania Sandstone, Amherstburg (Black Limestone), Lucas and Anderdon Formations have been included in the Detroit River Group, general practice is to call that portion of the column between the Amherstburg (Black Limestone) and the Dundee Limestone the "Detroit River," although it has been named the Lucas Formation. This suite of rocks is quite complex and contains a wide variety of lithologies including sandstone, limestone, dolomite, anhydrite (or gypsum) and halite (figs. to ). The Basal unit of the "Detroit River" is the "Richfield zone" or more properly the Richfield Member.

## Richfield Zone

The Richfield zone is a sequence of interbedded limestone, dolomite, and anhydrite with minor amounts of sand in the central portion of the basin and a relatively thick sand body, the Filer Sandstone, along the western margin of the Lower Peninsula (fig. 2.32). The limestone beds are dense micrites and contrast with the dolomites which are lighter in color and more permeable. The anhydrite beds have mosaic textures and generally overlie the dolomitized units.

Characteristics as an Aquifer. The Richfield zone is not an aquifer.

Characteristics as a Confining Layer. The anhydrites of the Richfield zone are excellent confining layers. The fact that several of the dolomite zones produce oil attests to the impervious nature of the interbedded anhydrites.

Characteristics as an Injection Formation. The Richfield contains too little permeable rock to be an injection formation.

Porosity. The dolomite zones in the Richfield are slightly porous, but the limestones and anhydrite beds essentially lack porosity.

Permeability. The limestone and anhydrite beds are virtually impermeable. The dolomite units have permeabilities that range from 4.0 to 6.5 milli-darcys.

Oil and Gas Potential. The Richfield has produced oil and gas from several fields in Michigan since the early 1940's.

## Massive Anhydrite

The driller's term "Massive Anhydrite" has been traditionally applied to a thick (75-100 feet) anhydrite bed that overlies the Richfield Zone (fig. 2.33). The unit is widespread in the central portions of the basin and thins toward the basin margins. It is best developed in the north-central part of the Southern Peninsula.

Characteristics as an Aquifer. The Massive Anhydrite is not an aquifer.

Characteristics as a Confining Layer. The Massive Anhydrite is essentially impermeable and an excellent confining unit.

Characteristics as an Injection Formation. None.

Porosity. Extremely low.

Permeability. Extremely low to essentially impermeable.

Oil and Gas Potential. None.

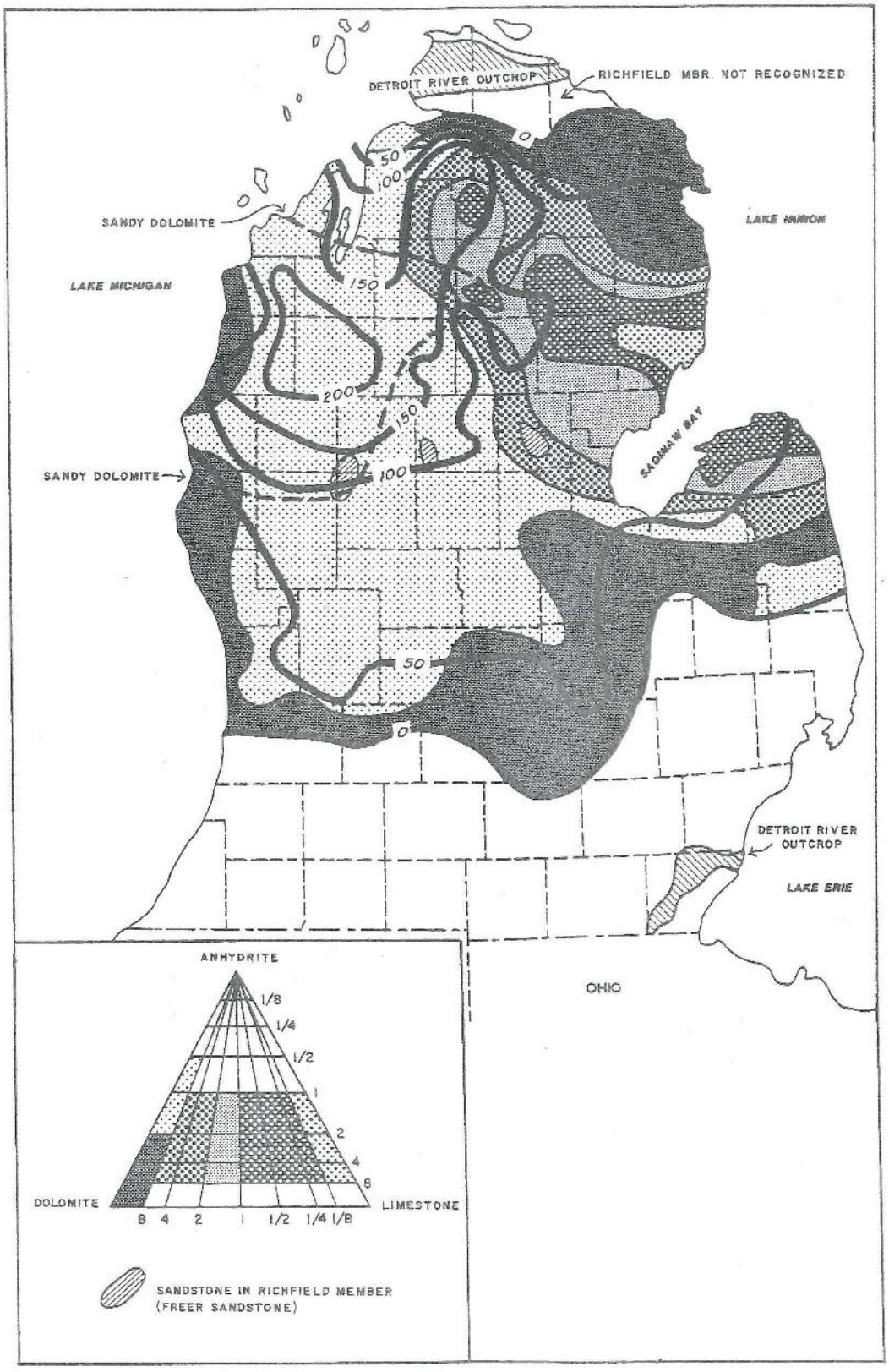



Figure 2.32. Thickness-lithofacies map of Richfield Member of Lucas Formation. (From Gardner, 1974.)

(22)

**MEMORANDUM**

**To:** Muskegon Development Holcomb 1-22 well, Permit File #MI-091-2R-0034

**From:** Bill Tong, Geologist/Permit Writer Bill Tong

**RE:** Evaluation of effects of EPA's undertaking on historic properties under the National Historic Preservation Act (NHPA)

**Date:** September 28, 2016

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), EPA is required to take into account the effect of its undertakings on historic properties. 36 CFR Part 800 sets out the procedures that define how EPA meets its statutory responsibility under Section 106 of the NHPA.

Under 36 CFR Section 800.3(a), the first step of the Section 106 process is to first determine whether the Federal action is an "undertaking" as defined in Section 800.16(y), and, if so, whether it is the type of activity that has the potential to cause effects on historic properties. A Federal undertaking is a project, activity, or program either funded, permitted, licensed, or approved by a Federal agency. On August 11, 2016, Muskegon Development Company submitted an application for an Underground Injection Control permit for the Holcomb 1-22 well. EPA is proposing to issue a Class II permit for this well; if issued, Muskegon Development is permitted to inject fresh water into the well for secondary oil recovery. EPA's approval of the permit constitutes a Federal undertaking as defined in 36 CFR Section 800.16(y).

The next step of the 106 process is to determine if the undertaking is a type of activity that has the potential to cause effects on historic properties, assuming such historic properties were present. If the activity does not have potential to cause effects on historic properties, the agency official has no further obligations under Section 106 or 36 CFR Part 800.

In a letter dated July 25, 2016, the Michigan State Historic Preservation Office (SHPO) stated in a letter addressed to EPA that there are no properties listed in the National Register of Historic Places that are located in within the area of potential effects of this undertaking (Hamilton Township, Clare County, Michigan). A search of the National Register of Historic Places shows two historic properties (Clare Congregational Church and Hitchcock House) listed in Clare County, located in the towns of Clare, and Farwell, respectively, but these properties are located over 20 miles away from and far outside of the area of potential effects of the proposed well site.

Based on the reasons set forth above, EPA's proposed approval of Muskegon Development's UIC permit does not have the potential to cause effects on historic properties.

STATE OF MICHIGAN

RICK SNYDER
GOVERNOR

MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
STATE HISTORIC PRESERVATION OFFICE

KEVIN ELSENHEIMER
EXECUTIVE DIRECTOR

July 25, 2016

LISA PERENCHIO
EPA REGION 5
77 WEST JACKSON BLVD WU 16J
CHICAGO IL 60604

RE: ER04-92 Muskegon Development Company Well Projects - Holcomb 1-22, Sec. 22, T19N, R3W, Hamilton Township, Clare County (EPA)

Dear Ms. Perenchio:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that **no historic properties are affected** within the area of potential effects of this undertaking.

This letter evidences the EPA's compliance with 36 CFR § 800.4 "Identification of historic properties," and the fulfillment of the EPA's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.4(d)(1) "No historic properties affected." **If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.**

We remind you that federal agency officials or their delegated authorities are required to involve the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties per 36 CFR § 800.2(d). The National Historic Preservation Act also requires that federal agencies consult with any Indian tribe and/or Tribal Historic Preservation Officer (THPO) that attach religious and cultural significance to historic properties that may be affected by the agency's undertakings per 36 CFR § 800.2(c)(2)(ii).

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking.

If you have any questions, please contact Brian Grennell, Cultural Resource Management Specialist, at 517-335-2721 or by email at GrennellB@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Brian G. Grennell
Cultural Resource Management Specialist

for Brian D. Conway
State Historic Preservation Officer

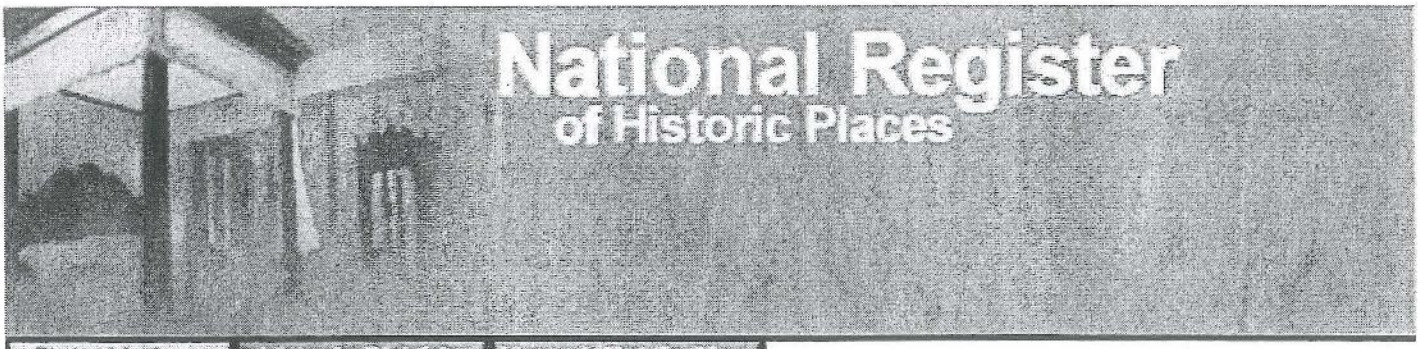
SAT:BGG

Copy: Bennett Myler, Muskegon Development Company

Review of Geographic Factors related to UIC Permit Issuance
August 18, 2016

| | |
|---|---|
| Applicant | Muskegon Development Company |
| Well Name | Holcomb #1-22 |
| Permit Writer | Bill Tong |
| Permit No. | MI-035-2R-0034; MDEQ #59345 |
| Latitude/Longitude | 44.0308, -84.6595 based on GeoWebFace data, Clare County |
| Bedrock | The well site is near the border between the Jurassic Red Beds and the Saginaw Formation. These may be USDWs. |
| Coastal Zone Management Area | The site is not within the Michigan Coastal Zone Management Area. |
| EJ | EJSCREEN: there is one parameter > 20%: Low Income Population is 56%. |
| Field Rules? | Not applicable |
| Public notice map | g:/UIC/Technical/Permits/Maps/035r0034.gif |
| Traverse USDW? | This site is not in the area in Michigan in which the Traverse Limestone can be an Underground Source of Drinking Water. |
| Tribal land? | There are no federally-recognized tribal lands in Clare County. The site is 15 miles from the Saginaw Chippewa Indian Tribe land in Isabella Co. |
| Wild & Scenic River? | There are no federally-recognized Wild & Scenic Rivers in Clare County. |
| WHPA? | The site is 5.1 miles from the Skeels Christian School Type 2 Provisional WHPA. |
| Nearest Public Water Supply | 7.6 miles from the 8.1 miles from the City of Harrison, PWSID MI0003030; Gladwin Nursing and Rehabilitation Community …; PWSID MI0062653 |
| Nearest Private Water Supply | None shown nearby |
| Other notes | |

Bedrock from the MDNR Michigan Bedrock Geology shapefile, dated 8/12/16.




## MICHIGAN - Clare County

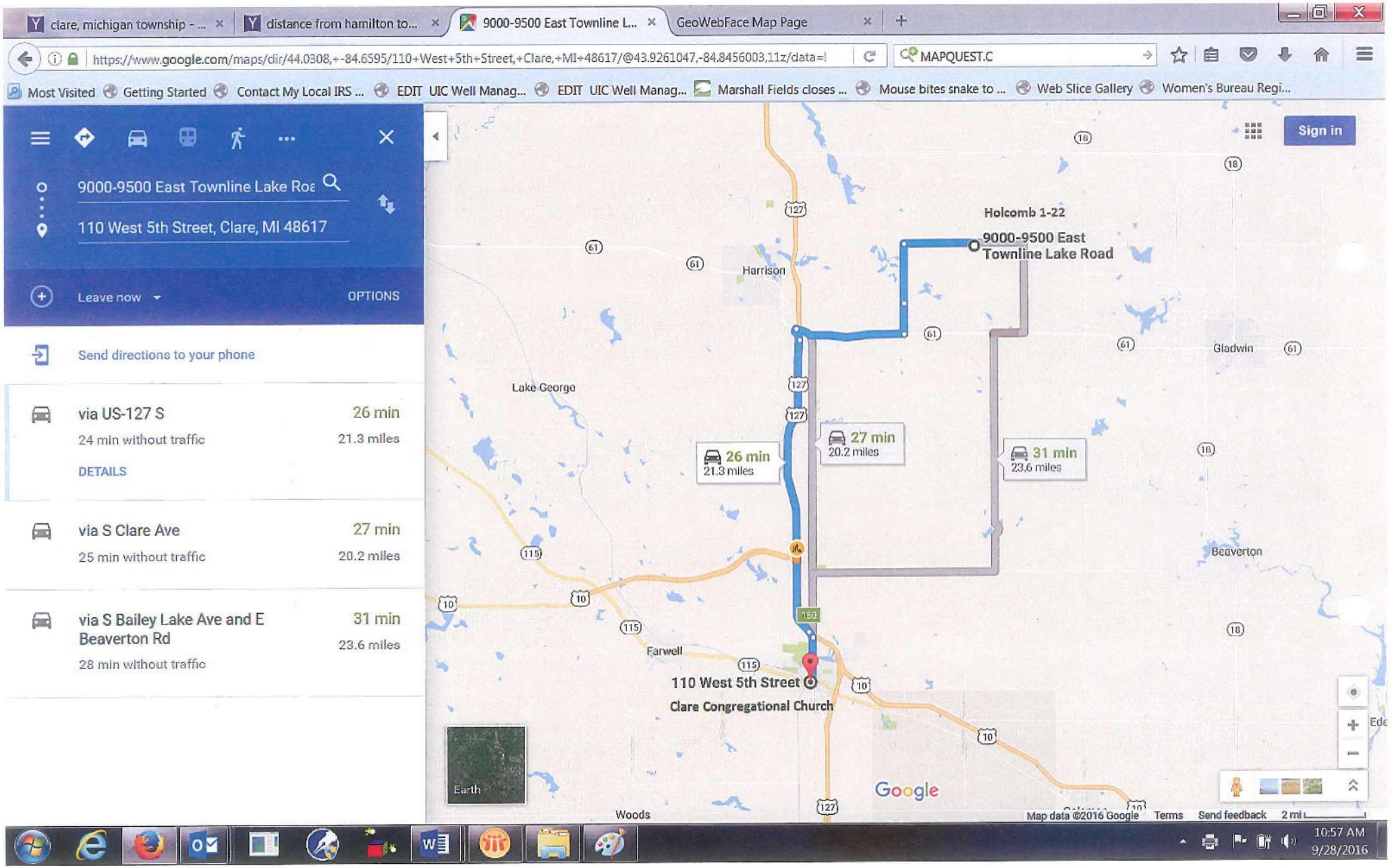
**Clare Congregational Church** (added 1994 - - #94001424)
Also known as **Clare Congregational United Church of Christ**
110 W. Fifth St. , Clare

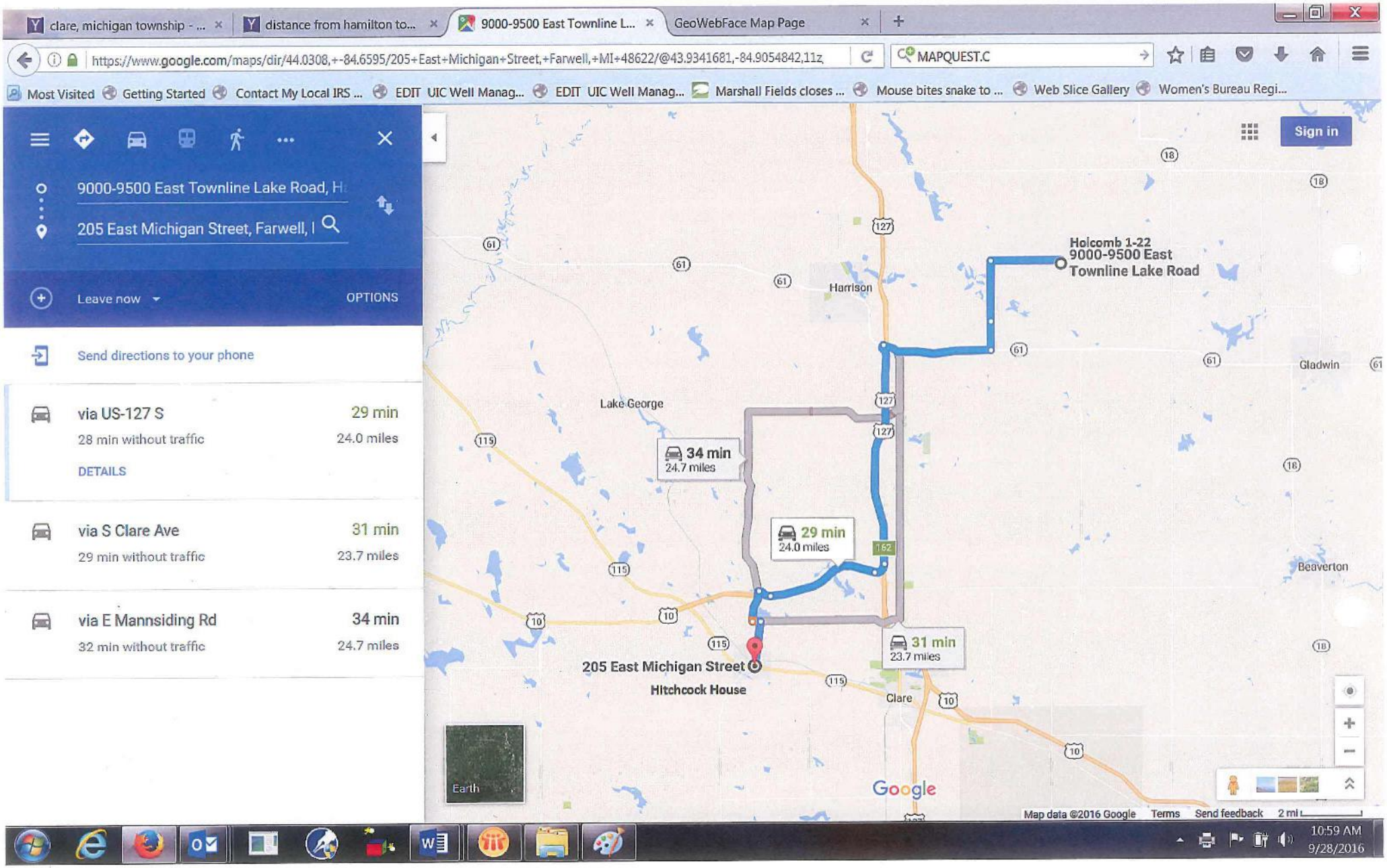
| | |
|---|---|
| Historic Significance: | Architecture/Engineering |
| Architect, builder, or engineer: | Cooper, William T. |
| Architectural Style: | Other |
| Area of Significance: | Architecture |
| Period of Significance: | 1900-1924 |
| Owner: | **Private** |
| Historic Function: | Religion |
| Historic Sub-function: | Religious Structure |
| Current Function: | Religion |
| Current Sub-function: | Religious Structure |




**Hitchcock, George and Martha, House** (added 1982 - - #82002832)
Also known as **The Fuller-McGuire House**
205 E. Michigan St. , Farwell

| | |
|---|---|
| Historic Significance: | Person, Event, Architecture/Engineering |
| Architect, builder, or engineer: | Mason & Rice |
| Architectural Style: | Queen Anne |
| Historic Person: | Hitchcock,Martha,et al. |
| Significant Year: | 1885 |
| Area of Significance: | Politics/Government, Exploration/Settlement, Architecture, Commerce, Social History |
| Period of Significance: | 1875-1899 |
| Owner: | **Private** |
| Historic Function: | Domestic |
| Historic Sub-function: | Single Dwelling |
| Current Function: | Vacant/Not In Use, Work In Progress |


clare, michigan township - ...
distance from hamilton to...
9000-9500 East Townline L...
GeoWebFace Map Page
https://www.google.com/maps/dir/44.0308,+-84.6595/110+West+5th+Street,+Clare,+MI+48617/@43.9261047,-84.8456003,11z/data=!
MAPQUEST.C
Most Visited
Getting Started
Contact My Local IRS ...
EDIT UIC Well Manag...
EDIT UIC Well Manag...
Marshall Fields closes ...
Mouse bites snake to ...
Web Slice Gallery
Women's Bureau Regi...
9000-9500 East Townline Lake Roa
110 West 5th Street, Clare, MI 48617
Leave now
OPTIONS
Send directions to your phone
via US-127 S
26 min
24 min without traffic
21.3 miles
DETAILS
via S Clare Ave
27 min
25 min without traffic
20.2 miles
via S Bailey Lake Ave and E Beaverton Rd
31 min
28 min without traffic
23.6 miles
Sign in
Holcomb 1-22
9000-9500 East Townline Lake Road
Harrison
Gladwin
Lake George
Beaverton
Farwell
Woods
110 West 5th Street
Clare Congregational Church
26 min
21.3 miles
27 min
20.2 miles
31 min
23.6 miles
Earth
Google
Map data ©2016 Google
Terms
Send feedback
2 mi
10:57 AM
9/28/2016


clare, michigan township - ...
distance from hamilton to...
9000-9500 East Townline L...
GeoWebFace Map Page
https://www.google.com/maps/dir/44.0308,+-84.6595/205+East+Michigan+Street,+Farwell,+MI+48622/@43.9341681,-84.9054842,11z
MAPQUEST.C
Most Visited
Getting Started
Contact My Local IRS ...
EDIT UIC Well Manag...
EDIT UIC Well Manag...
Marshall Fields closes ...
Mouse bites snake to ...
Web Slice Gallery
Women's Bureau Regi...
9000-9500 East Townline Lake Road, H
205 East Michigan Street, Farwell, I
Leave now
OPTIONS
Send directions to your phone
via US-127 S
29 min
28 min without traffic
24.0 miles
DETAILS
via S Clare Ave
31 min
29 min without traffic
23.7 miles
via E Mannsiding Rd
34 min
32 min without traffic
24.7 miles
Sign in
Holcomb 1-22
9000-9500 East
Townline Lake Road
Harrison
Gladwin
Lake George
34 min
24.7 miles
29 min
24.0 miles
31 min
23.7 miles
Beaverton
205 East Michigan Street
Hitchcock House
Clare
Earth
Google
Map data ©2016 Google
Terms
Send feedback
2 mi
10:59 AM
9/28/2016

23

## SEISMIC RISK EVALUATION

To: Well File, Permit No. MI-035-2D-0034 (Muskegon Development Holcomb 1-22)

From: William K. Tong, Permit Writer William K. Tong

RE: Seismic Risk Determination

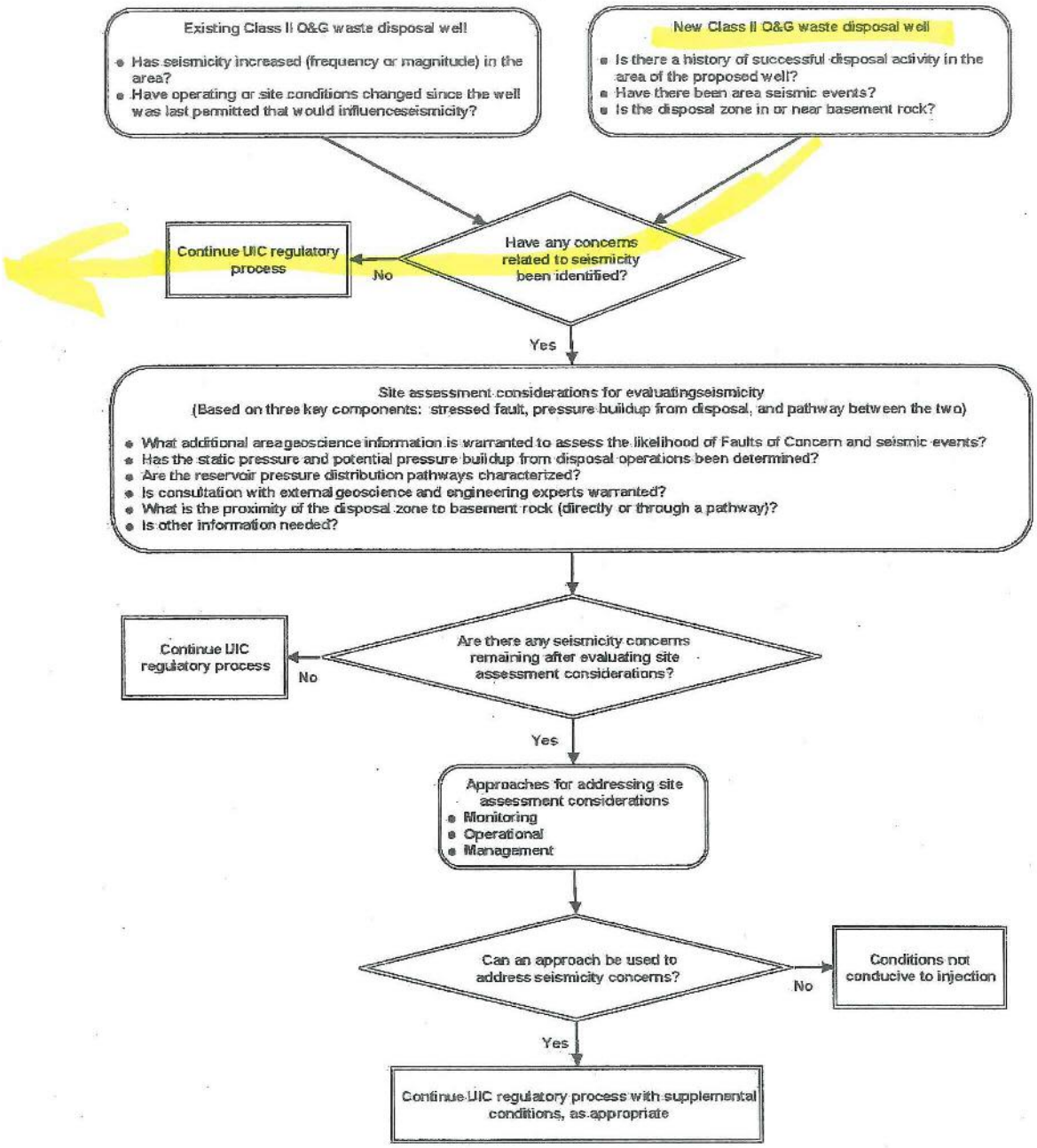
Date: September 28, 2016

According to historical data compiled by the U.S. Geological Survey (USGS), the Clare County area is considered a low risk area regarding earthquakes, with no instances of property damage or fatalities due to earthquakes. Of the five historic earthquakes cited by the USGS in their web site report on Michigan earthquake history, none were located near Clare County.

A recent earthquake in Michigan registered a Richter magnitude of 4.2 on May 2, 2015, but the epicenter was located 9 miles southeast of Kalamazoo, almost 175 miles away from Hamilton Township, Clare County, Michigan, where the site of the proposed Holcomb 1-22 well is located. Based upon this data, and using the EPA Injection-Induced Seismicity Decision Model flow chart, no concerns related to seismicity have been identified.

FIGURE-1: INJECTION-INDUCED SEISMICITY DECISION MODEL

Injection-Induced Seismicity Decision Model for UIC Directors*
(Based on the decision model discussion in Appendix B)

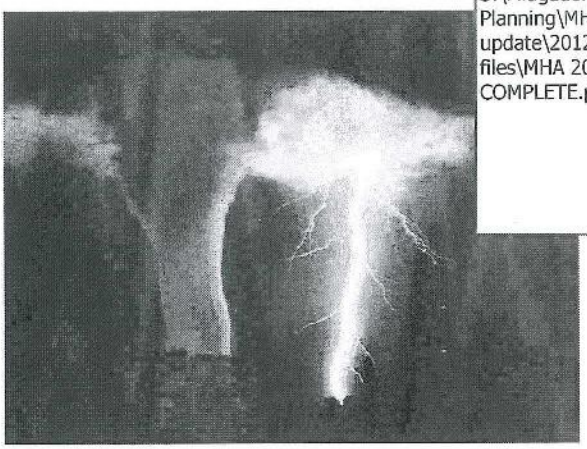


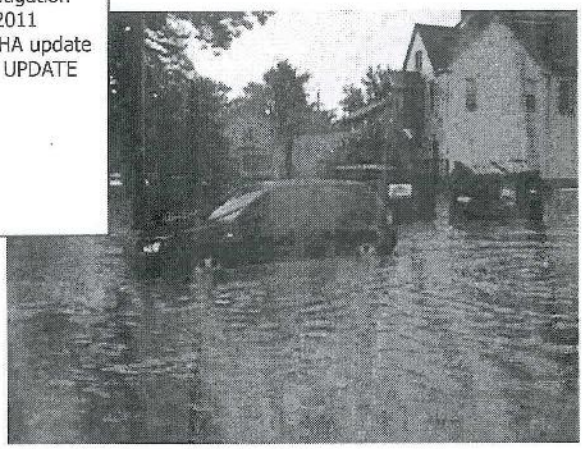

* Decision model is founded on Director discretionary authority

MSP/EMHSD PUB. 103
July 2012
EMERGENCY MANAGEMENT AND
HOMELAND SECURITY DIVISION
Michigan Department of State Police

# Michigan Hazard Analysis

S:\Mitigation\Mitigation Planning\MHA 2011 update\2012 MHA update files\MHA 2012 UPDATE COMPLETE.pdf





Hail • Lightning • Ice and Sleet Storms • Snowstorms • Severe Winds • Tornadoes • Extreme Temperatures Fog • Riverine Flooding • Great Lakes Shoreline Hazards • Dam Failures • Drought Wildfires • Invasive Species • Earthquakes • Subsidence • Celestial Impact • Structural Fires • Scrap Tire Fires • Hazardous Materials Incidents: Fixed Site • Nuclear Power Plant Emergencies Hazardous Materials Incidents: Transportation • Petroleum and Natural Gas Pipeline Accidents • Oil and Natural Gas Well Accidents Infrastructure Failures • Energy Emergencies • Transportation Accidents • Catastrophic Incidents • Civil Disturbances • Nuclear Attack • Public Health Emergencies • Terrorism and Similar Criminal Activities

# I. Natural Hazards
# D. Geological Hazards

The following outline summarizes the significant geological hazards covered in this section:

1. Ground Movement
    a. Earthquakes
    b. Subsidence
2. Celestial Impacts

Although some states recognize "landslides" as an additional hazard, Michigan's geology and history tends to make it more prone to land subsidence instead. Michigan's two main vulnerabilities to ground movement are therefore identified in the sections on earthquakes and subsidence hazards. Erosion is not in itself typically considered an emergency event, except in cases involving encroachment into shoreline developments near a river or lake, and these have been dealt with in the Hydrological Hazards section of this plan. A new section of this plan, celestial impacts, deals not only with the impact of physical objects on property, but also with the effects of solar storms on our modern infrastructure. It will be seen that the systemic technological impacts of this hazard involve greater expected risks than the more well-known impacts of a meteoritic type. Although meteorite impacts are quite easy to understand and visualize, and do have a small potential to be catastrophic, it is the seemingly abstract and mostly invisible effect of "space weather" that has the greatest probability of causing widespread disruption and harm in the near future.

Overlap Between Geological Hazards and Other Sections of the Hazard Analysis

The most serious Michigan earthquakes would be expected to damage some of the utilities infrastructure in the southern part of the state, and could contribute to the occurrence of an energy emergency. Some flooding could result from broken water mains. There may be some potential for oil and gas pipeline operations to be disrupted, as well. A serious subsidence event may cause a key roadway to collapse and become unusable, and may also cause certain other types of infrastructure to become exposed and vulnerable. Transportation accidents that may result from these hazards could cause the release of dangerous hazardous materials. The real potential for a catastrophic incident exists in the event of a major seismic event involving the New Madrid fault line.

Celestial impacts involving solar flares can cause infrastructure failures and have the potential to cause major transportation accidents involving airplanes and/or seagoing vessels. Other types of celestial impacts, involving the impact of physical bodies upon the Earth and its atmosphere, are usually minor but rarely will have the potential to be catastrophic, capable of causing damage equivalent to a nuclear attack and the associated casualties, mass fires (including wildfires), infrastructure failure, severe winds, and physical damages associated with the nuclear attack hazard (but without as intense of radiological effects).

# Earthquakes

*A shaking or trembling of the crust of the earth caused by the breaking and shifting of rock beneath the surface.*

***Hazard Description***

Earthquakes range in intensity from slight tremors to great shocks. They may last from a few seconds to several minutes, or come as a series of tremors over a period of several days. The energy of an earthquake is released in seismic waves. Earthquakes usually occur without warning. In some instances, advance warnings of unusual geophysical events may be issued. However, scientists cannot yet predict exactly when or where an earthquake will occur. Earthquakes tend to strike repeatedly along faults, which are formed where tectonic forces in the earth's crust cause the movement of rock bodies against each other. Risk maps have been produced which show areas where an earthquake is more likely to occur. Earthquake monitoring is conducted by the U.S. Geological Survey, the National Oceanic and Atmospheric Administration, and universities throughout the country.

The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Most casualties result from falling objects and debris. Disruption of communications systems, electric power lines, and gas, sewer and water mains can be expected. Water supplies can become contaminated by seepage around water mains. Damage to roadways and other transportation systems may create food and other resource shortages if transportation is interrupted. In addition, earthquakes may trigger other emergency situations such as fires and hazardous material spills, thereby compounding the difficulties of the situation.

A fault line is where a fault meets the ground's surface, but many faults dip at an angle away from their surface location, and therefore earthquakes that occur at some depth will often not line up with the fault at the surface. Faults do not only occur at the boundaries of large geological plates. There are many small plates that exist, as well as faults that are internal to or perpendicular to plate boundaries.

***Hazard Analysis***

No severely destructive earthquake has ever been documented in Michigan. However, several mildly damaging earthquakes have been felt since the late 1700s. The exact number is difficult to determine, as scientific opinion on the matter varies. With most of these earthquakes, damage (if any) was limited to cracked plaster, broken dishes, damaged chimneys, and broken windows.

In recent years, attention has been focused on the New Madrid Seismic Zone. This zone extends from approximately Cairo, Illinois through New Madrid, Missouri to Marked Tree, Arkansas. During the winter of 1811-1812, a series of earthquakes shook the area. The three worst earthquakes destroyed the town of New Madrid, created a 17,000 acre lake in Northwestern Tennessee, caused ocean-like swells on the Mississippi River (which reportedly ran backwards), and rang church bells as far away as the eastern seaboard. Richter Scale estimates ranged around 8.0. The 1811-1812 earthquakes also included hundreds of aftershocks, some with magnitudes estimated to be between 6.5 and 7.6 on the Richter Scale.

The New Madrid Seismic Zone is significant because scientists predict that a catastrophic earthquake (between 6.0 and 7.6 on the Richter Scale) will occur within the zone sometime during the next few decades. Michigan may be somewhat affected by such an earthquake. A repeat of the 1811-1812 earthquakes is unlikely in the near future. However, should it occur, it could result in damage, disruptions, casualties, and injuries on a scale never experienced from an earthquake in the history of the U.S. The immediate and long-term relief and recovery efforts could place a significant, prolonged burden on the regional and national economies.

Fortunately, Michigan is not located in an area subject to major earthquake activity. Although there are faults in the bedrock of Michigan, they are now considered relatively stable. However, these faults are poorly mapped. According to the U.S. Geological Survey, although Michigan is in an area in which there is a low probability of earthquake occurrences, the area may be affected by distant earthquakes that occur in the New Madrid Seismic Zone and upstate New York. The New Madrid Seismic Zone poses the most significant threat. Based on recent scientific studies, portions of southern Michigan could be expected to receive minor damage were such an earthquake to occur (see the map at the end of this section).

The greatest impact on the state would probably come from damage to natural gas and petroleum pipelines. If the earthquake occurs in the winter, many areas of the state could be severely impacted by fuel shortages. Damage would probably be negligible in well-designed and constructed buildings. However, poorly designed and constructed buildings could suffer considerable damage under the right circumstances.

The following table has a list of earthquakes that have been felt in Michigan. The most severe event centered in Michigan was the 4.7 magnitude event of 1947, which caused some damage to (mainly residential) structures in the southwest region of the Lower Peninsula.

**Tectonic Earthquakes Felt or Occurring in Michigan**

| Date | Origin | Magnitude |
|---|---|---|
| 4-20-1793* | Porcupine Mt, MI | N/A |
| 12-16-1811 (3 events) | New Madrid, MO | 7.9, N/A., N/A |
| 1-22-1812 | New Madrid, MO | N/A |
| 1-23-1812 | New Madrid, MO | N/A |
| 1-25-1812 | New Madrid, MO | 7.0 |
| 2-3-1812 | New Madrid, MO | N/A |
| 2-7-1812 | New Madrid, MO | 7.5 |
| 2-8-1812 (4 events) | New Madrid, MO | N/A |
| 10-20-1870 | La Malbaie, QUE | N/A |
| 8-17-1877* | Greenfield, MI | 3.2 |
| 9-19-1884 | Lima, OH | 4.8 |
| 9-1-1886 | Charleston, SC | 7.7 |
| 10-31-1895 | Charleston, MO | 6.7 |
| 5-26-1909 | Aurora, IL | 5.1 |
| 3-1-1925 | La Malbaie, QUE | 7.0 |
| 8-12-1929 | Attica, NY | 5.2 |
| 11-1-1935 | Timiskaming, QUE | 6.2 |
| 3-2-1937 | Anna, OH | 5.0 |
| 3-9-1937 | Anna, OH | 5.4 |
| 2-12-1938* | Porter, IN | 4.0 |
| 3-13-1938* | Gibraltar, MI | 3.8 |
| 3-14-1938* | Gibraltar, MI | N/A |
| 3-9-1943 | Lake Erie, OH | 4.5 |
| 9-5-1944 | Massena, NY | 5.8 |
| 8-10-1947 | Coldwater, MI | 4.7 |
| 11-9-1968 | El Dorado, IL | 5.5 |
| 9-15-1972 | Rock Falls, IL | 4.5 |
| 4-3-1974 | Lancaster, IL | 4.7 |
| 2-2-1976 | Pt. Pelee, ON | 3.4 |
| 7-27-1980 | Sharpsburg, KY | 5.1 |
| 8-20-1980 | Harrow, ON | 3.2 |
| 11-29-1982 | Scotts, MI | 2.5 |
| 10-7-1983 | Blue Mtn. Lake, NY | 5.1 |
| 1-31-1986 | Perry, OH | 5.0 |
| 7-12-1986 | St. Mary's, OH | 4.6 |
| 6-10-1987 | Lawrenceville, IL | 5.2 |
| 11-25-1988 | Saguenay, QUE | 5.9 |
| 9-2-1994 | Central Michigan | 3.4 |
| 9-25-1998 | Sharon, PA | 5.2 |
| 10-23-2001* | Prairie Lake, MI | 2.9 |
| 4-18-2008 (2 events) | West Salem, IL | 5.4, 4.8 |
| 2-10-2010 | Elgin, IL | 3.8 |
| 6-23-2010 | Val-Des-Bois, QUE | 5.0 |

N/A means that the magnitude information was not available.

* May not have been a natural earthquake. Explosive blasting, mine collapse or other subsidence, and large meteorite impacts can all cause tremors to be felt that may give persons the impression that an earthquake has occurred.

Source: Michigan State University Earthquake Information Center / East Lansing Seismic Station

NOTE: This list has been adapted from the "Earthquakes in Michigan" source list found at https://www.msu.edu/~fujita/earthquake/eqinfo.html. Earthquakes that may not have actually been felt in Michigan were not included in the list.

Historical earthquake occurrences appeared to have an element of a cyclical nature about them, with some decades containing numerous events, surrounded by decades with only a few events, and followed by periods with nearly no occurrences at all. Over time it may be that (probably due to increases in population and development) the number of occurrences gradually increases within this cycle, although this is uncertain. (The pattern is not extremely clear and long, and may just happen to be a statistical artifact.) The potential pattern is illustrated through the listing of natural tectonic earthquake events by decade, with arrows pointing to small peaks of earthquake activity approximately every 50 years. (This is shown on the next page.)

The hypothesis that there may be a kind of cyclic trend is based purely upon the historical data. A recent text, Michigan Geography and Geology (editor in chief, Randall Schaetzl), includes a chapter on earthquakes and states that "about once every 50 years, a magnitude 3-4 event occurs within the state, south of a line between Grand Rapids and Pontiac." Although the event information (listed above) had fit pretty well into this pattern, the most recently updated information from the same source has not quite fit perfectly into the proposed pattern, for instead of the earthquake activity dropping to zero after a clear peak during the 1980s, it has instead fallen into a pattern of about two events per decade, and one of those decades (the 2010s) has only just begun! Thus, there seem to be more earthquakes being felt recently than might have been expected, according to the previous pattern. It is possible that this level of disturbance might be comparable to the periods that would have been marked with zeroes in the past, and that the next occurrence of a peak (in the 2030s?) may therefore involve a record number of events, if there is indeed a gradual trend toward an increased number of disturbances.

| | | |
|---|---|---|
| 1790s: | 0 | |
| 1800s: | 0 | |
| 1810s: | 12 | ←These were all New Madrid events and aftershocks, and may not fit into a cyclic trend for Michigan |
| 1820s: | 0 | |
| 1830s: | 0 | |
| 1840s: | 0 | |
| 1850s: | 0 | |
| 1860s: | 0 | |
| 1870s: | 1 | |
| 1880s: | 2 | ←Possible peak in a cyclic trend |
| 1890s: | 1 | |
| 1900s: | 1 | |
| 1910s: | 0 | |
| 1920s: | 2 | |
| 1930s: | 3 | ←Possible peak in a cyclic trend |
| 1940s: | 3 | |
| 1950s: | 0 | |
| 1960s: | 1 | |
| 1970s: | 3 | |
| 1980s: | 8 | ←Possible peak in a cyclic trend |
| 1990s: | 2 | |
| 2000s: | 2 | |
| 2010s: | 2 | ←Recent trend might not quite match the proposed 50-year cycle |

Earthquake Risk Calculation

Although earthquakes are generally not considered a major hazard in Michigan, other states have had so many problems with this hazard that very detailed techniques have been developed to estimate earthquake risks. Each area of the country has been assessed by geologists (according to types of bedrock, fault line proximity, and other factors) and sorted into general zones of earthquake risk. (For a national map showing this, see the web site at http://earthquake.usgs.gov/research/hazmaps/.) These zones are expressed in terms of a probability that significant ground movements will be felt. For example, there may be a 10% chance of an area experiencing significant ground movement within a 50 year period, (which is similar to the "500-year" floodplain, since the annual probability of such an event calculates as roughly .0021). Another component of risk calculation would be to estimate the amount of damage that is likely when such an event occurs. Official measures use the concept of Peak Ground Acceleration (PGA, which is also abbreviated as %g). The key task is to translate the severity of (PGA) ground motion into estimates of structural damages and other economic costs. FEMA has developed a computer application (HAZUS) to give estimates of these earthquake effects.

Michigan has a comparatively low risk of experiencing damaging ground movements. Because of this low risk, however, many designers and developers did not take into consideration the possibility that an earthquake *might* occur. Some of Michigan's communities may actually be quite vulnerable to earthquake effects—especially Michigan's underground utilities—in cases where developed areas were not designed to withstand any ground movements.

Urban areas and active mineland/quarry areas may experience seismic effects as a result of blasting activities, subsidence, structural collapses, vibrations from trains and trucks, or explosions (such as from industrial accidents or terrorist activity). It is therefore worth considering a strengthening of infrastructure as well as interior design enhancements to resist both natural and other types of seismic impacts, vibrations, and stresses.

Impact on the Public

Earthquakes have the potential to cause impacts on an area's infrastructure and energy if a significant event occurs. Impacts could include higher prices for energy and supplies, and the potential for limited supplies of needed goods and resources. A major event, such as a large-scale temblor in the New Madrid Zone, may constitute a National Emergency event (on the scale of Hurricane Katrina), in which there is a need for mutual aid to be provided to states which were strongly affected, and the intake of evacuees from those states. There is a moderate potential for property damage to occur in areas of southern Michigan that are more prone to experiencing seismic activity, and these damages would clearly be inconvenient for homeowners and businesses, at the very least.

Impact on Public Confidence in State Governance

The public may perceive earthquake effects in terms of a governmental failure to plan for and maintain appropriate standards for infrastructure durability and hardening. Some questions may also be raised about whether sufficient

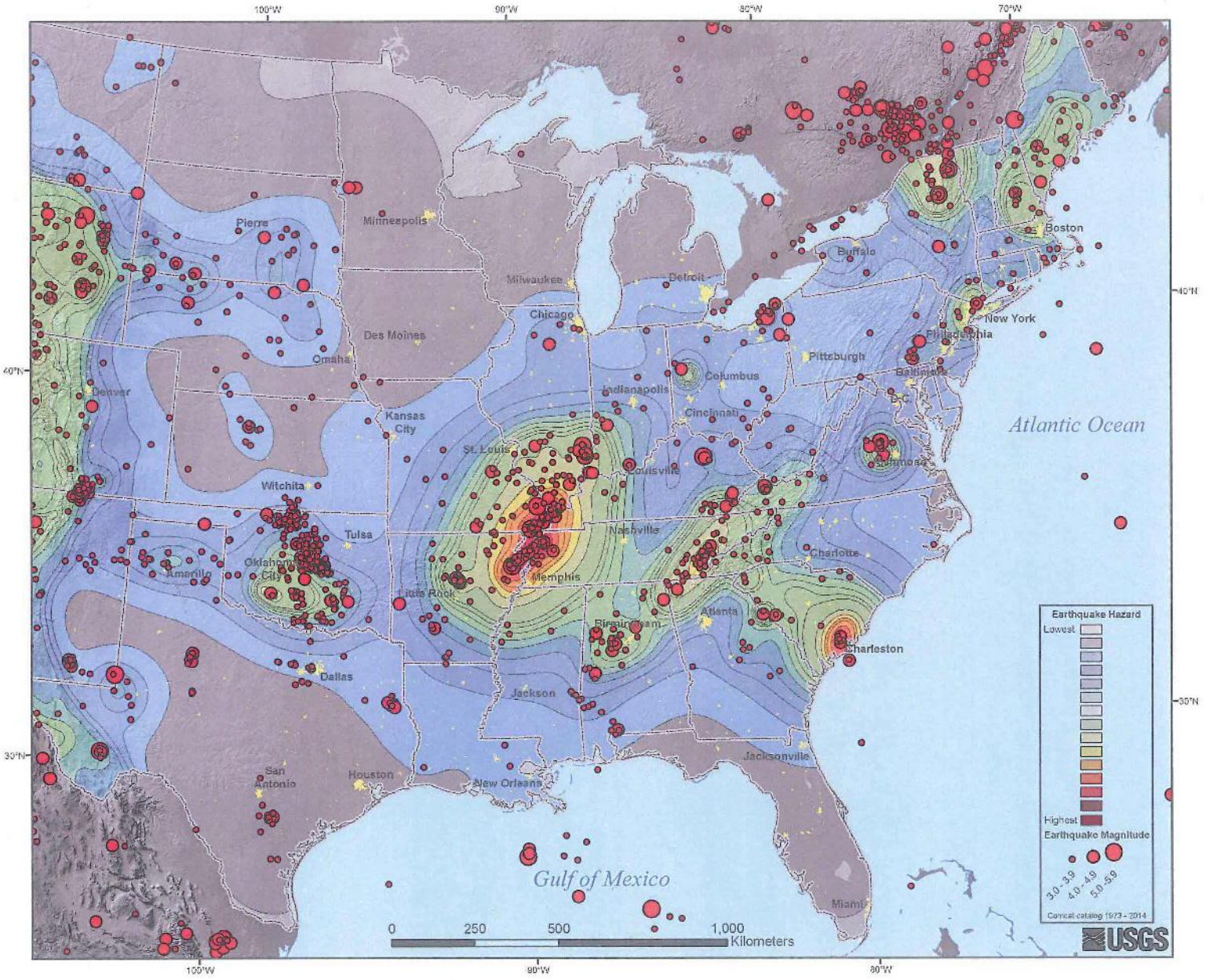
geological research had been conducted in the area, and about whether there was a successful means of providing advance warning that the area might experience an earthquake.

Impact on Responders
Response operations have the potential to include search and rescue activities, which involve special risks and requirements for training and equipment. Earthquake-related infrastructure failures or road subsidence may inhibit efficient and safe response to the incident, and may interfere with the access and use of resources needed for normal and emergency response activities.

Impact on the Environment
A significant earthquake has the potential to cause problems for the environment, both directly and indirectly. Ground movement may disrupt wildlife habitats and change an area's landscape. Secondary environmental impacts caused by a significant event may involve a hazardous materials release into the ground, air, or water from damaged buildings and infrastructure. Fortunately, it is unlikely that an earthquake, even a significant-magnitude New Madrid event, would cause great environmental impacts in Michigan.

***Programs and Initiatives***
The Federal government has several programs and initiatives in place to help reduce the earthquake threat, two of which impact Michigan. The most recent, and perhaps most prominent, is the development of the National Response Framework (NRF) to coordinate federal assistance to a catastrophic earthquake or other similar disaster. Coordinated through the federal Department of Homeland Security (DHS), the NRF outlines the responsibilities of all federal agencies with a role in disaster response and/or recovery. Should a catastrophic earthquake ever impact Michigan, federal response and recovery assistance would be coordinated under the provisions set forth in the NRF.

In January 1990, Executive Order (EO) 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction, was signed into law. This EO requires that appropriate seismic design and construction standards and practices be adopted for any new construction or replacement of a federal building or federally regulated building receiving federal assistance. The purpose of this EO is to reduce risks from failure of federal buildings during or after an earthquake.


100°W
90°W
80°W
70°W
40°N
30°N
Pierre
Minneapolis
Boston
Buffalo
Milwaukee
Detroit
Chicago
New York
Philadelphia
Des Moines
Omaha
Pittsburgh
Baltimore
Denver
Columbus
Indianapolis
Cincinnati
D.C.
Kansas City
Atlantic Ocean
St. Louis
Louisville
Witchita
Nashville
Tulsa
Charlotte
Amarillo
Oklahoma City
Memphis
Little Rock
Atlanta
Birmingham
Charleston
Dallas
Jackson
Jacksonville
San Antonio
Houston
New Orleans
Gulf of Mexico
Miami
0 250 500 1,000
Kilometers
Earthquake Hazard
Lowest
Highest
Earthquake Magnitude
3.0 - 3.9
4.0 - 4.9
5.0 - 5.9
Comcat catalog 1973 - 2014
USGS

# Michigan earthquake: 'Big deal' for a couple reasons, U.S. Geological Survey scientist says

By **Julie Mack | jmack1@mlive.com**
on May 05, 2015 at 2:13 PM, updated May 05, 2015 at 3:15 PM

**KALAMAZOO, MI** -- In terms of magnitude, the **4.2 earthquake** that originated in Kalamazoo County was no big deal: It was one of 18 in the world on May 2 with a magnitude of at least 4.0.

But the quake here was noteworthy by two other measures: Where it occurred and the number of people who felt it. An estimated 4.4 million people live in the five-state region that experienced the tremors, according to the U.S. Geological Survey.

That's why the Kalamazoo County quake was the only May 2 quake deemed "significant" by the USGS.

"These smaller quakes can happen anywhere, but a 4.2 is a little more rare and it's even more rare for Michigan," said Don Blakeman, a USGS geophysicist. "Plus, so many people felt it.

"It's a big deal," he said.

As of Tuesday morning, 13,656 people from five states and 1,156 Zip Codes had filled out a **questionnaire on the USGS website** offering their first-hand accounts of their experience in the quake, which occurred at 12:23 p.m. Saturday.

**MICHIGAN EARTHQUAKE**

Remember when earthquakes shook Michigan?

Michigan 2015 earthquakes not related to fracking, new USGS map shows

Michigan earthquakes: 8 comparisons between May and June tremors

Michigan readers share earthquake reactions

Residents describe Michigan earthquake as 'a big thump'

**All Stories**

The quake's epicenter was in Scotts, a rural community about 12 miles southeast of downtown Kalamazoo. The tremors were felt in most of the Lower Peninsula, plus parts of Indiana, Ohio, Illinois and Wisconsin, plus southern Ontario.

The USGS has different scales to categorize earthquakes, and the best known is the earthquake's magnitude.

"That's just a mathematical formula on how much energy has been released," Blakeman said. "It doesn't matter where you are, that number will be the same."

**RELATED: Complete coverage of the Michigan earthquake**

Earthquakes also are measured by the Modified Mercalli Intensity Scale, which evaluates what people felt and the impact on human activity. That scale -- which relies on roman numerals from I to X -- is more subjective and the number will change based on proximity to the epicenter.

The recent 7.8 earthquake in Nepal was rated a IX quake on the Mercalli scale for people near the epicenter and VIII for a region

that has 5.3 million residents.

The Mercalli scale is important because many quakes occur in remote areas, such as the middle of the ocean, and have minimal impact on human activity.

For instance, on the same day Michigan experienced a 4.2 quake, there was a 5.7 quake that was considerably more powerful -- but it occurred in the Pacific Ocean 100 miles off the coast the coast of Japan.

Based on their online survey, the USGS rated the Kalamazoo County quake as a level IV for communities near the epicenter. That includes Galesburg, Comstock, Kalamazoo, Kalamazoo Township, Vicksburg and Athens.

A level IV is "felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably," the USGS website says.

Most of Michigan experienced the quake as a level III "felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated," the website says.

The USGS estimates 1,000 people live close enough to the Michigan quake epicenter to experienced "moderate shaking"; 425,000 live in areas that had "light" tremors; and 3.9 million live in areas with weak tremors.

The quake likely lasted less than 10 seconds, Blakeman said, although "part of human nature is that everyone feels like it lasts longer than it really does."

And as often happens with quakes, many people reported hearing a "boom" just before they felt the tremors. "That happens more often than people think," Blakeman said about the noise associated with an earthquake. "The energy is traveling through the rock like a sound wave."

The fact the tremors were felt so far away has to do with the geological characteristics of Michigan, which is part of the Canadian Shield.

"It's very, very old, hard rock and the energy waves travel quickly and easily," Blakeman said.

A 4.2 magnitude quake in, say, California, would not have been felt as far away, he said.

A good analogy: The reverberations felt from whacking a hammer on sand feels much different from the reverberations from hitting a hammer on concrete, even when the same force is used.

In California, the Earth has been "broken and fractured so many times" that it quickly absorbs the energy released by an earthquake, while the Upper Midwest is more like concrete, Blakeman said.

The Kalamazoo County quake also was significant because of its location.

"We usually have a 5.5 quake somewhere in the world every day. Globally, that's not unusual," Blakeman said. "What is unusual is where this earthquake occurred. Michigan is not on a major plate" where earthquakes are common.

"We say these kinds of quakes can happen anywhere in the Lower 48 states. The entire continent is under stress" from geological forces, he said. "This size (a 4.2) is unusual, but not unknown."

The May 2 quake was the most powerful in Michigan since a 4.6 quake near Coldwater in 1947.

The U.S. Geological Survey's website has posted several pages of information collected about the Michigan quake. **That information can be found by clicking here.**

Julie Mack is a reporter for Kalamazoo Gazette. Email her at **jmack1@mlive.com**, call her at 269-350-0277 or follow her on **Twitter** @kzjuliemack.

---

Department of Environmental Quality
GeoWebFace

MICHIGAN.GOV Michigan's Official Web Site

24

# WELL SUMMARY REPORT

API NO: 21-035-59345-00-00
PERMIT NO: 59345

| Operator | Well |
|---|---|
| MUSKEGON DEVELOPMENT CO | HOLCOMB 1-22 |

| Permit Issued | Drilling Started | Well Completed | Well Type | Well Status |
|---|---|---|---|---|
| 2008-08-13 | 2008-09-05 | 2008-09-20 | Oil Well | Producing |

| Surface Location County Name | Township |
|---|---|
| CLARE | HAMILTON |

| Town Range Section | | QTRQTRQTR | | Latitude | Longitude |
|---|---|---|---|---|---|
| 19N-3W-22 | | NWNENW | | 44.0308 | -84.6595 |

| Bottom Location County Name | Township |
|---|---|
| | |

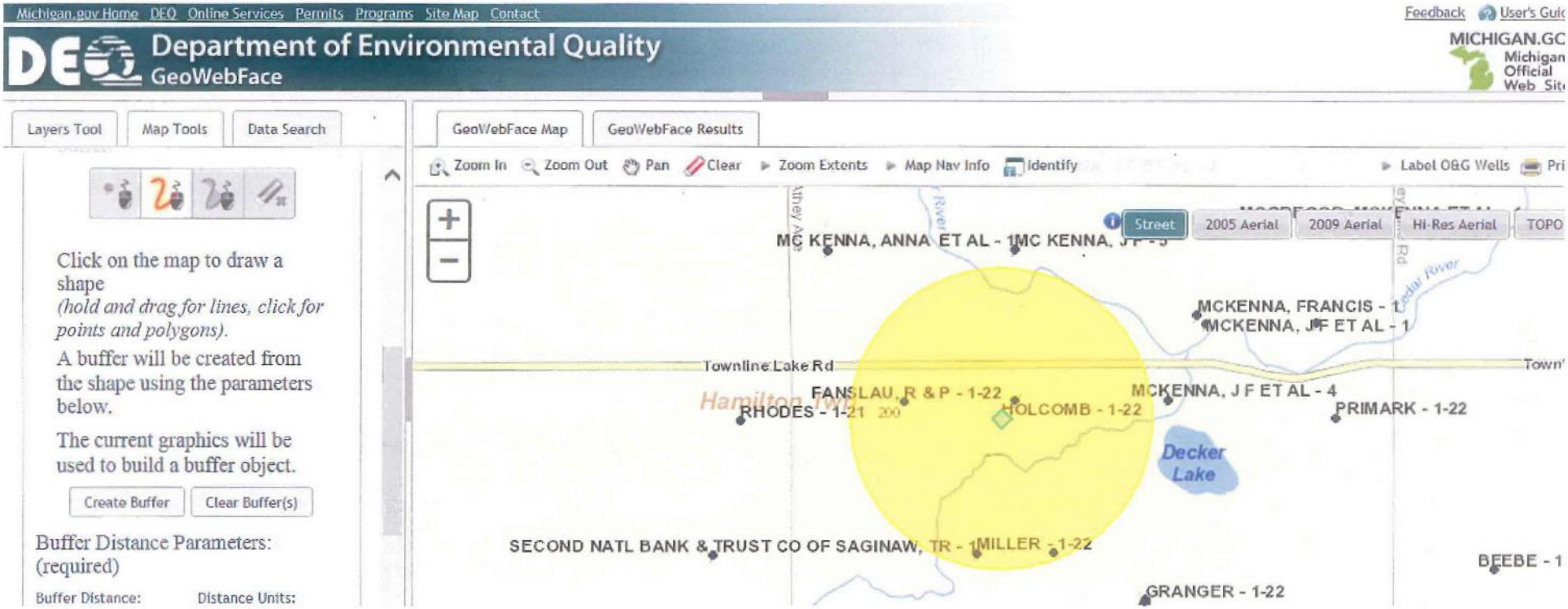
| Town Range Section | | QTRQTRQTR | | Latitude | Longitude |
|---|---|---|---|---|---|
| | | | | 44.0308 | -84.6595 |

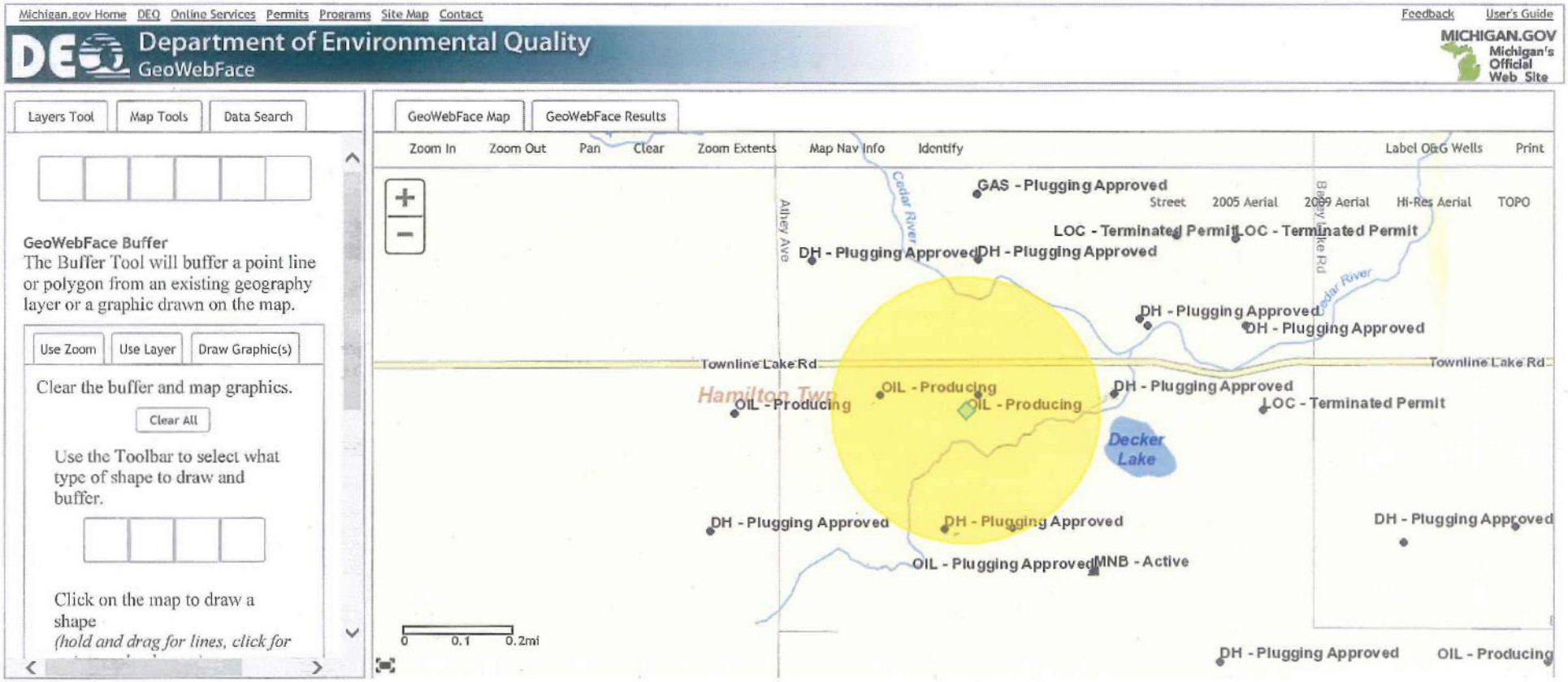
| Well Elevations: | Depths Measured From: |
|---|---|
| Ground: 933, Derrick Floor: 944, Kelly Bushing: 946 | Kelly Bushing |

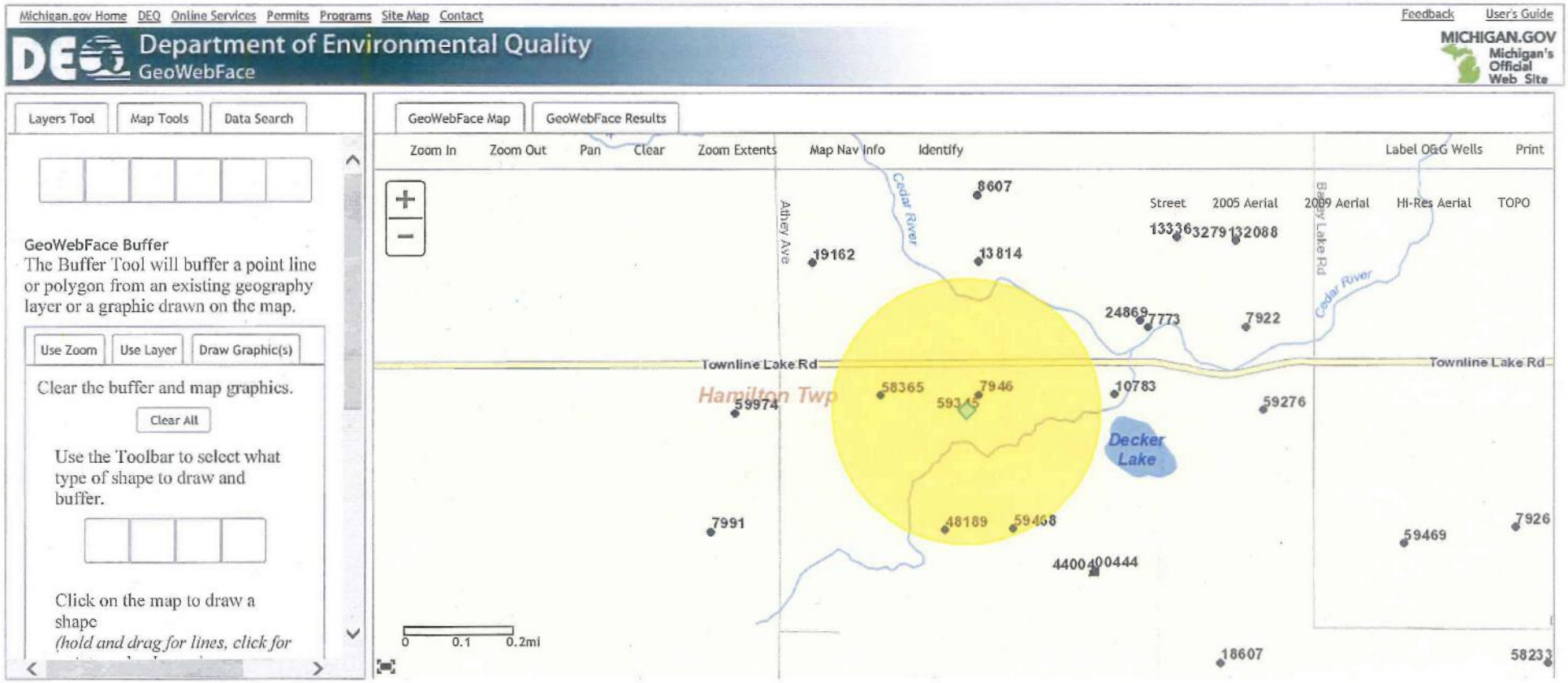
| Formation at Total Depth | Drilled Total Depth | True Vertical Total Depth |
|---|---|---|
| AMHERSTBURG | 5200 | |

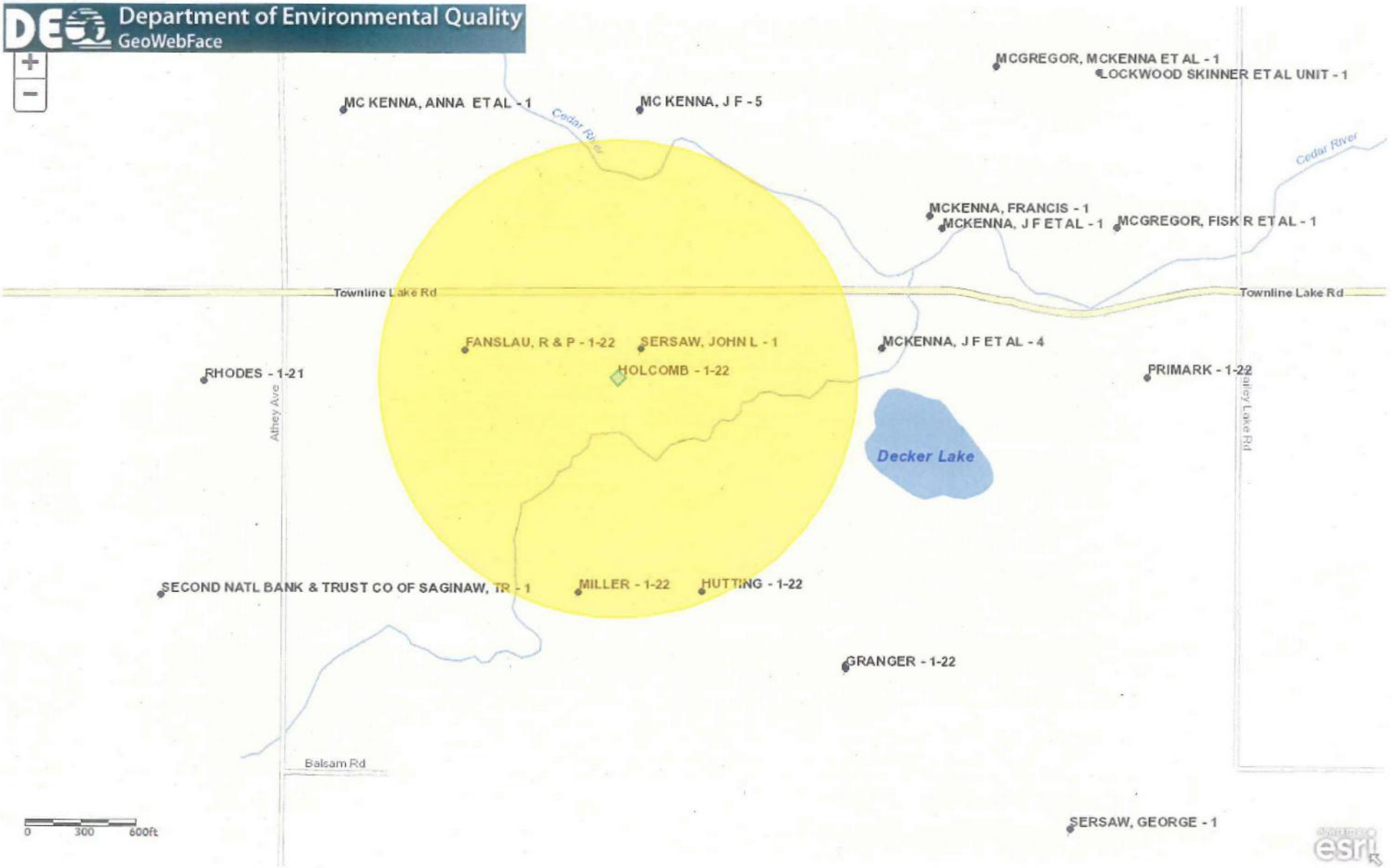
| Producing Formation |
|---|

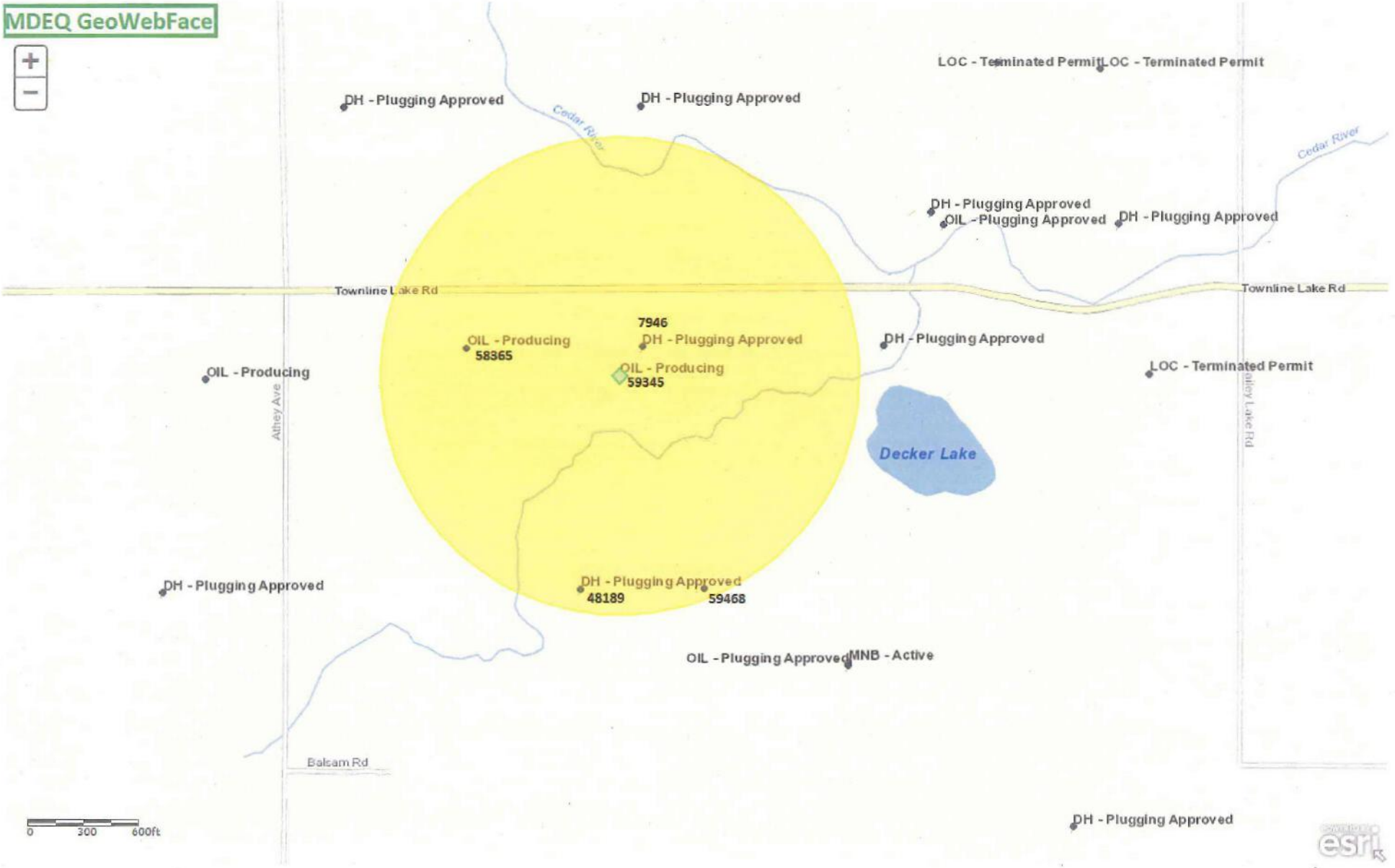
Note: *For vertical wells, the bottom hole location is the same as the surface location.*


Michigan.gov Home DEQ Online Services Permits Programs Site Map Contact
Feedback User's Guic
Department of Environmental Quality
GeoWebFace
MICHIGAN.GC
Michigan
Official
Web Site
Layers Tool
Map Tools
Data Search
Click on the map to draw a shape
(hold and drag for lines, click for points and polygons).
A buffer will be created from the shape using the parameters below.
The current graphics will be used to build a buffer object.
Create Buffer
Clear Buffer(s)
Buffer Distance Parameters: (required)
Buffer Distance:
Distance Units:
GeoWebFace Map
GeoWebFace Results
Zoom In
Zoom Out
Pan
Clear
Zoom Extents
Map Nav Info
Identify
Label O&G Wells
Pri
Street
2005 Aerial
2009 Aerial
Hi-Res Aerial
TOPO
MC KENNA, ANNA ET AL - 1
MC KENNA, J F - 5
MCKENNA, FRANCIS - 1
MCKENNA, JF ET AL - 1
Townline Lake Rd
FANSLAU, R & P - 1-22
RHODES - 1-21
HOLCOMB - 1-22
MCKENNA, J F ET AL - 4
PRIMARK - 1-22
Decker Lake
SECOND NATL BANK & TRUST CO OF SAGINAW, TR - 1
MILLER - 1-22
BEEBE - 1
GRANGER - 1-22






Department of Environmental Quality
GeoWebFace
MCGREGOR, MCKENNA ET AL - 1
LOCKWOOD SKINNER ET AL UNIT - 1
MC KENNA, ANNA ET AL - 1
MC KENNA, J F - 5
Cedar River
Cedar River
MCKENNA, FRANCIS - 1
MCKENNA, J F ET AL - 1
MCGREGOR, FISK R ET AL - 1
Townline Lake Rd
Townline Lake Rd
FANSLAU, R & P - 1-22
SERSAW, JOHN L - 1
MCKENNA, J F ET AL - 4
HOLCOMB - 1-22
RHODES - 1-21
PRIMARK - 1-22
Athey Ave
Bailey Lake Rd
Decker Lake
SECOND NATL BANK & TRUST CO OF SAGINAW, TR - 1
MILLER - 1-22
HUTTING - 1-22
GRANGER - 1-22
Balsam Rd
SERSAW, GEORGE - 1
0
300
600ft
esri


MDEQ GeoWebFace
LOC - Terminated Permit
LOC - Terminated Permit
DH - Plugging Approved
DH - Plugging Approved
Cedar River
Cedar River
DH - Plugging Approved
OIL - Plugging Approved
DH - Plugging Approved
Townline Lake Rd
Townline Lake Rd
7946
OIL - Producing
58365
DH - Plugging Approved
DH - Plugging Approved
OIL - Producing
OIL - Producing
59345
LOC - Terminated Permit
Athey Ave
Decker Lake
Athey Lake Rd
DH - Plugging Approved
DH - Plugging Approved
48189
59468
OIL - Plugging Approved
MNB - Active
Balsam Rd
DH - Plugging Approved
0
300
600ft
esri

Department of Environmental Quality
GeoWebFace

MICHIGAN.GOV Michigan's Official Web Site

# WELL SUMMARY REPORT

API NO: 21-035-58365-00-00
PERMIT NO: 58365

| Operator | Well |
|---|---|
| MUSKEGON DEVELOPMENT CO | FANSLAU, R & P 1-22 |

| Permit Issued | Drilling Started | Well Completed | Well Type | Well Status |
|---|---|---|---|---|
| 2007-05-01 | 2008-02-22 | 2008-03-13 | Oil Well | Producing |

| Surface Location County Name | Township |
|---|---|
| CLARE | HAMILTON |

| Town Range Section | | QTRQTRQTR | | Latitude | Longitude |
|---|---|---|---|---|---|
| 19N-3W-22 | | NENWNW | | 44.0313 | -84.6626 |

| Bottom Location County Name | Township |
|---|---|
| | |

| Town Range Section | | QTRQTRQTR | | Latitude | Longitude |
|---|---|---|---|---|---|
| | | | | 44.0313 | -84.6626 |

| Well Elevations: | Depths Measured From: |
|---|---|
| Ground: 939, Derrick Floor: 950, Kelly Bushing: 951 | Kelly Bushing |

| Formation at Total Depth | Drilled Total Depth | True Vertical Total Depth |
|---|---|---|
| AMHERSTBURG | 5200 | |

| Producing Formation |
|---|

**Note:** *For vertical wells, the bottom hole location is the same as the surface location.*

Department of Environmental Quality
GeoWebFace

MICHIGAN.GOV Michigan's Official Web Site

# WELL SUMMARY REPORT

API NO: 21-035-48189-00-00
PERMIT NO: 48189

| Operator | Well |
|---|---|
| DART OIL AND GAS CORP | MILLER 1-22 |

| Permit Issued | Drilling Started | Well Completed | Well Type | Well Status |
|---|---|---|---|---|
| 1994-01-19 | 1994-02-18 | | Dry Hole | Plugging Approved |

| Surface Location County Name | | | Township | | |
|---|---|---|---|---|---|
| CLARE | | | HAMILTON | | |
| **Town Range Section** | | **QTRQTRQTR** | | **Latitude** | **Longitude** |
| 19N-3W-22 | | NWSENW | | 44.0276 | -84.6603 |
| **Bottom Location County Name** | | | **Township** | | |
| **Town Range Section** | | **QTRQTRQTR** | | **Latitude** | **Longitude** |
| | | | | 44.0276 | -84.6603 |

| Well Elevations: | Depths Measured From: |
|---|---|
| Ground: 953, Derrick Floor: 965, Kelly Bushing: 967 | Kelly Bushing |

| Formation at Total Depth | Drilled Total Depth | True Vertical Total Depth |
|---|---|---|
| AMHERSTBURG | 5220 | |

| Producing Formation |
|---|

**Note:** *For vertical wells, the bottom hole location is the same as the surface location.*

Department of Environmental Quality
GeoWebFace

MICHIGAN.GOV Michigan's Official Web Site

## WELL SUMMARY REPORT

API NO: 21-035-07946-00-00
PERMIT NO: 7946

| Operator | Well |
|---|---|
| ORYX ENERGY CO | SERSAW, JOHN L 1 |

| Permit Issued | Drilling Started | Well Completed | Well Type | Well Status |
|---|---|---|---|---|
| 1940-08-22 | 1940-10-02 | | Dry Hole | Plugging Approved |

| Surface Location County Name | Township |
|---|---|
| CLARE | HAMILTON |

| Town Range Section | | QTRQTRQTR | | Latitude | Longitude |
|---|---|---|---|---|---|
| 19N-3W-22 | | N2NENW | | 44.0313 | -84.659 |

| Bottom Location County Name | Township |
|---|---|
| | |

| Town Range Section | | QTRQTRQTR | | Latitude | Longitude |
|---|---|---|---|---|---|
| | | | | 44.0313 | -84.659 |

| Well Elevations: | Depths Measured From: |
|---|---|
| Ground: 933, Derrick Floor: 933, Kelly Bushing: | Ground Level |

| Formation at Total Depth | Drilled Total Depth | True Vertical Total Depth |
|---|---|---|
| DUNDEE | 3860 | |

| Producing Formation |
|---|

**Note:** *For vertical wells, the bottom hole location is the same as the surface location.*

Department of Environmental Quality
GeoWebFace

MICHIGAN.GOV Michigan's Official Web Site

# WELL SUMMARY REPORT

API NO: 21-035-59468-00-00
PERMIT NO: 59468

| Operator | Well |
|---|---|
| MUSKEGON DEVELOPMENT CO | HUTTING 1-22 |

| Permit Issued | Drilling Started | Well Completed | Well Type | Well Status |
|---|---|---|---|---|
| 2008-09-22 | | | Location | Terminated Permit |

| Surface Location County Name | | | Township | | |
|---|---|---|---|---|---|
| CLARE | | | HAMILTON | | |
| **Town Range Section** | | **QTRQTRQTR** | | **Latitude** | **Longitude** |
| 19N-3W-22 | | NESENW | | 44.0277 | -84.6577 |

| Bottom Location County Name | | | Township | | |
|---|---|---|---|---|---|
| **Town Range Section** | | **QTRQTRQTR** | | **Latitude** | **Longitude** |
| | | | | 44.0277 | -84.6577 |

| Well Elevations: | Depths Measured From: |
|---|---|
| Ground: , Derrick Floor: , Kelly Bushing: | |

| Formation at Total Depth | Drilled Total Depth | True Vertical Total Depth |
|---|---|---|
| | | |

| Producing Formation |
|---|

**Note:** *For vertical wells, the bottom hole location is the same as the surface location.*

(25)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 10 2017

REPLY TO THE ATTENTION OF:

WU-16J

**CERTIFIED MAIL 7015 0640 0004 5965 0941**
**RETURN RECEIPT REQUESTED**

Bennett Myler
Muskegon Development Company
1425 South Mission Road
Mount Pleasant, Michigan 48858

**RE: Draft Permit for the Holcomb 1-22 Well in Clare County; U. S. Environmental Protection Agency Permit Number MI-035-2R-0034; Michigan Department of Environmental Quality (MDEQ) Permit 59345**

Dear Mr. Myler:

The U.S. Environmental Protection Agency has prepared an Underground Injection Control (UIC) draft permit for the Holcomb 1-22 injection well. Please see the enclosure. We have advised the public that the draft permit is subject to a 30-day comment period (and an additional three days to account for the delay caused by mailing) wherein Muskegon Development Company or any other person may comment on the draft permit.

To preserve your right to appeal any final permit decision that may be made in this matter under Title 40 of the Code of Federal Regulations (40 C.F.R.) § 124.19, you must either participate in a public hearing or send in written comments on this draft permit decision. A hearing is not planned at this time. Following such participation, the first appeal for review of any condition of the final permit decision must be made to the Environmental Appeals Board of the EPA. Such a petition must include a statement of the reasons supporting review of the decision, including a demonstration that the issue(s) being raised for review were raised during the public comment period (including any public hearing). The petition should, when appropriate, show that each condition being appealed is based on either, (1) a finding of fact or conclusion of law which is clearly erroneous, or (2) an exercise of discretion or an important policy demonstration which the Environmental Appeals Board should, in its discretion, review.

According to 40 C.F.R. § 124.10(b) and § 124.20(d), a public notice of the preparation of a draft permit shall allow at least a 30-day public comment period (and three additional days to account for the delay caused by mailing). At the end of the public comment period you will be notified if any significant changes in the draft permit are required. If no changes are made, the final permit will be issued without prior notification.

If you have any questions, please contact William Tong of my staff by telephone at (312) 886-9380 or by email to tong.william@epa.gov.

Sincerely,

Christopher Korleski
Director, Water Division

Enclosures

cc: Mark Snow, MDEQ

(26)

EPA
United States
Environmental Protection
Agency

# EPA Seeks Comments on Draft Underground Injection Permit

## Muskegon Development Company

Clare County, Michigan — February 2017

### How to comment
You may comment on the proposed permit approval in writing. Please refer to Holcomb 1-22, Permit # MI-035-2R-0034

Mail, email or fax your comments to:
**William Tong**
U.S. EPA, Water Division
UIC Branch (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590
Email: tong.william@epa.gov
Fax: (312) 886-4235
Phone: (312) 886-9380

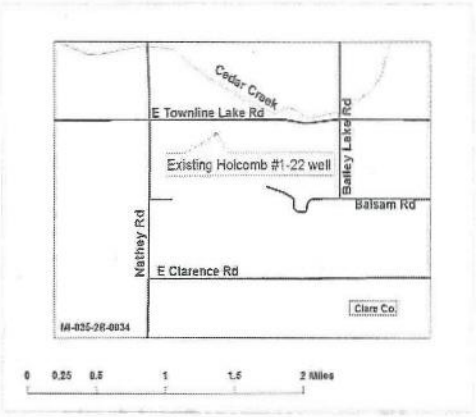
### Comment period
The Agency will accept written comments until **March 15** (midnight postmark).

### Information repository
You may see the draft permit at:
**Harrison District Library**
**105 East Main Street**
**Harrison, MI 48625**
Monday 10 am to 7 pm,
Tuesday-Friday 10 am to 6 pm, and
Saturday 10 am to 2 pm.
or at http://go.usa.gov/3JwFP.

### Administrative Record
You may see the full administrative record, including all data Muskegon Development Company submitted, at the EPA's Chicago regional office (*address above*), 9 a.m. to 4 p.m., weekdays. For an appointment to see the files, contact William Tong(*see above*).

### Right to appeal
You have the right to appeal any final permit decision if you make an official comment during the comment period or participate in the public hearing. A public hearing is not planned at this time. The first appeal must be made to the Environmental Appeals Board.

The U.S. Environmental Protection Agency plans to allow Muskegon Development Company, 1425 South Mission Road, Mount Pleasant, Michigan 48858 to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit.




If EPA makes its approval final, Muskegon Development Company may inject fresh water for enhanced oil recovery into a rock formation 4948 feet below the surface through a well at NW ¼ , Section 22, T19N, R3W, Clare County. Muskegon Development Company has also applied for a permit from the Michigan Department of Environmental Quality (MDEQ).

EPA is accepting comments from the public on this proposed permit approval (*see box, left*). The public comment period, which ends **Wednesday, March 15, 2017** includes 30 days for comments as required by law, plus an additional three days for any delay caused by mailing.

During the comment period, you may ask EPA – in writing – to hold a formal public hearing (*see address, left*). Be sure to say specifically what issues you want to raise. EPA will hold a hearing if there is significant interest. If there is a hearing, EPA will publish a notice at least 30 days prior. You will have an opportunity to make oral comments or submit written comments. EPA will consider all comments it receives, and then issue a final decision along with a response to significant comments.

The Safe Drinking Water Act requires EPA to regulate the underground injection of fluids through wells to protect the quality of underground sources of drinking water. Issuing permits is one way EPA does this. You can find the regulations governing underground injection wells at Title 40 of the Code of Federal Regulations, Parts 144 and 146.

EPA does not have the authority to change the surface location of the injection well. If you have questions or concerns about the well's location, contact the MDEQ, P.O. Box 30256, Lansing, Michigan 48909 and phone number (517) 284-6826.

To learn more about EPA's Underground Injection Control program, or to join our mailing list visit http://go.usa.gov/3JwFP.

(27)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 10 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Reid Nelson, Director
Office of Federal Agency Programs, ACHP
401 F Street NW, Suite 308
Washington, D.C. 20001

RE: Public Notice and Public Comment Period for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Nelson:

The U. S. Environmental Protection Agency plans to allow Muskegon Development Company to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit. EPA is accepting comments from the public on this proposed permit approval. The public comment period ends Wednesday, March 15, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(28)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 10 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Matt Fry
Land Use Program Leader
Michigan Department of Natural Resources, Forest Resources Division
P.O. Box 30452
Lansing, Michigan 48909

RE: Public Notice and Public Comment Period for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Fry:

The U. S. Environmental Protection Agency plans to allow Muskegon Development Company to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit. EPA is accepting comments from the public on this proposed permit approval. The public comment period ends Wednesday, March 15, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

29

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 10 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Jim Dexter, Chief
Michigan Department of Natural Resources
Fisheries Division
P. O. Box 30446
Lansing, Michigan 48909

RE: Public Notice and Public Comment Period for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Dexter:

The U. S. Environmental Protection Agency plans to allow Muskegon Development Company to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit. EPA is accepting comments from the public on this proposed permit approval. The public comment period ends Wednesday, March 15, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(30)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 10 2017

REPLY TO THE ATTENTION OF:
WU-16J

**CERTIFIED MAIL** 7011 1150 0000 2641 0209
**RETURN RECEIPT REQUESTED**

Russ Mason, Chief
Michigan Department of Natural Resources
Wildlife Division
P. O. Box 30444
Lansing, Michigan 48909

RE: Public Notice and Public Comment Period for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Mason:

The U. S. Environmental Protection Agency plans to allow Muskegon Development Company to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit. EPA is accepting comments from the public on this proposed permit approval. The public comment period ends Wednesday, March 15, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(31)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 10 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Brian D. Grennell
Michigan State Historic Preservation Office
702 W. Kalamazoo Street
Lansing, Michigan 48909

RE: Public Notice and Public Comment Period for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Grennell:

The U. S. Environmental Protection Agency plans to allow Muskegon Development Company to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit. EPA is accepting comments from the public on this proposed permit approval. The public comment period ends Wednesday, March 15, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| **COMPANY** | **EPA DRAFT PERMIT NUMBER** |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(32)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 10 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Annette Trowbridge
Ecological Services
U.S. Fish & Wildlife Service, Suite 990
5600 American Boulevard West
Bloomington, Minnesota 55437

RE: Public Notice and Public Comment Period for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Ms. Trowbridge:

The U. S. Environmental Protection Agency plans to allow Muskegon Development Company to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit. EPA is accepting comments from the public on this proposed permit approval. The public comment period ends Wednesday, March 15, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(33)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 1 0 2017

REPLY TO THE ATTENTION OF:
WU-16J

**CERTIFIED MAIL** 7011 1150 0000 2641 0193
**RETURN RECEIPT REQUESTED**

Ms. Sheila Bissonnette, Director
Harrison District Library
105 East Main Street
P.O. Box 380
Harrison, MI 48625

Dear Ms. Bissonnette:

Recently a staff member of the Underground Injection Control (UIC) Branch contacted your office regarding the need for citizens of your area to have an opportunity to view draft UIC materials. We thank you for assisting us in making these documents available to the public. All of this material should be stored and presented together if requested.

Please hold this UIC Draft Permit until we can be certain that the public comment period has ended. This material may be comfortably disposed after 90 days, you may wish to attach this letter to the last page of the document to use as a dated reference.

If there are any questions regarding the enclosure as listed below, please feel free to contact Lilly Simmons of my staff at (312) 886-5740. We appreciate your assistance in the public notification process.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

## Simmons, Lilly

(34)

**From:** Snow, Mark (DEQ) <SNOWM@michigan.gov>
**To:** Simmons, Lilly
**Sent:** Friday, February 10, 2017 4:47 PM
**Subject:** Read: draft permit: MI-035-2R-0034 [WARNING: DKIM validation failed]

Your message

To:
Subject: Read: draft permit: MI-035-2R-0034 [WARNING: DKIM validation failed]
Sent: Friday, February 10, 2017 10:47:32 PM (UTC+00:00) Monrovia, Reykjavik

was read on Friday, February 10, 2017 10:47:26 PM (UTC+00:00) Monrovia, Reykjavik.

(35)

## CERTIFICATE OF SERVICE

I hereby certify that on the 10th day of February, 2017, I delivered:

the Public Notice and Fact Sheet for << MI-035-2R-0034 >> to the mail room to be mailed via regular U.S. Mail to the list of parties attached.

_[Signature] L. L.
Lilly Simmons

_[Signature] Bill Tong
Bill Tong

| FIRST NAME | LAST NAME | COMPANY NAME | EET ADDRE: STREET ADDRESS 2 | CITY | STATE | ZIP CODE | |
|---|---|---|---|---|---|---|---|
| | | Antrim Development Corp. | P.O. Box 1148 | Traverse City | Michigan | 49685 | |
| | | Department of Attorney Gene | 525 W. Ott P.O. Box 30755 | Lansing | Michigan | 48909 | |
| | | Paxton Resources | 132 North Otsego | Gaylord | Michigan | 49735 | |
| | | Dixon Exploration Inc. | 3361 Executive Parkway, #100 | Toledo | Ohio | 43606 | |
| | | Louis Fisk | P.O. Box 18 | Sterling | Michigan | 48659 | |
| | | Gogebic Communtity College | E-4946 Jackson Road | Ironwood | Michigan | 49938 | |
| James | Henry | | 460 West U.S. 10 | Scottville | Michigan | 49454 | |
| H. Richard | Fruehauf, Jr. | | 718 Notre Dame, Suite 100 | Grosse Point | Michigan | 48230 | |
| Alphonse L. | Sipior Jr. | | 29215 Southgate Dr. | Southfield | MI | 48076 | |
| Cynthia | Waidley | | 1361 Michigan Avenue | Adrian | Michigan | 49221 | |
| | | Fremont Area District Library | 104 E. Main | Fremont | Michigan | 49412 | |
| Thomas W. | Brown | | 240 Cascade Road | Pittsburgh | PA | 15221 | |
| Sandra | Yerman | | 6600 Riverside | Brooklyn | MI | 49230 | |
| Kristine | Ptak | Grand Traverse Band | 2605 N. West Bayshore Dr. | Peshawbestown | MI | 49682 | |
| Kathie | Brosemer | Sault Ste. Marie Tribe of Chipp | 523 Ashmon St. | Sault Ste. Marie | MI | 49783 | |
| Allison | Smart | Little River Band of Ottawa Ind | 2608 Government Center Drive | Manistee | MI | 49660 | |
| Sally | Kniffen | Saginaw Chippewa Planning D | 7070 E. Broadway Rd. | Mt. Pleasant | MI | 48858 | |
| John | Rodwan | Nottawaseppi Huron Band of F | 2221 1 1/2 Mile Road | Fulton | MI | 49052 | |
| Christina | Coger | Little Traverse Bay Bands of O | 7500 Odawa Circle | Harbor Springs | MI | 49740 | |
| Dwight | Sargent | Inter-Tribal Council of Michiga | 3601 Mackinaw Trail | Sault Ste. Marie | MI | 49783 | |
| Scott | Wieting | Hannahville Indian Community | N14911 Hannahville B-1 Rd. | Wilson | MI | 49896 | |
| Lori Ann | Sherman | Keweenaw Bay Indian Commu | 14359 Pequaming Road | L'Anse | MI | 49946 | |
| George | Beck | Lac Vieux Desert Band of Lake | P.O. Box 24 Choate Rd. | Watersmeet | MI | 49969 | |
| | | Hamilton Township Supervisor | 11443 Fir | Gladwin | MI | 48624 | |
| | | Hamilton Township Trustees | 3042 N. Rodgers Road | Harrison | MI | 48625 | |
| | | Clare County Board of Commis | 225 West M P.O. Box 438 | Harrison | MI | 48625 | |
| Frank & Nancy | Oblinsky | | 9321 East Townlake Road | Harrison | MI | 48625 | |
| | | Richard A. & Eveline E. Burtka | 3360 12th Street | Wyandotte | MI | 48192 | |
| James & Lydia Magda | Molinari | | 9463 East Townline Lake Road | Harrison | MI | 48625 | |
| Herman & Marilyn K. | Roe | | 5600 Cribbins Road | North Street | MI | 48049 | |
| Paul & Shawn | Scott | | 10447 Lewis Road | Clio | MI | 48420 | |
| | | Robert A. & Pearl Fanslau Trus | 9062 East Townline Lake Road | Harrison | MI | 48625 | |
| Frederick & Katherine | Fanslau | | 200 North Occidental Road | Tecumseh | MI | 49286 | 3/15/17 returned ff |

| | | | | | | |
|---|---|---|---|---|---|---|
| Vernon & Miranda | Weaver | | 9326 East Townline Lake Road | Harrison | MI | 48625 |
| Ronald E. | Driver | | 9478 East Townline Lake Road | Harrison | MI | 48625 |
| | | Primemark Properties LLC | 437 North Larch | Lansing | MI | 48912 |
| Alvin B. | Miller | | 10860 Strasburg | Erie | MI | 48133 |
| Willis & Pamela E. | Cover | | 9161 Balsam Road | Harrison | MI | 48625 |
| Levi & Naomi | Troyer | | 2593 North Bailey Lake Avenue | Harrison | MI | 48625 |

| Email | Class II |
|---|---|
| 3oaks1120@gmail.com | x |
| akohley@wolvgas.com | X |
| aldrich4k@frontier.com | x |
| angels@cass.net | x |
| antrimcd@macd.org | x |
| apiechocki@craworld.com | x |
| bcroftchik@oilenergy.us | X |
| benoite@gvsu.edu | x |
| beverlypeters105@charter.net | X |
| biodegrawable@icloud.com | x |
| bmielke@dcgtech.com | x |
| brains@cass.net | x |
| brandon.trigg@epa.ohio.gov | x |
| brock.engineering@yahoo.com | x |
| careyk3@michigan.gov | x |
| cclady1@gmail.com | x |
| char.blanton@gmail.com | x |
| ckosmowski@calhouncountymi.gov | x |
| cpratt@geminigroup.net | x |
| csayerbrooks@gmail.com | x |
| ctejedor@copper.net | x |
| ctomaszewski@fibertec.us | x |
| cwitt10@gmail.com | x |
| dennis_erica@yahoo.com | x |
| eabinoniemi@mbpi.org | X |
| eclements@dnr.in.gov | x |
| erivera1446@comcast.net | x |
| foxviewfarm@earthlink.net | x |
| gail.philbin@sierraclub.org | x |
| h.richard@HRFantrim.com | x |
| harrison@wmich.edu | x |
| hollis@darcyconsulting.com | x |
| jennifer.kanine@PokagonBand-nsn | x |
| jenniferm@watershedcouncil.org | X |
| jessica.greathouse@chk.com | x not deliverable JH |
| jim@cobraogc.com | x |
| jimenez@battelle.org | x |
| jkuschell@gmail.com | X |
| johnwbrooke@gmail.com | x |
| jray@cass.lib.mi.us | x |
| jschmitz48@hotmail.com | X |
| jstegman@srwinc.com | X |
| jwilson@undeerc.org | x |
| kcoddington@kmcllaw.com | x |
| kdungey@coreenergyllc.com | x |
| ken.cooper@petrotek.com | x |

| | |
|---|---|
| kmurray@libertysecurity.us | x |
| kturnbull72@gmail.com | x |
| kukukw@michigan.gov | x |
| linda@scandiaenergy.com | X |
| lisannewoods@gmail.com | x |
| luannekozma@gmail.com | X |
| lynnh@sraproject.org | x |
| lynnwilmot@hotmail.com | x |
| manning@michigan.gov | X |
| manville.jennifer@epa.gov | X |
| mariliadtavares@gmail.com | x |
| marykoenen4@gmail.com | x |
| matian0303@163.com | x |
| mbeebe500@mac.com | x |
| mfisher@sagchip.org | x |
| mmcadams@whitelaketwp.com | x |
| mstaal@grcity.us | x |
| nancy.dickens@tetratech.com | x |
| nshiffler@comcast.net | x |
| optimalvalue@att.net | x |
| pamflom@gmail.com | x |
| pattivk@att.net | x |
| rcarson@manisteecountymi.gov | X |
| rfvanvoorhees@bryancave.com | x |
| robert.fousek@breitburn.com | x |
| rpmalloy@dcpmidstream.com | x |
| rrodiek@yahoo.com | x |
| rstanley@cecinc.com | x |
| s.hammontree@seilertts.com | X not deliverable |
| sara.ringer@nov.com | x |
| scott.binder@usecology.com | x |
| scott_bellinger@michoilandgasnew | x |
| shill@scsengineers.com | x |
| smithformisenate@gmail.com | x |
| szeisler915@gmail.com | x |
| tcybulla@beckmanproduction.com | x |
| thehomeworksolution@gmail.com | x |
| tim.tritten@martinmarietta.com | x |
| victoryj@michigan.gov | x |
| whitetod@gmail.com | x |
| wojo@wisperhome.com | x |

(36)

# Hearing and Public Comment Period on Muskegon Development Company Request for an Underground Injection Well Permit

Clare County, Michigan

The U.S. Environmental Protection Agency is opening a second public comment period on Muskegon Development Company's request for a permit to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests for a public hearing during the original comment period, which closed March 15.

The second comment period ends at midnight Friday, July28. Submit comments in writing to:

**Bill Tong**
U.S. Environmental Protection Agency (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590
Tong.william@epa.gov

A public meeting and formal public hearing have been scheduled:

**Tuesday, July 25**
Clare High School
201 E. State St, Clare

Public Meeting: 6 to 7:30 p.m.
Public Hearing: 7:30 to 9:30 p.m.

During the public meeting, EPA representatives will give a brief presentation and answer questions. During the hearing, you may comment orally on the draft permit. EPA will respond to all comments on the draft permit after the comment period closes. Responses will address comments received during the original and current comment periods.

You may see a copy of the draft permit at the Harrison District Library, or at EPA's regional office in Chicago. Please make an appointment to visit the Chicago office; contact Lisa Perenchio at 312-886-6593, or perenchio.lisa@epa.gov.

For questions, additional information, or to join our UIC mailing list, call EPA toll-free at 800-621-8431, 9:30 a.m. to 5:30 p.m., weekdays, or visit http://go.usa.gov/3JwFP.

EPA
United States
Environmental Protection
Agency

# EPA Public Hearing on Draft Underground Injection Permit

**Muskegon Development Company**

Clare County, Michigan June 2017

## Public meeting & hearing

EPA is seeking further comments on the Holcomb 1-22 well, draft permit number MI-035-2R-0034.

Thursday, July 25
**Public meeting**
6:00 to 7:30 p.m.
**Public hearing**
7:30 to 9:30 p.m.

Clare High School
201 E. State St.
Clare, Michigan

## How to comment

New comments can be submitted by mail, email, or in person at the public hearing. If you already submitted a comment, you do not need to resubmit.

Send new comments to:
**William Tong**
U.S. EPA, Water Division
UIC Branch (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590
Email: tong.william@epa.gov

## New comment period

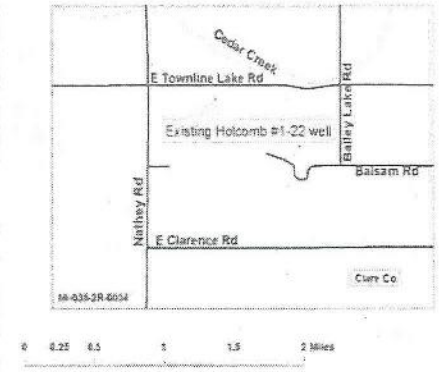
EPA will accept written comments until **July 28** (midnight postmark). The original comment period ended in March.

## Right to appeal

You have the right to appeal any final permit decision if you make an official comment during the comment period or participate in the public hearing. The first appeal must be made to the Environmental Appeals Board.

## On the Web

To learn more about EPA's Underground Injection Control program, or to join our mailing list: http://go.usa.gov/3JwFP




The U. S. Environmental Protection Agency plans to allow Muskegon Development Company, 1425 South Mission Road, Mount Pleasant, Michigan to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit.

If EPA makes its approval final, Muskegon Development Company may inject fresh water for enhanced oil recovery into a rock formation 4948 feet below the surface through the Holcomb 1-22 injection well near N. Athey and E. Townline Lake Roads in Hamilton Township of Clare County. Muskegon Development Company has also applied for a permit from the Michigan Department of Environmental Quality (MDEQ).

EPA received requests for a public hearing on this proposed permit approval. EPA will hold a public meeting and hearing Tuesday, July 25 (*see box, left*). During the hearing, you will have an opportunity to make oral comments or submit written comments. EPA will consider all comments it receives, and then issue a final decision along with a response to the significant comments.

The new public comment period ends **Friday, July 28.** This exceeds the required 30-day period and includes the additional three days for any delay caused by mailing.

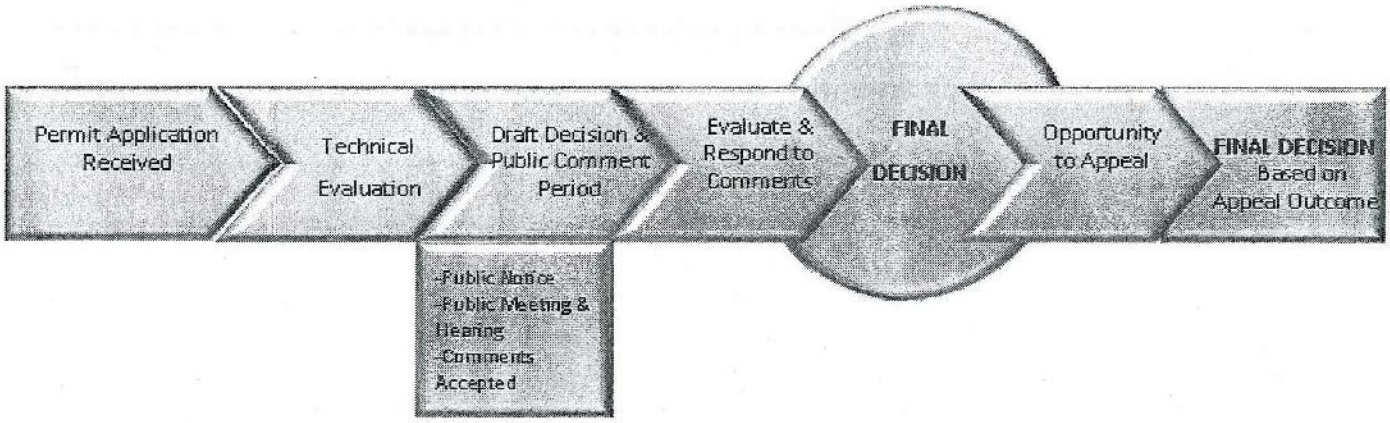
## Legal authority

The Safe Drinking Water Act requires EPA to regulate the underground injection of fluids through wells to protect the quality of underground sources of drinking water. Issuing permits is one way EPA does this. You can find the regulations governing underground injection wells at Title 40 of the Code of Federal Regulations, Parts 144 and 146.

EPA does not have the authority to change the surface location of the injection well. If you have questions or concerns about the well's location, contact the MDEQ, P.O. Box 30256, Lansing, Michigan 48909 and phone number (517) 241-1515.

*continued on back ...*

*Figure 1: The permit process*




*... continued from front*

## What is the role of the EPA?

EPA must make sure that injection wells will not harm drinking water. The Safe Drinking Water Act requires companies that want to drill these wells to apply for and receive a permit from EPA. The permits include conditions to ensure that the wells will not have a negative impact on drinking water.

To make sure that the wells will not harm drinking water, EPA looks at a number of things, including:

- Location of underground drinking water sources
- Rock type and suitability for injection
- Wells in the area that may accidentally leak

EPA also looks at the way the well will be operated, including:

- Pressure used to inject the fluid in the well
- Monitoring the well when it is in use
- Closing the well when it is no longer in use

## What is the permit process?

EPA must review the permit application and make sure it is complete. The application must meet the Safe Drinking Water Act requirements for this type of well. After reviewing the application, EPA issues a draft decision approving or denying the permit. The draft decision is announced for public comments.

Based on the comments, EPA may notify the public of a public meeting and hearing on the decision. At the public meeting EPA will provide information and answer questions about the permit. At the public hearing people can provide comments to EPA for the record. Comments can also be given in writing or by email.

EPA will review comments and then make a final decision. EPA will respond to all of the significant comments that were received. The final permit decision may be appealed to the Environmental Appeals Board by anyone who commented during the comment period or participated in the hearing.

## More information available

You may view the draft permit and public hearing fact sheet at:
**Harrison District Library**
**105 East Main Street, Harrison, Michigan**

You may also view related documents at EPA's Chicago office. Please contact:
**William Tong**
(312) 886-4235
Tong.william@epa.gov.

You may call toll-free, 800-621-8431, weekdays, 9:30 a.m. to 5:30 p.m. Eastern Time
Or visit http://go.usa.gov/3JwFP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 2 1 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Reid Nelson
Office of Federal Agency Programs, ACHP
401 F Street NW, Suite 308
Washington, D.C. 20001

RE: Hearing and Public Comment Period for Muskegon Development Company's Request for an Underground Injection Well Permit in Clare County, Michigan

Dear Nelson:

The U. S. Environmental Protection Agency plans to open a second public comment period for Muskegon Development Company's request to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests from the public for a public hearing during the original comment period on this proposed permit approval. This second public comment period ends Friday, July 28, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit applications and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(39)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 2 1 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Annette Trowbridge
Ecological Services
U.S. Fish & Wildlife Service, Suite 990
5600 American Boulevard West
Bloomington, Minnesota 55437

RE: Hearing and Public Comment Period for Muskegon Development Company's Request for an Underground Injection Well Permit in Clare County, Michigan

Dear Trowbridge:

The U. S. Environmental Protection Agency plans to open a second public comment period for Muskegon Development Company's request to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests from the public for a public hearing during the original comment period on this proposed permit approval. This second public comment period ends Friday, July 28, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit applications and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(40)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 2 1 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Brian D. Grennell
Michigan State Historic Preservation Office
702 W. Kalamazoo Street
Lansing, Michigan 48909

RE: Hearing and Public Comment Period for Muskegon Development Company's Request for an Underground Injection Well Permit in Clare County, Michigan

Dear Grennell:

The U. S. Environmental Protection Agency plans to open a second public comment period for Muskegon Development Company's request to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests from the public for a public hearing during the original comment period on this proposed permit approval. This second public comment period ends Friday, July 28, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit applications and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(41)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 2 1 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Matt Fry, Land Use Program Leader
Michigan Department of Natural Resources, Forest Resources Division
P.O. Box 30452
Lansing, Michigan 48909

RE: Hearing and Public Comment Period for Muskegon Development Company's Request for an Underground Injection Well Permit in Clare County, Michigan

Dear Fry:

The U. S. Environmental Protection Agency plans to open a second public comment period for Muskegon Development Company's request to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests from the public for a public hearing during the original comment period on this proposed permit approval. This second public comment period ends Friday, July 28, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit applications and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(42)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 2 1 2017

REPLY TO THE ATTENTION OF:
WU-16J

**Certified Mail** 7016 1370 0001 5720 3630
**RETURN RECEIPT REQUESTED**

Russ Mason, Chief
Michigan Department of Natural Resources
Wildlife Division
P. O. Box 30444
Lansing, Michigan 48909

RE: Hearing and Public Comment Period for Muskegon Development Company's Request for an Underground Injection Well Permit in Clare County, Michigan

Dear Mason:

The U. S. Environmental Protection Agency plans to open a second public comment period for Muskegon Development Company's request to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests from the public for a public hearing during the original comment period on this proposed permit approval. This second public comment period ends Friday, July 28, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit applications and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

43

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 2 1 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Jim Dexter, Chief
Michigan Department of Natural Resources
Fisheries Division
P. O. Box 30446
Lansing, Michigan 48909

RE: Hearing and Public Comment Period for Muskegon Development Company's Request for an Underground Injection Well Permit in Clare County, Michigan

Dear Dexter:

The U. S. Environmental Protection Agency plans to open a second public comment period for Muskegon Development Company's request to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests from the public for a public hearing during the original comment period on this proposed permit approval. This second public comment period ends Friday, July 28, 2017.

Per our program regulations, 40 C.F.R. 124.10(e), all permit applications and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(44)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 2 1 2017

REPLY TO THE ATTENTION OF:
WU-16J

**CERTIFIED MAIL** 7016 1370 0001 5720 3623
**RETURN RECEIPT REQUESTED**

Ms. Sheila Bissonnette, Director
Harrison District Library
105 East Main Street
P.O. Box 380
Harrison, MI 48625

Dear Ms. Bissonnette:

Recently a staff member of the Underground Injection Control (UIC) Branch contacted your office regarding the need for citizens of your area to have an opportunity to view draft UIC materials. We thank you for assisting us in making these documents available to the public. All of this material should be stored and presented together if requested.

Please hold this UIC Draft Permit until we can be certain that the public comment period has ended. This material may be comfortably disposed after 90 days, you may wish to attach this letter to the last page of the document to use as a dated reference.

If there are any questions regarding the enclosure as listed below, please feel free to contact Lilly Simmons of my staff at (312) 886-5740. We appreciate your assistance in the public notification process.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(45)

**CERTIFICATE OF SERVICE**

I hereby certify that on the 21st day of June, 2017, I delivered:

[the Public Notice and Fact Sheet] for ___<<MI-035-2R-0034 hearing>>__ to the mail room to be mailed via regular U.S. Mail to the list of parties attached.

_[Signature] Charlene Neal-Crump
[Charlene Neal-Crump]

_[Signature] _____
[Lilly Simmons]

| FIRST NAME | LAST NAME | COMPANY NAME | STREET ADDRESS 1 | STREET ADDRESS 2 | CITY | STATE | ZIP CODE |
|---|---|---|---|---|---|---|---|
| | | Antrim Development Corp. | P.O. Box 1148 | | Traverse City | MI | 49685 |
| | | Department of Attorney General-ENRA Division | 525 W. Ottawa | P.O. Box 30755 | Lansing | MI | 48909 |
| | | Paxton Resources | 132 North Otsego | | Gaylord | MI | 49735 |
| | | Dixon Exploration Inc. | 3361 Executive Parkway, #100 | | Toledo | OH | 43606 |
| | | Louis Fisk | P.O. Box 18 | | Sterling | MI | 48659 |
| | | Gogebic Communtity College | E-4946 Jackson Road | | Ironwood | MI | 49938 |
| James | Henry | | 460 West U.S. 10 | | Scottville | MI | 49454 |
| H. Richard | Fruehauf, Jr. | | 718 Notre Dame, Suite 100 | | Grosse Point | MI | 48230 |
| Alphonse L. | Sipior Jr. | | 29215 Southgate Dr. | | Southfield | MI | 48076 |
| Cynthia | Waidley | | 1361 Michigan Avenue | | Adrian | MI | 49221 |
| | | Fremont Area District Library | 104 E. Main | | Fremont | MI | 49412 |
| Thomas W. | Brown | | 240 Cascade Road | | Pittsburgh | PA | 15221 |
| Sandra | Yerman | | 6600 Riverside | | Brooklyn | MI | 49230 |
| Kristine | Ptak | Grand Traverse Band | 2605 N. West Bayshore Dr. | | Peshawbestown | MI | 49682 |
| Kathie | Brosemer | Sault Ste. Marie Tribe of Chippewa | 523 Ashmon St. | | Sault Ste. Marie | MI | 49783 |
| Allison | Smart | Little River Band of Ottawa Indians | 2608 Government Center Drive | | Manistee | MI | 49660 |
| Sally | Kniffen | Saginaw Chippewa Planning Dept. | 7070 E. Broadway Rd. | | Mt. Pleasant | MI | 48858 |
| John | Rodwan | Nottawaseppi Huron Band of Potawatomi | 2221 1 1/2 Mile Road | | Fulton | MI | 49052 |
| Christina | Coger | Little Traverse Bay Bands of Odawa Indians | 7500 Odawa Circle | | Harbor Springs | MI | 49740 |
| Dwight | Sargent | Inter-Tribal Council of Michigan | 3601 Mackinaw Trail | | Sault Ste. Marie | MI | 49783 |
| Scott | Wieting | Hannahville Indian Community | N14911 Hannahville B-1 Rd. | | Wilson | MI | 49896 |
| Lori Ann | Sherman | Keweenaw Bay Indian Community | 14359 Pequaming Road | | L'Anse | MI | 49946 |
| George | Beck | Lac Vieux Desert Band of Lake Superior Chippewa | P.O. Box 249 | Choate Rd. | Watersmeet | MI | 49969 |
| | | Hamilton Township Supervisor | 11443 Fir | | Gladwin | MI | 48624 |
| | | Hamilton Township Trustees | 3042 N. Rodgers Road | | Harrison | MI | 48625 |
| | | Clare County Board of Commissioners | 225 West Main Street | P.O. Box 438 | Harrison | MI | 48625 |
| Frank & Nancy | Oblinsky | | 9321 East Townlake Road | | Harrison | MI | 48625 |
| | | Richard A. & Eveline E. Burtka Trust | 3360 12th Street | | Wyandotte | MI | 48192 |
| James & Lydia Magda | Molinari | | 9463 East Townline Lake Road | | Harrison | MI | 48625 |
| Herman & Marilyn K. | Roe | | 5600 Cribbins Road | | North Street | MI | 48049 |
| Paul & Shawn | Scott | | 10447 Lewis Road | | Clio | MI | 48420 |
| | | Robert A. & Pearl Fanslau Trust | 9062 East Townline Lake Road | | Harrison | MI | 48625 |
| Frederick & Katherine | Fanslau | | 200 North Occidental Road | | Tecumseh | MI | 49286 |
| Vernon & Miranda | Weaver | | 9326 East Townline Lake Road | | Harrison | MI | 48625 |
| Ronald E. | Driver | | 9478 East Townline Lake Road | | Harrison | MI | 48625 |
| | | Primemark Properties LLC | 437 North Larch | | Lansing | MI | 48912 |
| Alvin B. | Miller | | 10860 Strasburg | | Erie | MI | 48133 |
| Willis & Pamela E. | Cover | | 9161 Balsam Road | | Harrison | MI | 48625 |
| Levi & Naomi | Troyer | | 2593 North Bailey Lake Avenue | | Harrison | MI | 48625 |
| Bennett | Myler | Muskegon Development Company | 1425 South Mission | | Mount Pleasant | MI | 48858 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Jim | Walter | Clare High School | 201 E. State Street | Clare | MI | 48617 |
| Kirby | North Ancona | North Lake Farm | 9538 Peterson Road & N. Lake Road | Brooklyn | MI | 49230 |

Email
3oaks1120@gmail.com
admin@caccmi.org
akohley@wolvgas.com
aldrich4k@frontier.com
angels@cass.net
antrimcd@macd.org
apiechocki@craworld.com
bcroftchik@oilenergy.us
benoite@gvsu.edu
beverlypeters105@charter.net
bfountain@pioneergroup.com
biodegrawable@icloud.com
bmielke@dcgtech.com
brains@cass.net
brandon.trigg@epa.ohio.gov
brock.engineering@yahoo.com
careyk3@michigan.gov
cclady1@gmail.com
char.blanton@gmail.com — 6/21/17 not delivered full email box. ff
ckosmowski@calhouncountymi.gov
cpratt@geminigroup.net
csayerbrooks@gmail.com
ctejedor@copper.net
ctomaszewski@fibertec.us
cwitt10@gmail.com
dalt8903@yahoo.com
dennis_erica@yahoo.com
erivera1446@comcast.net
foxviewfarm@earthlink.net
foxviewfarm@earthlink.net
gail.philbin@sierraclub.org
glier@battelle.org
h.richard@HRFantrim.com
harrison@wmich.edu
hollis@darcyconsulting.com
j.logan@aisystemsgroup.com
jefferyloman@mac.com
jennifer.kanine@PokagonBand-nsn.gov
jenniferm@watershedcouncil.org
jim@cobraogc.com
jimenez@battelle.org
jkuschell@gmail.com
johnwbrooke@gmail.com
jray@cass.lib.mi.us
jschmitz48@hotmail.com
jstegman@srwinc.com
jwilson@undeerc.org
kcoddington@kmcllaw.com

kdungey@coreenergyllc.com
ken.cooper@petrotek.com
kmurray@libertysecurity.us
kturnbull72@gmail.com
kukukw@michigan.gov
linda@scandiaenergy.com
lisannewoods@gmail.com
luannekozma@gmail.com
lynnh@sraproject.org
lynnwilmot@hotmail.com
manning@michigan.gov
manville.jennifer@epa.gov
mariliadtavares@gmail.com
marykoenen4@gmail.com
matian0303@163.com
mbeebe500@mac.com
mfisher@sagchip.org
mmcadams@whitelaketwp.com
mstaal@grcity.us
nancy.dickens@tetratech.com
nshiffler@comcast.net
optimalvalue@att.net
pamflom@gmail.com
pattivk@att.net
psullivan@envgeotech.com
rcarson@manisteecountymi.gov
rfvanvoorhees@bryancave.com
robert.fousek@breitburn.com
rpmalloy@dcpmidstream.com
rrodiek@yahoo.com
rstanley@cecinc.com
sara.ringer@nov.com
SchrouderK@michigan.gov
schultebm@pbworld.com
scott.binder@usecology.com
scott_bellinger@michoilandgasnews.com
shill@scsengineers.com
smithformisenate@gmail.com
snowm@michigan.gov
szeisler915@gmail.com
tcybulla@beckmanproduction.com
thehomeworksolution@gmail.com
tim.tritten@martinmarietta.com
victoryj@michigan.gov
whitetod@gmail.com
wojo@wisperhome.com

# Reunion

*Cont. from Page 2B*

1961
Robert Ames, Paul Benchley, Jean (Hart) Cruickshank, Norman Davis, Bruce Dole, Janet (Orvis) Hart, Rodger Hicks, Wallace Northon, Michele (Deallaue) Polakowski, Donna (Bell) Prather, Jeff Raymond, Judy (Presley) Stiler, Janet (Hart) Slocum, Edward Williams

1962
Gene Badgley, Bernard Benchley, Betty Jo (Miller) Finch, George Finch Jr, Daniel Green

1963
Midge (Poepplemann) Breen, Skip Breen, Gordon Cameross, Ralph Cleveland, Theola (Leith) Cleveland, Lois (Presley) McJames, Richard Sharp

1964
Leslie (McGuire) Dean, Robert Denton, Lynn Drallette, Roxanne (Schroeder) Evison, Ruth Ann (Sutton) Green, Richard Hughes, David Krell, Susan (Perrine) Marlow, Karen (Branstrom) Prince, Ruth Ann (Pelton) Reynolds, Calla (House) Ringgenberg, John Simpkins, Vickie (Haring) Trussel, Robert "Bob" Wood

1965
Beverly (Haring) Cameross, Patricia (Case) Greene, Linda (Kile) Hayward, Flavious Hicks, Mary Beth (Rodabaugh) McDonald, Valarie (Brown) Mildenberg, Susan (Sogge) Murawski, Louise (Mackenzie) Paquette, Priscilla (Ervin) Thompson

1966
Shirley (Walter) Ashley, Sharon (Peltier) Doxtader, Marilyn (LaVoye) Doyle, June (Hart) Figgins, Janet (Battle) Krell, Beverly (Weldon) Magnus, Nancy (Perrine) Orr, Sandra (Owens) Sharp, Ted Papesh, Jean (Sharp) Thayer, Ronald Walters

1967
Myron "Vince" Allen, Sharon (Richardson) Bishop, Jeanne (David) Carscross, Donald Dunlop, Pamela (Miller) Eaton, James Eberhart, Elaine Flood, Sue (Eberhart) Granger, James Irwin Jr, David Isaac, Peggy (Miller) Kukulka, Sarah Jo (Sogge) Kiessel ,Charles Magnus ,Michael Manee, Ruthanne (Smith) Manikeau, John Morgan, Susie Neff, Sue (Smith) Prince, Kristine "Tina" (Pantire) Rundle, James Warner, Ellen (Ackerman) Warner, Tim White, Del Wiley, Billie (Luke) Willett

1968
Ann (Miller) Alvarado, Jeanne Pinaire, Lois (Dunn) Werner

1969
Twyla (LaVoye) Arquette, Shirley (Armstrong) Beemer, Lee Ann Bonic, Donald Brown, Lana Eberhart, Ann (Eberhart) Haskill, Allen Isaac, Stephen Miller, Kathy (Owens) Evans, Bruce Patterson, Susan Smith, Gayla (Bergey) Weaver, Daniel White, Tom Whitfield, William Woodworth

1970
Norma (Chapman) Allen, Ray Branstrom, Jackie (Luke) Brilhart, Donald (Chute) Stewart, Gayla (Kleinhardt) Wiley, Deb (Showers) Wolfe

1971
Suzanne Allen, Karen (Chapman) Blankenship, Ellyce Brinkerhoff, Charlene Chapple, Glenna (Chapple) Crafard, Sue (Walters) Green, LuAnn Leach, Jeanie (Belle) Mishler

1972
Regina (Randle) Agle, Belinda Bicknell, Charma (Kleinhardt) Brian, Rebecca (Hartshorn) Elkins, Carol (Flones) Iacco, Dennis Iacco, Ann (Sexton) Ganz, Bruce Hales, Roxanne(House) Jordan, Janine (Salchett) Kreisel, Cynthia (Mahan) Krell, Tim Lapham, Cathy "Cate" (Slater) McGinn, Jayne (Green) Palmer, Kenneth Sheredy, Robert Showers

1972
DECEASED CLASSMATES TO DATE
Bruce Cook, Bryan Snow, Dianna (Cameross) Glass, Gordie Palmer, Jerry Wood, John Haring, Kathey (Hitchcock) Post, Louise (Armentrout) Doolittle, Marcia (Garver) Gibis, Roger Schafer, Ronald Underwood, Shelly (Tomaski) Sandel

June 18, 2016-June 17, 2017)
1940 Leonel Green
1944 Marjorie (Hileman) Case, Helen (Murphy) McFarland, Jean (Mclean) Corey, Robert Ackerman
1945 Olive Nash
1946 Jackie (Frey) Ackerman
1947 Betty (Severson) Miller, June (Coveart) Melnek, Robert Sanborn
1948 Carol (Hackmuth) Irwin, Alma (Seiter) Busche, David Seiter, Donna (Lumley) Norton, Norrilyn (Mitchell) Ferguson
1949 Joseph Pudvay
1951 Gayle (Clute) Cimmerer, Jacob Walker, Kay Carlton "KC" Green, Nancy (Brockway) Kullman
1953 James Mayer
1955 Joseph Humphrey
1958 Robert Thayer
1959 Linda (McQuiston) Dole, Vern Dingman
1961 Terry Conroy, Norma (Roger) Luellers
1962 Thomas Kozicki
1964 Robert Grigg
1965 Calvin Jackson
1966 Penny(Haring) Hughes
1967 Mary Matt
1971 Kay (Eberhart) Lewis
1971 Patricia (Tiedeman) Shull

# New president announced for Med Center

MidMichigan Health has announced that Marita Hattem has been named president of MidMichigan Medical Center – Gratiot. In this role she will also oversee MidMichigan Medical Center – Mt. Pleasant, MidMichigan's newly expanded health park that opened in February 2017.

A native of Spring Lake, Mich., Hattem holds a master's degree in business administration from the University of St. Francis in Ft. Wayne, Ind., and a bachelor's degree in psychology with honors from Central Michigan University in Mt. Pleasant.

She joins MidMichigan from Wausau, Wis., where she had a wide range of responsibilities as the chief experience officer of Connexus Credit Union for the past two and a half years. Prior to that she was with the Aspirus health system, also in Wausau, where she held positions of increasing scope and responsibility from vice president of physician support services to interim president and chief operating officer of the Aspirus Wausau Hospital to senior vice president of provider relations and service lines for Aspirus, Inc.

"We are pleased to have Marita join our MidMichigan Health leadership team," said Diane Postler-Slattery, president and CEO, MidMichigan Health. "Hattem was selected for the position after an extensive national search and interviews with the Medical Center board of directors, medical staff and key administrative leaders. There were many well qualified candidates interested in this position, and Marita rose to the top. Her background, talent and experience are an excellent match for the challenges and opportunities ahead of us. We are confident that she will excel as president."

"I was immediately impressed with MidMichigan Health and their emphasis on quality of care and the teamwork that is involved in creating an excellent patient and family experience," said Hattem. "Being part of a nationally recognized organization is an honor and I look forward to working with an outstanding team."

A Fellow of the American College of Health Care Executives, Hattem holds a Certification in Professional Medical Services Management. In addition, this month she completed her 200-hour certification as a yoga teacher.

Marita Hattem has been named the new president of MidMichigan Medical Center – Gratiot.

## NOTICE

The City of Clare is accepting sealed bids for the reconstruction of John R Street from the Doherty apartments to Maple Street. Sealed bids will be accepted until 2:00 p.m. on Friday, June 30, 2017, and should be submitted to:

City of Clare
Excavation Bid – John R Street
202 West Fifth Street
Clare, MI 48617

Project descriptions may be obtained from Clare City Hall, Monday through Friday, 8:00 a.m. to 3:30 p.m., 989/386-7541, ext. 202. The City of Clare is an equal opportunity employer and we reserve the right to accept and/or reject any and/or all bids.

Alan J. Jessup, DPW Director

## NOTICE

The City of Clare is accepting sealed bids for approximately 418.6 ton of 1100T 20AA Asphalt Paving for the 2017-18 street reconstruction project. Sealed bids will be accepted until 2:00 p.m. on Friday, June 30, 2017, and should be submitted to:

City of Clare
Asphalt Bid – John R Street
202 West Fifth Street
Clare, MI 48617

Project descriptions may be obtained from Clare City Hall, Monday through Friday, 8:00 a.m. to 3:30 p.m., 989/386-7541, ext. 202. The City of Clare is an equal opportunity employer and we reserve the right to accept and/or reject any and/or all bids.

Alan J. Jessup, DPW Director

## NOTICE

The City of Clare is accepting sealed bids for Asphalt Paving for the 2017-18 street reconstruction project Beech Street between Dunlop and West First Street. Sealed bids will be accepted until 2:00 p.m. on Friday, June 30, 2017, and should be submitted to:

City of Clare
Asphalt Bid – Beech Street
202 West Fifth Street
Clare, MI 48617

Project descriptions may be obtained from Clare City Hall, Monday through Friday, 8:00 a.m. to 3:30 p.m., 989/386-7541, ext. 202. The City of Clare is an equal opportunity employer and we reserve the right to accept and/or reject any and/or all bids.

Alan J. Jessup, DPW Director

## City of Clare Commission Meeting Unofficial Condensed Minutes June 19, 2017

The regular meeting of the Clare City Commission was called to order at 6:00 pm in the Commission Chambers by Mayor Pat Humphrey, who led the Pledge of Allegiance. Present were: Commissioners Bob Bonham, Pat Humphrey, Jean McConnell, Carolyn (Gus) Murphy, and Karla Swanson.

Public Comment: None.

Motion to approve the Consent Agenda was supported and approved.

Motion to recognize the CHS Varsity Boys Track Team for winning the 2017 Division III MITCA State Championship was supported and approved.

Presentation by director of MAC/TVS.

Motion to approve the Employment Contract of Joy Simmer, Director of Parks and Recreation was supported and approved.

Motion to approve the Oil & Gas Lease with West Bay Exploration Company of Traverse City was supported and approved.

Motion to approve the Authorization to change Consumers Energy Agreement was supported and approved.

Motion to approve the MDOT Contract for the Clare Municipal Airport Taxiway Project was supported and approved.

Motion to approve final FY 2016/2017 Budget Amendments was supported and approved.

The Treasurer's Report was received.

The City Manager's Report was received.

Extended Public Comment: None.

Commission Topics: None.

Motion to adjourn was supported and approved.

A complete copy of the minutes is available at the Clerk's office upon request. After approval, minutes are posted on the City website: cityofclare.org.-Boards & Commissions-Mayor and City Commission. This institution is an equal opportunity provider and employer.

Stacy B. Pecnacek
Deputy City Clerk

## NOTICE TO CREDITORS
### Decedent's Estate

**State of Michigan**
**Probate Court**
**County of Clare**

File No. 17-17307-DE
*Estate of:*
LOTA M. HARDING,
Deceased
Date of Birth: 12/04/1932

TO ALL CREDITORS:*

NOTICE TO CREDITORS:

The decedent, Lota M. Harding, died 01/07/2016. Creditors of the decedent are notified that all claims against the estate will be forever barred unless presented to Neal Harding, personal representative or to both the Probate Court at 225 W. Main Street, Harrison, MI 48625 and the personal representative within 4 months after the date of publication of this notice.

06/13/2017
Heather M. Warren
P78468
2828 N. Saginaw Rd.,
Midland, MI 48640
(989) 832-2599

Neal Harding
11959 E. Forest Rd.,
Gladwin, MI 48624
(989) 246-0567

# Holley named to Dean's List

Zachary Holley, of Farwell was named to the Dean's List at Capital University for the spring 2017 semester.

In order to be named to the Dean's List, full-time, degree-seeking students must have achieved a grade point average of at least 3.5.

## NOTICE

The City of Clare is accepting sealed bids for approximately 11,360 square feet of 4" and 6" thick sidewalks throughout the City of Clare. Bids will be accepted until 2:00 p.m. on Friday, June 30, 2017, and should be submitted to:

City of Clare
Sidewalk Bid
202 West Fifth Street
Clare, MI 48617

The project description may be obtained from the Department of Public Works, Monday through Friday, 7:00 a.m. to 3:30 p.m., 989/386-2182, extension 202. The City of Clare is an equal opportunity employer and provider and we reserve the right to accept and/or reject any and/or all bids.

Alan J. Jessup, DPW Director

## NOTICE

The City of Clare is accepting sealed bids for approximately 1,401 lineal feet of F4 Modified Curb. Project descriptions may be obtained from the Clare City Hall, Monday through Friday, 8:00 a.m. to 3:30 p.m., 989/386-7541, ext. 202. Please contact Alan J. Jessup, DPW Director at 989-429-7735 to schedule a walk thru of work included prior to bidding. Sealed bids will be accepted until 2:00 p.m. on Friday, June 30, 2017, and should be submitted to:

City of Clare
Curb Bid – John R Street
202 West Fifth Street
Clare, MI 48617

The City of Clare is an equal opportunity employer and we reserve the right to accept and/or reject any and/or all bids.

Alan J. Jessup, DPW Director

## NOTICE

The City of Clare is accepting sealed bids for the reconstruction of Beech Street between Dunlop and West First Street. Sealed bids will be accepted until 2:00 p.m. on Friday, June 30, 2017, and should be submitted to:

City of Clare
Excavation Bid – Beech Street
202 West Fifth Street
Clare, MI 48617

Project descriptions may be obtained from Clare City Hall, Monday through Friday, 8:00 a.m. to 3:30 p.m., 989/386-7541, ext. 202. The City of Clare is an equal opportunity employer and we reserve the right to accept and/or reject any and/or all bids.

Alan J. Jessup, DPW Director

## Hearing and Public Comment Period on Muskegon Development Company Request for an Underground Injection Well Permit
### Clare County, Michigan

The U.S. Environmental Protection Agency is opening a second public comment period on Muskegon Development Company's request for a permit to inject fluids to enhance oil and natural gas production. If approved, the permit would allow the company to operate a Class II underground injection well. EPA received requests for a public hearing during the original comment period, which closed March 15.

The second comment period ends at midnight Friday, July 28. Submit comments in writing to:

Bill Tong
U.S. Environmental Protection Agency (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590
Tong.william@epa.gov

A public meeting and formal public hearing have been scheduled:

Tuesday, July 25
Clare High School
201 E. State St. Clare
Public Meeting: 6 to 7:30 p.m.
Public Hearing: 7:30 to 9:30 p.m.

During the public meeting, EPA representatives will give a brief presentation and answer questions. During the hearing, you may comment orally on the draft permit. EPA will respond to all comments on the draft permit after the comment period closes. Responses will address comments received during the original and current comment periods.

You may see a copy of the draft permit at the Harrison District Library, or at EPA's regional office in Chicago. Please make an appointment to visit the Chicago office; contact Lisa Perenchio at 312-886-6593, or perenchio.lisa@epa.gov.

For questions, additional information, or to join our UIC mailing list, call EPA toll-free at 800-621-8431, 9:30 a.m. to 5:30 p.m., weekdays, or visit http://go.usa.gov/3JwF2.

Well Name: HOLCOMB 1-22 ; MUSKEGON;
Permit #: MI-035-2R-0034

| | Comment at hearing? | First Name | Last Name | Mailing Address OR Email |
|---|---|---|---|---|
| Ex. | Yes | John | Doe | 123 Main, City, ST 12345 |
| Ex. | No | Jane | Smith | janesmith2@email.com |
| 1 | Yes | Wes | Raymond | admin@caccmi.org |
| 2 | Yes | Jen | Raymond | volunteer@caccmi.org |
| 3 | Yes | Rebecca | Terpening | Rterpening@gmail.com |
| 4 | ~~MAYBE~~ | BILL (Bennett) | MYLER | 1425 S. MISSION RD, MT. PL., MI 48858 |
| 5 | ~~Maybe~~ MAY | Wayne | Terpening | 510 Forest Ave. Clare, MI |
| 6 | MAY | REX | RAYMOND | 10537 S. HEMLOCK AVE LAKE MI 48632 |
| 7 | MAY | LETHA | RAYMOND | " " |
| 8 | maybe | Stephanie | Terpening | 510 Forest Ave. Clare MI 48617 |
| 9 | maybe | mary Anne | Van Oosterhout | 2920 S. Harrison Ave Harrison MI 48625 |
| 10 | yes | Karen | Turnbull | 5737 Harding, Barryton MI 49305 |

Well Name: HOLCOMB 1-22 ; MUSKEGON;
Permit #: MI-035-2R-0034

| | Comment at hearing? | First Name | Last Name | Mailing Address OR Email |
|---|---|---|---|---|
| Ex. | Yes | John | Doe | 123 Main, City, ST 12345 |
| Ex. | No | Jane | Smith | janesmith2@email.com |
| 1 | No | Jerry | Hilliard | h.illiard.jerry@yahoo.com |
| 2 | YES | JEFF | OSTAHOWSKI | BARDOFEDEN@HOTMAIL.COM |
| 3 | NO | MARI PAT | TERPENING | mterpening@comdbd.org |
| 4 | N/A | Pat | Maurer | Clare Co. Review |
| 5 | No | Pam | Gilbert | pamflora@gmail.com |
| 6 | NO | JANET | PAUQUETTE | jakacapa@yahoo.com |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

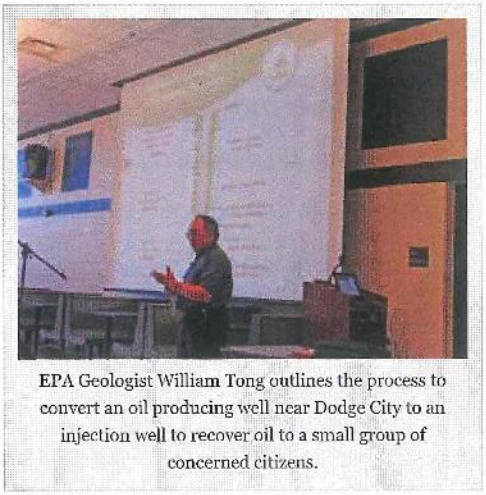
# Injection well raises concerns

*July 27, 2017*

**By Pat Maurer**
**Correspondent**

*A small group, concerned over an Environmental Protection Agency permit application from Muskegon Development Company of Mt. Pleasant to convert an existing oil production well to an injection well for "enhanced oil recovery" in the Dodge City area, came to a presentation and Public Hearing with EPA officials Wednesday evening.*

*Many expressed concern over errors and omissions in the notification process, saying the day and location were incorrect in the Public Notice and that many may not have been aware of the hearing.*



EPA Geologist William Tong outlines the process to convert an oil producing well near Dodge City to an injection well to recover oil to a small group of concerned citizens.

*During the presentation, Bill Tong, Geologist for the Underground Injection Control Branch, explained the process of developing and monitoring the Class II injection wells, using fresh water to force out oil from a non-producing well.*

*The application is for the existing Holcomb #1-22 well located on the south side of East Townline Lake Road between North Athey and Bailey Lake Road. The location is about 1.5 miles east of Dodge City.*

*The presentation, part of the process before EPA makes a decision to approve or deny the permit, included a question and answer session with audience members.*
*If approved the permit would apply to the life of the well, Tong explained.*

*He went over the construction of the injection well and specific requirements including pressure limits, fluid composition (fresh water), plugging and abandonment plans, and funds for closing an injection well.*

*Audience members were not concerned about pollution issues but rather with how much fresh water would be used and how it would affect drinking water supplies to what many said was a "poor, depressed area."*

*Jeff Ostahowski of Mecosta representing Michigan Citizens for Water Conservation, questioned why brine water couldn't be used and fresh water conserved. "For years and years fresh water will be injected into the well. How many drinking water wells will this affect? he questioned.*

*Tong replied, "Zero." He explained that the injection system would be "deep below the underground sources of drinking water with confining rock layers above the injections zone which would prevent the migration of fluids upwards. He said there are "significant penalties" for permit violations.*

*Tong explained that the deepest source of drinking water is 464 feet and the surface casing would extend to 792 feet, 300 feet more than is required. The injection zone would begin at 4,948 feet.*

*Mary Anne Van Oosterhout asked about the effect on the water table, how much fresh water would be injected and where it would come from.*

*EPA representative Steve Jann, Branch Chief of the Underground Injection Control Branch of Region 5 in Chicago said "The amount of fresh water used is not in the scope of our permit process. The permit says nothing about where the water comes from. That is a State issue through the Department of*

*Environmental Quality.*

Geologist William Tong and EPA representative Steve Jann, Branch Chief of the Underground Injection Control Branch of Region 5 in Chicago, answered questions from a group of about 15 citizens who came to a presentation and public hearing about a permit application for an injection well from Muskegon Development Company.

*Wayne Terpening asked, "Where does the DEQ interface with the process?"*

*Several others spoke asking questions about surrounding properties would be affected and how the well would be monitored and regulated.*

*In his presentation Tong explained that injection wells are designed and constructed to prevent leaks with multiple layers of steel pipe (well casing), cement in between the well casings and confining rock layers to protect drinking water sources.*

*The presentation said more than 180,000 Class II injections wells are in the United States and about 1,300 are in Michigan.*

*Following the presentation, vocal comments on the permit application were given by several audience members.*

*Wes Raymond representing the Citizens for Chemical Contamination was the first speaker. He said, "Your outreach was insufficient. There were errors in communications, a contact number for Tong was wrong. It feels like you're avoiding us. You need to find new ways to maintain the environment. Cedar Creek on the map is a trout stream and Decker Lake isn't even on the map. It is frustrating to know you're compartmentalized about this. You can't see what is 4,000 feet under the surface. That has to be part of the equation. The climate change factor is real. I would like to see an EPA who would be here to hold a symposium on...anything related to climate change."*

*Jen Raymond repeated the "inaccuracies with the date and location of the meeting." She asked for an extension of time for comments. "The map was inaccurate," she said. She also noted a lack of restriction on [the amount of] water withdrawal.*

*Rebecca Terpening said, "I care for the area I live in. The Cedar River is about a mile north of the well." She questioned why the Public Notice was only in the Clare County Review. "It had the wrong day, the address incorrect. You should consider extending Public Comment (the deadline for written comments is Friday). In the future it would be helpful to have someone here from the DEQ to answer questions on water use." She continued, "This area is the poorest in the county. Ground water use should be taken into consideration."*

*Wayne Terpening said the Public Hearing should have be "advertised in the Gladwin paper since the [well] location is almost on the edge of Clare County" and the water flow is in that direction. "It is important that Gladwin be given an opportunity to have input into this [permit]...Our greatest concern is the safety of fresh water. It should also be the adequacy of drinking water. I challenge you to get someone to answer at the DEQ...I'm nor they can take this seriously. Oil production? What is the point? We have solar and wind power and electric cars.*

*Rex Raymond repeated the request to extend the time allowed for the public comment "based on the inaccuracies."*

*Stephanie Terpening also said "The required comment [period] should be extended and there should be another Public Hearing. You are dealing with people who may not have cars or WiFi to be able to comment. I am feeling like it is very rushed with the publicity with incorrect time, date and location. Also keep in mind how impoverished people are in this area."*

*Mary Ann Van Oosterhout said she echoed the request for an extended comment period and "more geographically appropriate notification. The well water we rely on is the thing that binds us all together. Safe water – we protect the access to that and the status of how it might affect the aquafer. I ask that you deny the request."*

*Karen Turnbull, also a member of Citizens for Water Conservation of Mecosta, said there were 14 errors in the permit application including the omission of Decker Lake, the gas plant in Section 8 nearby, that the permit needs real data. "The permit should be returned to the applicant," she said. "I am frustrated with the State of Michigan. In Michigan our water is not managed."*

*Jeff Oosterhout of the MCWC said he was grateful for the information and the EPA representative's willingness to answer questions. He said, however, in the first of five points that, "The MCWC feel you are permitting injection wells you are not able to monitor."*

*He also said the area of the well was within 200 miles of an earthquake in 2015; that the problem with this well and Class II D wells is a finding by the U.S. Geological Survey that injection wells cause earthquakes."*

*He noted that with [fresh] water withdrawal , his purpose with no limitations, "you are basically c. ing draining of the aquafer. Four million people in Michigan draw their water from aquafers. You should not use fresh water...I'm not sure this is an appropriate use [of fresh water]."*

*Lastly he noted the condition of the application. "We need to have a close look at the application they submitted. It does have errors and inadequate information...it should be sent back to corrections of the errors and omissions in it.*

*Mary Pat Terpening said her concern is with the questions she has for the DEQ about the water.*

*The last speaker, Pamela Gilbert said, "The hot seat you're in is on the social injustice issue. The townships with the largest need and the poorest townships are the most affected."*

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

49

JUL 2 7 2017

REPLY TO THE ATTENTION OF:
WU-16J

To Whom It May Concern:

I am writing as the Presiding Officer for the public hearing that the U.S. Environmental Protection Agency held on July 25, 2017 for the draft permit for the Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017.

The purpose of this letter is to let you know that EPA has extended the public comment period on the draft permit to **August 18, 2017**. EPA is taking this action under Title 40 of the Code of Federal Regulations §§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the *Clare County Review* and on our web site identified the correct day of the week for the hearing. Please see the enclosure for details about how one can comment during the extended comment period.

Thank you for your interest in the draft permit for the Holcomb 1-22 injection well. Please contact William Tong at (312) 886-9380 or tong.william@epa.gov if you have any questions.

Sincerely,

Stephen M. Jann, Chief
Underground Injection Control Branch

Enclosure

(50)

## CERTIFICATE OF SERVICE

I hereby certify that on the 28 day of July, 2017, I delivered:

[the public comment extension] for ___<<MI-035-2R-0034 >>__ to the mail room to be mailed via regular U.S. Mail to the list of parties attached.

Bill Tong
[Bill Tong]

[Lilly Simmons]

| FIRST NAME | LAST NAME | COMPANY NAME | STREET ADDRESS 1 | TREET ADDRESS 2 | CITY | STATE | ZIP CODE | Email |
|---|---|---|---|---|---|---|---|---|
| George | Beck | Lac Vieux Desert Band of Lake Superior Chippewa | P.O. Box 249 | Choate Rd. | Watersmeet | MI | 49969 | |
| Sheila | Bissonnette | Harrison District Library | 105 E. Main Street | | Harrison | MI | 48625 | |
| Kathie | Brosemer | Sault Ste. Marie Tribe of Chippewa | 523 Ashmon St. | | Sault Ste. Marie | MI | 49783 | |
| Thomas W. | Brown | | 240 Cascade Road | | Pittsburgh | PA | 15221 | |
| Christina | Coger | Little Traverse Bay Bands of Odawa Indians | 7500 Odawa Circle | | Harbor Springs | MI | 49740 | |
| Willis & Pamela E. | Cover | | 9161 Balsam Road | | Harrison | MI | 48625 | |
| Ronald E. | Driver | | 9478 East Townline Lake Road | | Harrison | MI | 48625 | |
| Frederick & Katherine | Fanslau | | 200 North Occidental Road | | Tecumseh | MI | 49286 | |
| H. Richard | Fruehauf, Jr. | | 718 Notre Dame, Suite 100 | | Grosse Point | MI | 48230 | |
| James | Henry | | 460 West U.S. 10 | | Scottville | MI | 49454 | |
| Sally | Kniffen | Saginaw Chippewa Planning Dept. | 7070 E. Broadway Rd. | | Mt. Pleasant | MI | 48858 | |
| Russ | Mason | Michigan Department of Natural Resources | Wildlife Division | P. O. Box 30444 | Lansing | Michi | 48909 | |
| Alvin B. | Miller | | 10860 Strasburg | | Erie | MI | 48133 | |
| James & Lydia Magda | Molinari | | 9463 East Townline Lake Road | | Harrison | MI | 48625 | |
| Bennett | Myler | Muskegon Development Company | 1425 South Mission | | Mount Pleasant | MI | 48858 | |
| Bill | Myler | | 1425 S. Mission Rd | | Mt. Pleasant | MI | 48858 | |
| Bennett | Myler | Muskegon Development Company | 1425 South Mission | | | | | |
| Kirby | North Ancona | North Lake Farm | 9538 Peterson Road & N. Lake Road | | Brooklyn | MI | 49230 | |
| Frank & Nancy | Oblinsky | | 9321 East Townlake Road | | Harrison | MI | 48625 | |
| Kristine | Ptak | Grand Traverse Band | 2605 N. West Bayshore Dr. | | Peshawbestown | MI | 49682 | |
| Rex | Raymond | | 10537 S. Hemlock Ave | | Lake | MI | 48632 | |
| Letha | Raymond | | 10537 S. Hemlock Ave | | Lake | MI | 48632 | |
| John | Rodwan | Nottawaseppi Huron Band of Potawatomi | 2221 1 1/2 Mile Road | | Fulton | MI | 49052 | |
| Herman & Marilyn K. | Roe | | 5600 Cribbins Road | | North Street | MI | 48049 | |
| Dwight | Sargent | Inter-Tribal Council of Michigan | 3601 Mackinaw Trail | | Sault Ste. Marie | MI | 49783 | |
| Paul & Shawn | Scott | | 10447 Lewis Road | | Clio | MI | 48420 | |
| Lori Ann | Sherman | Keweenaw Bay Indian Community | 14359 Pequaming Road | | L'Anse | MI | 49946 | |
| Alphonse L. | Sipior Jr. | | 29215 Southgate Dr. | | Southfield | MI | 48076 | |
| Allison | Smart | Little River Band of Ottawa Indians | 2608 Government Center Drive | | Manistee | MI | 49660 | |
| Wayne | Terpening | | 510 Forest Ave. | | Clare | MI | 48617 | |
| Stephanie | Terpening | | 510 Forest Ave. | | Clare | MI | 48617 | |
| Levi & Naomi | Troyer | | 2593 North Bailey Lake Avenue | | Harrison | MI | 48625 | |
| Karen | Turnbull | | 5732 Harding | | Barryton | MI | 48305 | |
| MaryAnne | VanOosterhout | | 2920 S. Harrison Ave. | | Harrison | MI | 48625 | |
| Cynthia | Waidley | | 1361 Michigan Avenue | | Adrian | MI | 49221 | |
| Jim | Walter | Clare High School | 201 E. State Street | | Clare | MI | 48617 | |
| Vernon & Miranda | Weaver | | 9326 East Townline Lake Road | | Harrison | MI | 48625 | |
| Scott | Wieting | Hannahville Indian Community | N14911 Hannahville B-1 Rd. | | Wilson | MI | 49896 | |
| Sandra | Yerman | | 6600 Riverside | | Brooklyn | MI | 49230 | |
| | | Antrim Development Corp. | P.O. Box 1148 | | Traverse City | MI | 49685 | |
| | | Department of Attorney General-ENRA Division | 525 W. Ottawa | P.O. Box 30755 | Lansing | MI | 48909 | |
| | | Paxton Resources | 132 North Otsego | | Gaylord | MI | 49735 | |

| | | | | | |
|---|---|---|---|---|---|
| Dixon Exploration Inc. | 3361 Executive Parkway, #100 | | Toledo | OH | 43606 |
| Louis Fisk | P.O. Box 18 | | Sterling | MI | 48659 |
| Gogebic Communtity College | E-4946 Jackson Road | | Ironwood | MI | 49938 |
| Fremont Area District Library | 104 E. Main | | Fremont | MI | 49412 |
| Hamilton Township Supervisor | 11443 Fir | | Gladwin | MI | 48624 |
| Hamilton Township Trustees | 3042 N. Rodgers Road | | Harrison | MI | 48625 |
| Clare County Board of Commissioners | 225 West Main Street | P.O. Box 438 | Harrison | MI | 48625 |
| Richard A. & Eveline E. Burtka Trust | 3360 12th Street | | Wyandotte | MI | 48192 |
| Robert A. & Pearl Fanslau Trust | 9062 East Townline Lake Road | | Harrison | MI | 48625 |
| Primemark Properties LLC | 437 North Larch | | Lansing | MI | 48912 |

| First Name | Last Name | Title 2 | Organization | Email |
|---|---|---|---|---|
| | Aldrich | | | aldrich4k@frontier.com |
| Kirby North | Ancona | | | foxviewfarm@earthlink.net |
| | Angels | | cass.net | angels@cass.net |
| | apiechocki | | apiechocki@craworld.com | apiechocki@craworld.com |
| M | atian | | | 163 matian0303@163.com |
| Michael | Beebe | | | mbeebe500@mac.com |
| Scott | Bellinger | | Michigan Oil & Gas News | scott_bellinger@michoilandgasnews.com |
| Elaine | Benoit | | | benoite@gvsu.edu |
| Scott | Binder | | US Ecology Detroit North | scott.binder@usecology.com |
| Charleen | Blanton | | | char.blanton@gmail.com |
| | brains | | cass.net | brains@cass.net |
| John | Brooke | | | johnwbrooke@gmail.com |
| Casey | Brooks | | | csayerbrooks@gmail.com |
| Kevin | Carey | | MDEQ, Office of Oil, Gas & Minerals | careyk3@michigan.gov |
| Robert | Carson | | | rcarson@manisteecountymi.gov |
| | cclady | | cclady1@gmail.com | cclady1@gmail.com |
| Jim | Clark | | Cobra Oil & Gas Corp. | jim@cobraogc.com |
| K | Coddington | | KMCL Law | kcoddington@kmcllaw.com |
| Ben | Croftchik | | | bcroftchik@oilenergy.us |
| Tom | Cybulla | | Beckman Production | tcybulla@beckmanproduction.com |
| Douglas | Dalton | | | dalt8903@yahoo.com |
| Andrew | DeGraw | | | biodegrawable@icloud.com |
| Nancy | Dickens | | Tetratech | nancy.dickens@tetratech.com |
| K | Dungey | | coreenergyllc.com | kdungey@coreenergyllc.com |
| Michael | Fisher | | Saginaw Chippewa | mfisher@sagchip.org |
| Brandon | Fountain | | Big Rapids Pioneer | bfountain@pioneergroup.com |
| Robert | Fousek | | Breitburn | robert.fousek@breitburn.com |
| H. Richard | Fruehauf, Jr. | | | h.richard@HRFantrim.com |
| Pamela | Gilbert | | | pamflom@gmail.com |
| Pam | Gilbert | | | pamflom@gmail.com |
| Justin | Glier | | Battelle | glier@battelle.org |
| Lynn | H | | SRA Project | lynnh@sraproject.org |
| William | Harrison | | Western Michigan University | harrison@wmich.edu |
| S | Hill | | shill@scsengineers.com | shill@scsengineers.com |
| Jerry | Hilliard | | | hilliard.jerry@yahoo.com |
| Erica | Hokt | | 2032 S. Congress | dennis_erica@yahoo.com |
| Martin | Jimenz | | Battelle | jimenez@battelle.org |
| Jennifer | Kanine | | Pokagon Band of Potawatomi | jennifer.kanine@PokagonBand-nsn.gov |
| Mary | Koenen | | | marykoenen4@gmail.com |
| A | Kohley | | wolvgas.com | akohley@wolvgas.com |
| Christine | Kosmowski | | Calhoun County, Water Resources Commissioner | ckosmowski@calhouncountymi.gov |
| LuAnne | Kozma | | Ban Michigan Fracking | luannekozma@gmail.com |
| Wayne | Kukuk | | MDEQ, Drinking Water & Municipal Assistance, Environment | kukukw@michigan.gov |
| John | Kuschell | | | jkuschell@gmail.com |
| Jon | Logan | | AI Systems Group | j.logan@aisystemsgroup.com |
| Becky | Malloy | | DCP Midstream | rpmalloy@dcpmidstream.com |
| S. Peter | Manning | | Environment Natural Resources and Agriculture Division | manning@michigan.gov |
| Jennifer | Manville | | | manville.jennifer@epa.gov |
| Pat | Maurer | | Clare County Review | pmaurer@clarecountyreview.com |
| M | Mcadams | | mmcadams@whitelaketwp.com | mmcadams@whitelaketwp.com |
| Jennifer | McKay | | Tip of the Mitt Watershed council | jenniferm@watershedcouncil.org |
| Bryan | Mielke | | Charter Township of Union, Isabella County | bmielke@dcgtech.com |
| Keith | Murray | | Liberty Security Group | kmurray@libertysecurity.us |
| Jeff | Ostahowski | | | bardofeden@hotmail.com |
| Janet | Pauquette | | | jakacapa@yahoo.com |
| Carl | Peters | | | 1947 beverlypeters105@charter.net |
| Gail | Philbin | | Sierra Club | gail.philbin@sierraclub.org |
| Ed | Pollister | | Pollister Drilling | ed@pollisterdrilling.com |
| Ceci | Pratt | | SRW, Inc. | cpratt@geminigroup.net |
| J | Ray | | Cass Library | jray@cass.lib.mi.us |
| Wes | Raymond | | CACC | admin@caccmi.org |
| Wes | Raymond | | | admin@caccmi.org |
| Jen | Raymond | | | volunteer@caccmi.org |
| Sara | Ringer | | nov.com | sara.ringer@nov.com |

| | | | | |
|---|---|---|---|---|
| Ethyl | Rivera | | | erivera1446@comcast.net |
| R | Rodiek | | | rrodiek@yahoo.com |
| Jackie | Schmitz | | | jschmitz48@hotmail.com |
| Brandon | Schulte | | | schultebm@pbworld.com |
| N | Shiffler | | | nshiffler@comcast.net |
| | Smith | | Smith for MI Senate | smithformisenate@gmail.com |
| Lee | Smith | | | optimalvalue@att.net |
| Michael | Staal | | City of Grand Rapids | mstaal@grcity.us |
| R | Stanley | | | rstanley@cecinc.com |
| John | Stegman | | SRW, Inc. | jstegman@srwinc.com |
| Patrick | Sullivan | | EGT | psullivan@envgeotech.com |
| Mark | Sweatman | Director | Michigan Department of Natural Resources | sweatmanm@michigan.gov |
| Marilia | Tavares | | | mariliadtavares@gmail.com |
| C | Tejedor | | copper.net | ctejedor@copper.net |
| MariPat | Terpening | | | mterpening@cmdhd.org |
| Rebecca | Terpening | | | rterpening@gmail.com |
| C | Tomaszewski | | Fibertec | ctomaszewski@fibertec.us |
| Brandon | Trigg | | Ohio EPA | brandon.trigg@epa.ohio.gov |
| Tim | Tritten | | Martin Marietta | tim.tritten@martinmarietta.com |
| Karen | Turnbull | | | kturnbull72@gmail.com |
| Robert | Van Voorhees | | | rfvanvoorhees@bryancave.com |
| Patricia | VanderKooy | | | pattivk@att.net |
| J | Victory | | michigan | victoryj@michigan.gov |
| Cynthia | Vigneron | | | 3oaks1120@gmail.com |
| Jason | Wentworth | | 97th District State Representative | JasonWentworth@house.mi.gov |
| Todd | White | | MPC | whitetod@gmail.com |
| Lynn | Wilmot | | | lynnwilmot@hotmail.com |
| J | Wilson | | undeerc.org | jwilson@undeerc.org |
| Coty | Withorn | | MDEQ Saginaw Bay District Office | WithornC@michigan.gov |
| C | Witt | | | cwitt10@gmail.com |
| Dale | Wojtkowski | | Sierra Club | wojo@wisperhome.com |
| Dan | Woods | | | lisannewoods@gmail.com |
| S | Zeisler | | | szeisler915@gmail.com |
| | | | Petrotek Engineering Corp. | ken.cooper@petrotek.com |
| | | | Brock Engineering | brock.engineering@yahoo.com |
| | | | Scandia Energy Co. Inc. | linda@scandiaenergy.com |
| | | | thehomeworksolutions | thehomeworksolution@gmail.com |
| | | | Antrim CD | antrimcd@macd.org |
| Hollis | | | Darcy Consulting | hollis@darcyconsulting.com |

Leigh Clarke to: leighbker@gmail.com

(51)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 28 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Reid Nelson, Director
Office of Federal Agency Programs, ACHP
401 F Street NW, Suite 308
Washington, D.C. 20001

RE: Public Comment Period Extended for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Nelson:

The U. S. Environmental Protection Agency has extended the public comment period on the MI-035-2R-0034 draft permit which would allow Muskegon Development to inject fresh water underground for enhanced oil recovery into the Holcomb 1-22 well. EPA is continuing to accept comments from the public on this proposed permit approval until Friday, August 18, 2017. Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBERS |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

52

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 28 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Annette Trowbridge
Ecological Services
U.S. Fish & Wildlife Service, Suite 990
5600 American Boulevard West
Bloomington, Minnesota 55437

RE: Public Comment Period Extended for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Ms. Trowbridge:

The U. S. Environmental Protection Agency has extended the public comment period on the MI-035-2R-0034 draft permit which would allow Muskegon Development to inject fresh water underground for enhanced oil recovery into the Holcomb 1-22 well. EPA is continuing to accept comments from the public on this proposed permit approval until Friday, August 18, 2017. Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBERS |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

53

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 28 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Matt Fry, Land Use Program Leader
Michigan Department of Natural Resources
Forest Resources Division
P.O. Box 30452
Lansing, Michigan 48909

RE: Public Comment Period Extended for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Fry:

The U. S. Environmental Protection Agency has extended the public comment period on the MI-035-2R-0034 draft permit which would allow Muskegon Development to inject fresh water underground for enhanced oil recovery into the Holcomb 1-22 well. EPA is continuing to accept comments from the public on this proposed permit approval until Friday, August 18, 2017. Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBERS |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

54

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 28 2017

REPLY TO THE ATTENTION OF:
WU-16J

**CERTIFIED MAIL** 7015 0640 0004 5965 5724
**RETURN RECEIPT REQUESTED**

Russ Mason, Chief
Michigan Department of Natural Resources
Wildlife Division
P. O. Box 30444
Lansing, Michigan 48909

RE: Public Comment Period Extended for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Mason:

The U. S. Environmental Protection Agency has extended the public comment period on the MI-035-2R-0034 draft permit which would allow Muskegon Development to inject fresh water underground for enhanced oil recovery into the Holcomb 1-22 well. EPA is continuing to accept comments from the public on this proposed permit approval until Friday, August 18, 2017. Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBERS |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

55

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 28 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Jim Dexter, Chief
Michigan Department of Natural Resources
Fisheries Division
P. O. Box 30446
Lansing, Michigan 48909

RE: Public Comment Period Extended for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Dexter:

The U. S. Environmental Protection Agency has extended the public comment period on the MI-035-2R-0034 draft permit which would allow Muskegon Development to inject fresh water underground for enhanced oil recovery into the Holcomb 1-22 well. EPA is continuing to accept comments from the public on this proposed permit approval until Friday, August 18, 2017. Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBERS |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

(56)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 28 2017

REPLY TO THE ATTENTION OF:
WU-16J

**BY EMAIL**

Brian D. Grennell
Michigan State Historic Preservation Office
702 W. Kalamazoo Street
Lansing, Michigan 48909

RE: Public Comment Period Extended for Underground Injection Control Draft Permit in Clare County, Michigan

Dear Mr. Grennell:

The U. S. Environmental Protection Agency has extended the public comment period on the MI-035-2R-0034 draft permit which would allow Muskegon Development to inject fresh water underground for enhanced oil recovery into the Holcomb 1-22 well. EPA is continuing to accept comments from the public on this proposed permit approval until Friday, August 18, 2017. Per our program regulations, 40 C.F.R. 124.10(e), all permit application and draft permit materials are available to your office. As these documents are lengthy, please let us know if you would like electronic or hard copies by contacting Lilly Simmons of my staff at simmons.lilly@epa.gov or (312) 886-5740.

Sincerely,

Lisa Perenchio

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBERS |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

57

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 28 2017

REPLY TO THE ATTENTION OF:

WU-16J

**CERTIFIED MAIL** 7016 3010 0000 9203 0013
**RETURN RECEIPT REQUESTED**

Ms. Sheila Bissonnette, Director
Harrison District Library
105 East Main Street
P.O. Box 380
Harrison, MI 48625

Dear Ms. Bissonnette:

Recently a staff member of the Underground Injection Control (UIC) Branch contacted your office regarding the need for citizens of your area to have an opportunity to view draft UIC materials. We thank you for assisting us in making these documents available to the public. All of this material should be stored and presented together if requested.

Please add this notice to materials previously received for the MI-035-2R-0035 draft permit and hold them until we can be certain that the public comment period has ended. This material may be comfortably disposed after 90 days, you may wish to attach this letter to the last page of the document to use as a dated reference.

If there are any questions regarding the enclosure as listed below, please feel free to contact Lilly Simmons of my staff at (312) 886-5740. We appreciate your assistance in the public notification process.

Sincerely,

Lisa Perenchio, Chief
Section 1
Underground Injection Control Branch

Enclosure

| COMPANY | EPA DRAFT PERMIT NUMBER |
|---|---|
| Muskegon Development Company | MI-035-2R-0034 |

58

JANE ROSE REPORTING

800-825-3341

74 FIFTH AVENUE NYC 10011
JANE ROSE REPORTING.COM
JANE ROSE @ JANE ROSE REPORTING.COM

*State of Michigan*

---

# Draft Underground Injection Permit on Holcomb 1-22 Well, Draft Permit Number MI-035-2R-0034

---

**Public Hearing**
**July 25, 2017**

STATE OF MICHIGAN

---

EPA PUBLIC HEARING ON DRAFT
UNDERGROUND INJECTION PERMIT
ON HOLCOMB 1-22 WELL,
DRAFT PERMIT NUMBER MI-035-2R-0034

---

PUBLIC HEARING
July 25, 2017
Clare, Michigan

FINAL COPY
JANE ROSE REPORTING 1-800-825-3341

APPEARANCES

Steve Jann, EPA Hearing Officer
Underground Injection Control
Branch Chief

Bill Tong, Geologist

Lilly Simmons, Environmental Scientist

Members of the Public

JANE ROSE REPORTING
74 Fifth Avenue
New York, New York 10011
1-800-825-3341
Lori J. Cope, CSR-4113, RPR

July 25, 2017
7:47 p.m.
Clare, Michigan
***

MR. JANN: Good evening and welcome. I may have told you that my name is Steve Jann. I am the Chief of the Underground Injection Control Branch at EPA Region 5 in Chicago. I will serve as the so-called hearing officer for the hearing tonight. You have met Bill Tong, who works in my group. Bill is a geologist. You may have met Lilly Simmons, who also works in my group, and she is a chemist by training.

So this is a hearing on EPA's proposal to issue a permit to Muskegon Development Company for a Class II injection well. Muskegon plans to use this well for injection of fresh water for enhanced oil recovery. The proposed permit has been available for viewing on the EPA's website and at the Harrison District Library. The full file, we call that the administrative record, the full file for the draft permit is available in our office in Chicago.

So we are pleased to have this opportunity to listen to your comments on the draft permit. And the comment period is open until this Friday, the 28th. If anybody would like to make a comment, either spoken or in writing, they can do so tonight or they can send in a written comment by Friday. And those written comments can be sent to Bill by email. His

email address is on this fact sheet, as is his mailing address.

So we are holding this hearing in accordance with the regulations under the Safe Drinking Water Act. The hearing is designed to allow you to make comments for the EPA to consider in making a final permit decision. All of the comments we receive during the current comment period, as well as those received during the comment period that ended last March, will become part of the official record for the draft permit.

We will not be responding to your comments tonight. However, when we get back to the office and receive the transcript from the hearing, we will review all of the comments after the comment period ends. We will then put together a written document that we call a responsiveness summary that will respond to all of the significant comments on the draft permit. And the time it will take to do that is unknown at this point because we don't know the number and the complexity of the comments that we will get. Once that summary is complete we will send it to all of those who gave comments to us.

When the EPA reviews the comments and prepares the responsiveness summary, we will make a final decision to either issue or not issue a permit. At the same time the responsiveness summary is sent out we will send a letter

notifying Muskegon Development whether or not we have issued the permit. If the EPA issues the permit, it will authorize Muskegon to convert and operate one Class II injection well.

A public hearing gives people an opportunity to let EPA know their views on the draft permit. All oral statements will be recorded by our court reporter, but you will not be sworn in and we will not be asking you any questions. This is your opportunity to tell the EPA whether you think the permit is consistent with the Safe Drinking Water Act and the underground injection control regulations, and whether the facts, as the EPA has determined them, are accurate. Our role is to listen, but we will not be responding tonight. And in that responsiveness summary we will respond to all significant comments received during both comment periods and the hearing tonight.

The final decision whether to issue a permit or to deny a permit can be appealed to a group within the EPA that is known as the Environmental Appeals Board, and it can be appealed by any person who sends us a comment or participated in this hearing tonight, and it can also be appealed by the permit applicant.

If you want to make a statement, please make sure you have given your information to Lilly. I think she said five or six folks want to do that. And even if you choose not to make a statement, but you want to get information about

this permit application from us in the future, please also give your information to Lilly. So with a small group of five to six people who want to comment, I think that time is generally going to be unlimited, which is a change for us. So that's great. If you choose to mail in some comments to us, please be sure to make sure that they are postmarked by the 28th. Okay. So Lilly will call folks in the order in which they registered to speak, and if you could come up to the microphone and state your name, and perhaps spell your last name. I think that will help our court reporter get your name down accurately. And, with that, let's have our first person.

MS. SIMMONS: Right. So time will be unlimited, but 10 minutes maximum. At that point I am going to try to yank the microphone away from you. You can submit comments in writing extensively and submit research, and that will be really great for us to have.

Our first commenter is Wes Raymond. Do you still want to comment? The second commenter will be Jen Raymond.

MR. WES RAYMOND: I am Wes Raymond. I'm the administrator for Citizens for Alternatives to Chemical Contamination. I want to thank you for answering our request to have this public meeting, but I do want to be pretty brief. I think a lot of people who are more technically proficient than I am are going to have a lot of good things to say. I do want to focus on the organizational aspects and the public

outreach that is woefully insufficient. Even if it is more public outreach than is required by law, it's still obviously insufficient. It shouldn't be incumbent on us to take time out of the organizational work that we are already doing on top of our typical workaday lives to run a social media campaign to try and get people to understand, in the first place, the technical aspects of what is going on here, and that there is a meeting, and when they can be at it, especially when we see errors coming through in the communications that aren't redacted, aren't corrected. When I tried to reach out to the office, one of those errors is that the number listed for you, Bill Tong, is your fax number. So I tried to give you a call on the phone. Screech, fax noise. I had to call the EPA 800 number to try and get through to your desk. That automated system that answers that 800 number hung up on me five times before I managed to get through to a human operator that then gave me your phone number and after a couple of moments of silence offered to direct me to your desk finally. That's not sufficient.

What it feels like from our perspective is like you're avoiding us. And you seem more, in person, like good-natured people who are trying to do a good job with the toolkit that was given to you by your bosses. But until we get to know you, coming into this, yeah, it feels like you're trying to make sure there is nobody at the public meeting, you

are trying to make sure that there aren't going to be too many questions that are way off base, and you are trying to make sure there aren't wack jobs coming out of the woodwork to com in and talk about climate change instead of the particulars of this injection well permit. We need to get over that. We need to get over that in this system. We need to find new ways to manage environmental protection outside of that toolkit that you are given by your bosses.

The idea that this permit can be in compliance with the spirit of the Safe Drinking Water Act. When you tell us the truth, that the aquifers are managed by the state government, and there is limited communication, it sounds like you definitely don't have much to tell us off the top of your head that indicates that this is something that you deal with in your worklife. So, you know, there is -- whether or not this particular well will leak is not the end-all, be-all of the clean water situation surrounding the well. You know, we live here. We are looking at Cedar Creek. We are looking at Decker Lake that's also not included on the map that was given out. That holistic picture is what is important to us. It's really frustrating to not get answers in that holistic manner. It's really frustrating to know that you have to answer our questions in a really compartmentalized manner when our questions are generated in a holistic manner that is based on our relationship with our land base that we live on.

So I would like to add that probably 80 percent of the people that I went to high school with work in oil and gas. We know the people who do this work. We know the questions that they have about the integrity of their own well casings. We know that they, in a very common sense way, understand that you can't see 4,000 feet down into the ground. You can't. You can use scientific tools to make guesstimates about what's going on down there, but you can't see it. You can't touch it. You can't know for sure if it's cracked. You can't know for sure if cement is coming together properly in the first place, frankly, down there. And that's what the people who do the job tell me. And that has to be a part of the realistic consideration, that the reporting requirements are -- it's self-regulated. You have got to try and find out more.

And the climate change element is -- it's real. And it's extremely frustrating that it's almost like we can't even talk about it, that it has to remain that elephant in the room. All of these years that we have been talking about it and it still has to remain the elephant in the room when we are talking about -- because we are talking about this specific well permit we can't talk about the greater issue of whether or not we should be extracting any oil. You know, I would like to see an Environmental Protection Agency that would be here tonight to do a symposium on home-scaled

renewable alternative energy sources, helping people regain control of their own food supply so that we can be less reliant on fossil fuel used in factory farming, helping transportation solutions so that we are not caught in a fossil fuel economy to deal with the life that we lead, now that we have grown so accustomed to the transportation solutions that we have had for so many years, literally anything that would be more akin to mitigating climate change than just having a discussion about whether or not you are to going to permit this particular well. I guess I will stop there.

MS. SIMMONS: Jen Raymond, followed by Rebecca Terpening.

MS. JEN RAYMOND: My name is Jen Raymond, R-a-y-m-o-n-d. Just a couple of really brief comments. One, in light of inaccuracies with both the location of the meeting and the date of the meeting, I would like to formally request that we extend the comment period to just compensate for that miscommunication to the community.

I do also want to note that on the application there are a couple of water sources that are not accurately depicted, one of which, Decker Lake, was omitted entirely from the map provided in the application, as well as the creek -- the river labeled Cedar Creek is actually Cedar River, and it is a designated trout stream.

One other thing I would like to note on a more

personal community-based level, Clare County, according to the 2015 United Way ALICE Report, which stands for Asset Limited, Income Constrained, and Employed, indicates that 53 percent of people in Clare County are at or below the poverty level or within that ALICE line. This means more than half of this community is struggling to meet their basic needs. In light of the lack of restriction on water withdrawal, I would like to point out that any requirements for folks to drill additional wells on their property due to the water withdrawal for operations of this injection well would be devastating for this community, and folks would not be able to recover from that. That's it. Thank you.

MS. SIMMONS: Rebecca Terpening, followed by Wayne Terpening.

MS. REBECCA TERPENING: I am Rebecca Terpening, and that's T-e-r-p-e-n-i-n-g. I came tonight mostly because I am interested in the subject. It is new to me. I wanted to learn something. And I care for the area that I live in. I am a City of Clare resident, but I sold real estate in Clare County for many years, and had some customers that have a cabin on the Cedar River, which is about a mile north of where this well site is. They couldn't make it to the meeting, so I wanted to come and get some information for them. Through the course of sharing this event with the public I started to do research and found at least that it was only advertised by

public notice in the paper in the Clare County Review, which is distributed around the county, but it's based out of the City of Clare. And this property where the well sits actually could very well be a Gladwin address, but Harrison area. And our county seat paper is the Clare County Cleaver. Another paper that might have gotten some of the public's attention would have been the Gladwin -- I believe it's called The Record Eagle. Two of those may have been a better choice to get the notice out to the public.

It's already been noted the other things I noticed as well. The wrong day. Even though the date was correct, there still was some confusion as to when and where we were meeting, with the date being -- or the address also being incorrect on the form. So, you know, in real estate business when they publish foreclosure notices they have to publish at the county seat, and you have to publish so many times. I would think that with the inaccuracies of this you should consider extending the public comment period because many may not know about this until after Pat runs her article in the paper next week. And the time period would be expired by then.

I also think that maybe in the future, since you don't regulate the groundwater use that would be taken for sites like this, it may be helpful to the public to have somebody here from the DEQ to answer those kinds of questions.

Because you are really here just to get, you know, the feedback on the permit part. That's your job. And then they are in charge of the water use, and I'm assuming the designated trout stream that's within a mile from this well site. So you don't really have any say when we give you those kinds of facts.

The other thing that I would note and want on record is, again, that this area is the poorest area of our county, and there have been areas with other well sites where the entire street, everybody, has lost their well and had to drill new wells. So the groundwater usage, since we don't know how much would be used on a daily basis and for how long, I think that that should be taken into consideration how the property owners would have sufficient water source.

MS. SIMMONS: Wayne Terpening, followed by maybe Rex Raymond.

MR. TERPENING: I am Wayne Terpening. T-e-r-p-e-n-i-n-g is the spelling on the name. I guess my comments are overlapping somewhat with what you have already heard, but I do think the most important paper to have advertised this meeting in would be the Gladwin paper. This property is located on the border -- or almost on the border of Clare and Gladwin Counties. It's in an area with large numbers of cedar swamps. The Cedar River flows from there to Gladwin. And over my last 25 years selling real estate and

building homes in this area I have been told repeatedly that the underground water table flows south and east from this area, taking it directly into the Gladwin aquifer. So I do think it's important that Gladwin be given an opportunity to have input in this.

I guess we are all concerned about contamination of the water table for sure, but I know our standards have improved a great deal over the years. Clare County has had large numbers of oil wells back to the 1930s. And if you want to tour some black sand sites, join me this fall for a grouse hunt and I will show you black sand, because the old wells were not well regulated, and there are literally hundreds of old wells on the state land throughout northern Clare County that were very poorly regulated over the years, probably have been abandoned at this point or should be. And that's a big concern for us all for sure.

But my greatest concern is the fresh water -- not necessarily the safety of the fresh water. Yes, that's important, but I think you have taken a lot of steps to ensure that. And I know the law that you operate under is regulating the safe drinking water, but it should also be regulating the adequacy of the drinking water and the supply of the drinking water. You know, Michigan -- an old friend of ours used to refer to Michigan as the center of the fresh water world. We have a lot with the Great Lakes all around us and I think it's

easy to take for granted. It's easy to say we have a lot of that. And I don't think we can afford to continue thinking that way. You mentioned the DEQ having regulatory authority over a large portion of the fresh water usage. And on the heels of the Flint water crisis I challenge you to get someone to answer the phone at the DEQ. There is nobody there. You can send a water supply in and their lab will test it. In a week or ten days you will get a report whether the water was clean or not. But, above and beyond that, they are generally unavailable. Their staffing has been cut to bare bones and it's entirely directed towards the Flint mess, as it should be. And I don't think we can depend on them to take this process seriously and do their due diligence on their job to ensure that this water is managed properly.

I guess, you know, kind of in conclusion, I kind of question the point of trying to establish increased domestic oil. I know that may go beyond your scope here tonight. But it's already been proven to us in the last decade that American oil companies will not produce oil unless they can get 4 bucks a gallon for it at the fuel tank. And the Saudi Arabians are going to make sure that that never happens. They will continue to undercut. They don't want us producing oil locally. So I think we are kind of chasing our tail. And, on the heels of that, we have electric cars coming, we have solar power and wind power coming, and I guess what is the point.

If there is another 50 gallons of oil down there, so what. Let's leave it there. Thank you.

MS. SIMMONS: Rex Raymond, followed by maybe Letha Raymond.

MR. REX RAYMOND: Hi, Rex Raymond, R-a-y-m-o-n-d. I would like to thank you for coming here today. And I appreciate your honesty on some of the questions that we asked. And, I guess, my comment is not so much about this particular well, but about wells in general. I think -- when I think of EPA, Environmental Protection Agency, it does not -- we are not -- you are not here just to protect us from oil spills and from oil wells contaminating water. You are here to protect the environment. That means solar power, that means wind power, and different things. Go different directions. And I don't see that happening with our EPA, and that disturbs me a lot because that's the future. You know, you can -- we can be hostage to the Middle East or to the United States oil or Canadian oil or South American oil. Why? We don't need to be. So I guess I just -- I expect more from the EPA than I am getting. Thank you.

MS. SIMMONS: Maybe Letha Raymond, followed by maybe Stephanie Terpening.

MS. LETHA RAYMOND: Letha Raymond, L-e-t-h-a, R-a-y-m-o-n-d. And I certainly underscore every comment that has been made to this point, so I won't repeat those items,

but I would like to add yet another request to extend the public comment period based on the inaccuracies in the notice for this public meeting tonight. Thank you.

MS. SIMMONS: Stephanie Terpening followed by maybe MaryAnne Van Oosterhout.

MS. STEPHANIE TERPENING: I'm a musician. I know how this is done. I got it.

UNKNOWN: So am I.

MS. STEPHANIE TERPENING: I can tell. Thanks.

I am going to go ahead and repeat a few things that were said because I think the EPA probably listens to things that are repeated in numerous ways. So, one, I would also like to request that the comment period is extended, but I would like to go beyond that and say I would like another public meeting for this area that is actually more locally appropriate for where this well is going to be put in. One, we are dealing with a local group of people in Dodge City, who are -- I know you have heard Clare is very poor. The county is very poor overall. Dodge City is probably the poorest neighborhood in the entire county. So we are dealing with some people that don't have cars to get to Clare to this meeting. We are dealing with some people that don't have Wi-Fi to communicate comments to the EPA to let them know how -- you know, what they think of this. And I am sure most of them in that area, if they are working, some of them are

working two or three jobs, and if they have gotten something in the mail haven't even had a chance to read it and respond yet. I think it is feeling like it is a very rushed project as it right now with the time limits on it. So I would like to request an extended public comment period and an additional more locally-appropriate hearing that has got publicity out for it with the correct date, time, and location. There were multiple sources of misinformation on the date, time, and location of this hearing today, which is why there is not very many people here. I know there is a lot more people than this in Clare County that drink fresh water, so I am pretty sure there would have been way more here if they knew that -- where it was going to be at. I plan on being at the middle school on Thursday, which is where the paper said the meeting is going to be, to see how many people are there to let them know that they can email you before the very next day, because that's their last chance to get a hold of you. So I would like to ask those two of things of you, please.

And also keep in mind how impoverished these people are in this area when you are making this decision. I would like you to have more solid answers for the public about how much of this aquifer is going to be drained for this project, because we do have people up there who will be waterless if the water table goes down. So thank you. That's it.

MS. SIMMONS: MaryAnne Van Oosterhout, followed by

Karen Turnbull.

MS. VAN OOSTERHOUT: Thank you.

Thank you, gentlemen, for being here. These are very good things to have because you get a sense of the people who are on the regulatory side, and it's been really nice to do that. You guys are square shooters. And when you think of just an entity, you don't realize it's actual people, you know, that make it up. So thank you and I appreciate that.

I want to echo the asks here that are most important, and that is extended comment period and the idea of a more geographically-appropriate location for a public hearing. There are people who are really going to be impacted by this decision. And the primary, I think, thread that ties us all together was well said in the very first comment, the holistic approach. For those of us who live here, regardless of where we live, we understand that the well water we rely on is a thread that binds all of us together. So we need to know. We need to know what is the impact potentially on the aquifers that we rely on. And because you cannot make that assessment, regardless of the lack of communication, the spirit of the Safe Water Act is such that we protect our access to the safe water we drink. And this project may well take it away from us. And we don't know because there isn't that communication.

So the third ask I would have is that until some

sort of getting together about the status of the aquifer, as well -- and I'm not questioning the technology for making the well, but the status that this may -- how it might affect the aquifer. I would really strongly ask you to deny this permit until more information is gotten so that we have a holistic assessment of how it will impact us. Thank you.

MS. SIMMONS: MaryAnne, can you spell your name for the record, please.

MS. VAN OOSTERHOUT: V-a-n-O-o-s-t-e-r-h-o-u-t.

MS. SIMMONS: Thank you very much.

Next we will have Karen Turnbull, followed by Jeff Ostahowski.

MS. TURNBULL: Thank you for coming all of the way up here to Clare County today. My name is Karen Turnbull, and I am the secretary of a group, Michigan Citizens for Water Conservation. We have gotten together and looked at the application very carefully, and we believe that there are many errors in this application, and we believe that the permit application should be returned to the applicant for completion prior to further EPA approval considerations. And I have 14 errors in the application.

Number 1 is that EIA is furnished by William Sikkema, an Osceola County surveyor. The portion of the permit in 2008 does not actually make a certifying statement that it will not impact the environment. It cites soil makeup

and various topographical considerations in an elaborate plot plan. Surveyors are not qualified to make such EIA and perhaps Mr. Sikkema readily acknowledged this by the omission. The certifying statement must be reviewed for compliance.

Number 2, proposed construction of a flow line routed along a new well access is depicted on the plot plan, but no statement as what will be -- what will be done with the old flow line is made. Without removal of the old flow line there exists the potential safety hazard of trapped volatile liquids that could make this field unsafe.

Number 3, plot plan depicts secondary wetlands due east as part of the Cedar Creek watershed, but fails to indicate the broader pattern outlying Decker Lake. This statement is not accurate.

Number 4, the Cranberry and Cedar Creeks greater confluence is also impacted by the proposed gas plant upon the Michigan gas storage property in nearby section 8 to the northwest. Would it have been better on the plot plan to cite conditions slightly beyond the quarter mile zone? Is this not the real influence and spirit of the 615 rules?

Number 5, there is no reference for H2S sour gas potency other than that it is believed to be somewhat less than 330 parts per million. Though the full contingency of emergency evac and blowout preventer forms are compiled in the permit, the permit needs to contain real data, not the beliefs

of the applicant.

Number 6, what is the plan for water well monitoring beyond the specific site of Holcomb?

Number 7, an actual EIA must be provided via a qualified environmentalist or professional.

Number 8, primary wetlands are at 1400 feet east/southeast abutting Decker Lake. They are not depicted and need to be.

9, Decker Lake needs to be depicted upon a revised plot plan for this new permit.

10, as part of a revised evac plan, wind socks need to be secured at least 20 feet above facilities.

11, independent lab evaluations need to make a chemical analysis of this site.

12, the westerly extremity of Decker Lake scales at 1340 feet from the Holcomb well, and it is not depicted in the application.

13, area has a confining impact for H2S migration in the surrounding woods. The size of the opening to the woods needs to be depicted in the application.

14, proposed 3238 psig for injection is highly dangerous and unsafe without safety measures. What are the safety precautions proposed by the applicant?

In consideration of the omissions and errors contained in this application, Michigan Citizens for Water

Conservation believes this permit should be returned to the applicant for completion prior to further EPA approval considerations. Thank you very much.

And, as an individual, I would like to say that I am very, very frustrated with the State of Michigan rules. I know that doesn't have anything to do with you. It does because you need to work with Michigan, but we have talked with a hydrologist who said -- who worked in oil fields in Texas and said in Michigan our water is not managed. It's not managed at all because it has always been we have got so much water here. Well, all over the state right now there is a concern with our fresh water. And I just -- as an individual I'm very frustrated with all of these injection wells. Michigan is the premier state in this region for injection wells because we have this natural basin, which makes it easy for people to inject things into our natural basin, and I just propose that down the line we are going to see more and more Pennsylvania, Ohio fracking businesses shipping their water up here to Michigan for wastewater injection, and I just think that's a crime, a big crime. Thank you.

MS. SIMMONS: Jeff Ostahowski, and then anybody who did not tell me they wanted to make a comment and would like to please step up to the microphone.

MR. OSTAHOWSKI: Hello, my name is Jeff Ostahowski. I am with the same group that Karen is with, and Pam Gilbert

is also here from our group, who is on our board.

MR. TONG: Please spell your name for the court reporter.

MR. OSTAHOWSKI: Sure. It is O-s-t-a-h-o-w-s-k-i, and my first name is Jeff. And I would like to start by first thanking you, not only for coming here, but to give us an understanding in a really professional, and yet not-so-professional-that-it-was-over-our-heads type. I think the tone of your remarks here was exceptional. And I think I, along with many people here, learned many things. I am grateful for that. And I think most of the people here may know that it isn't that easy to get a public hearing, and it's unfortunate that you have had so much trouble with the notifications, but it is quite rare to have a public hearing on one of these wells.

I do have some things to say to the EPA unfortunately. First, I do feel -- or I should say Michigan Citizens for Water Conservation feels that you are currently permitting wells, injection wells, in Michigan that you do not have a realistic expectation of being able to site monitor. And we feel that's a violation of the Safe Drinking Water Act. So we would hope that you could suspend your activities on permitting until such time as you have caught up with the backload -- log of unmonitored wells, which is quite substantial. So that's the first thing I would like to say.

I mentioned the earthquake that occurred in May of 2015. This is not the closest well that you are currently considering. You have one in Barry County that is less than 20 miles from the original earthquake site, but this is within the area that earthquakes can routinely affect. And the size of the earthquake was 4.2 or 4.3. And that size of earthquake easily can affect the confining strata within a 200-plus area from the epicenter. So asking that there be some collaboration or substantiation that there wasn't a problem with the earthquake on any well within that 200-mile radius I think is reasonable. And I am not sure that it has occurred.

I have -- we talked a little bit about the DEQ and primacy. I know they are going to be asking for primacy. We will be opposing primacy. They cannot do a good job. And you do a much better job in many respects than they could ever hope to. So I just wanted to at least mention that in passing.

In terms of another problem that you have in this well, and in particular with the Class II D wells, you have an infinity limitation. In March of 2016, I am not telling you things you don't know, but you haven't implemented. The U.S. Geological Survey -- the United States Geological Survey made a finding that injection wells do, in fact, cause earthquakes. And if you live in Oklahoma you don't have to wonder about

that finding at all. But with a unlimited infinity limitation on your Class D wells, you have not adjusted the maximum limitation, and you are, in fact, permitting earthquakes by doing that. It may take 40 or 50 or 100 years, but if someone wants to put down as much as they -- infinity. Infinity will catch up with whatever is there and physics will take over and you will have an earthquake. So the EPA must redo that standard so that disposal wells do not have infinity.

The back side of that deals with the issue of water withdrawal for this purpose of production enhancement. And because there is no limitation, in essence there is no coordination with the aquifer that's going to provide them the fresh water, so you basically are allowing the permittee to drain the aquifer. And that shouldn't happen. That should be a violation of the Safe Water Drinking Act. The Safe Water Drinking Act says you are supposed to protect all of the aquifers from loss or contamination. In Michigan we have a little bit more than 4 million people who draw their water every day from an aquifer, and we need to protect them all as far as I'm concerned, and I know that's exactly what you want to do. So I do think you need to readjust the standard that you have for these -- this class of injection to consider the aquifer that is -- to consider where the fresh water is coming from. Well, frankly, you should not use fresh water. You should do what they do in region 10 or region 9 or region 8.

In the EPA they at this time do not allow fresh water. Of course, those are state regulations, but if you live in New Mexico, and there is a lot more gas wells in New Mexico than there are Wolverines in Michigan. I can say that all of those wells do not use fresh water and they operate every day. And some of them are involved in these enhancement activities. So it's clearly a possibility that produced brine or produced water, or toxic brine, I don't care what you call it, it should be used a second time in these, in these things, and fresh water ought to be used at -- not for this, for drinking and other uses that are appropriate. But I'm not sure this is an appropriate use.

So, having said all of that, the last piece deals with the condition of the application. From my perspective, the operator here is not the riskiest operator that has ever applied for a permit. We have one in the southern part of Michigan that has only a couple injection wells and an operating income of less than a million dollars, and that company scares me because they are starting out. And if they do have a problem, they will do what companies need to do, and that is to cover up what they can to stay in business. So I think this Muskegon company has been -- this Muskegon Development has a long record in injection wells. And that is to the advantage of the people of the county. And so I do not worry about them submitting inaccurate data. They might

submit it, but they wouldn't do it intentionally, I am sure of that.

And so what I'm trying to say is that we need to have a close look at the application that they have submitted. It does have omissions. It does have errors. And between the two it should be a document that's more or less accurate to a fairly large extent. And I'm not sure that that's what we have in front of us. If you were to submit that back to them and do a fast track of some kind, I'm pretty sure that we could find out if the microfiche at the Clark Library in Mt. Pleasant has any ancient wells before 1950 that are within the quarter mile confining area. We probably could do that in a matter of a few weeks. It's not an easy process. It takes probably an hour-and-a-half or so per roll, and there is 14 rolls. So you have got some time on the machines. There is only two machines. So it will take a couple weeks to go through with what they have doing it two/three times a week. And that's my concluding remark is that this should be sent back for completion of the errors that are in it and the omissions that are in it, and hopefully that can be the case. I do want to thank you for coming.

MS. SIMMONS: Is there anybody who did not sign in who would like to make comments before the court reporter, for the record?

Please introduce yourself and spell your name for

the record.

MS. MARI PAT TERPENING: I don't have to. My family did.

Good evening. I am Mom Terpening, Mari Pat Terpening, T-e-r-p-e-n-i-n-g. Thank you very much for being here tonight. I, too, came because I really wanted to get educated, because I was, unfortunately, not understanding the process, so I appreciate the time and the education that you have given us. And I can sense that your mission is truly to protect the public health.

So, with that being said, my greatest concern is the questions I have for the DEQ actually regarding the aquifer and the water. And so I think -- you know, I don't know -- you know, in the future if we are having public meetings to inform the public, we need to have the whole picture. We need to be able to answer all of our questions. We need to have DEQ here to answer them, as well as you here.

And thank you for being here.

MS. SIMMONS: Are there any further comments for the record?

MS. GILBERT: I will make one.

My name is Pamela Gilbert. I, too, would like to thank you. We worked with Ross Micham, and I think you probably know Ross. He had a heart of gold. And he knew -- I could see the conflict in his eyes knowing that what was going

on was something that he didn't even agree with, but he had to follow the rules. We really appreciate the hot seat that you are on. I want you to know that. This is a -- water is a human right. And also, in both Mecosta County, where we had our injection wells, I would agree with you (indicating), it is a social injustice issue. It is a social injustice issue because it seems as if the townships with the largest need and the poorest townships are always those most affected. And I really would like you to consider that as well when you are looking at what you are looking at because it sounds as if that is the case here as well. So thank you. Thank you for all you do.

MR. JANN: So if no one wants to speak at this time, we will maybe put a pause on the hearing because we need to stay until 9:30. And if somebody shows up, maybe they are just getting off of work, we will, in fact, reopen the hearing at that time. So let me pause it now. And we, of course, will remain and we are happy to talk with anyone individually as you might wish. So thank you for now.

(Record paused from 8:40 to 9:15 p.m.)

(Whereupon this hearing was concluded at 9:15 p.m.)

CERTIFICATE

STATE OF MICHIGAN )
)
COUNTY OF KENT )

I, LORI J. COPE, Certified Shorthand Reporter and Notary Public, do hereby certify that the foregoing matter was taken before me at the time and place hereinbefore set forth.

I FURTHER CERTIFY that this matter was taken in shorthand and thereafter transcribed by me and that it is a true and accurate transcript.

IN WITNESS WHEREOF, I have hereunto set my hand this 31st day of July of 2017, at Fremont, Michigan.


LORI J. COPE, CSR-4113, RPR
Notary Public for Newaygo County
My Commission Expires: 3-25-2021

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 1. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Nature of fluid to be injected into the well | Thank you for your continued service in the EPA protecting our fragile environment! Many of us in Michigan have descended from families that have lived in this area for over 7 generations, our roots run deep into the many beautiful lakes. Thank you sincerely, for allowing the community of Harrison, MI in Claire County, the opportunity to voice our thoughts & concerns regarding the Muskegon Development Company, request for a Class II underground oil waste injection well. We are grateful but question why the EPA has alerted us in short notice, with a comment period ending March 15, 2017 that Muskegon Development Company has requested an injection well permit: MI-035-2R-0034 for the disposal of by-products in the production of gas and oil. It is our understanding that the purpose of the permit is to inject fluid (displaced chemicals & brine waste) 2651 feet below the surface. Could this not possibly effect our ground water & lake water aquifers? | The U.S. Environmental Protection Agency (EPA) is required by regulations to publish notice of a 30-day public comment period for a draft UIC permit. The proposed permit is for a well that will inject fresh water for enhanced oil recovery and this will not adversely affect ground water and lake water; the injection for disposal of by-products of gas and oil, or any other substances, is prohibited. |
| 2. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Public hearing request | Our community would appreciate the questions we have, be directly answered by Muskegon in a public forum: that they will agree to have Muskegon Development Company, available to answer our questions/concerns, along with experts from the EPA. These are vital issues that could impact our community, our environment in the near future and in generations to come. | A public hearing regarding this proposed permit was held by EPA staff at Clare High School on July 25, 2017. Under the regulations governing public hearings for Underground Injection Control ('UIC') Permits (40 Code of Federal Regulations ('CFR') Part 124), the permit applicant, Muskegon Development Company, is not required to be present nor answer questions. EPA answered questions at the public meeting preceding the hearing. |
| 3. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Increased truck traffic associated with well | What the increase will be to the already existing heavy oil truck traffic on historical narrow roads, (when constructed not intended for heavy truck traffic)? Many residents of the area feel this practice negatively impacts the roads (by breaking them up) and the safety of our community. | Because the Holcomb 1-22 well and access roads had already been constructed in 2008, no substantial new construction or ground disturbance is anticipated during the conversion from production to enhanced recovery injection, which involves the installation of injection tubing and a packer into the well. Fresh water is to be pumped via a pipeline for injection into the well, so no additional regular truck traffic is expected. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 4. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Ground water contamination | The water resources in this area "if contaminated by the oil industry" would be irreversible and could pollute ground water, could damage lives & our beloved lakes. This negative impact on the environment, the fragile eco-system, could affect our property values: we have worked hard to build and maintain our property during difficult economic times. | EPA has conducted a thorough technical review of the permit application to ensure that the engineering design of the well, plugging and abandonment plan, and site geology are protective of Underground Sources of Drinking Water (USDWs). ground water, and the environment. |
| 5. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Public hearing request | Our community would appreciate the questions we have, be directly answered by in a public forum: that they will agree to have Muskegon Development Company, available to answer our questions/concerns, along with experts from the EPA. These are vital issues that could impact our community, our environment in the near future and in generations to come. | A public meeting and hearing regarding this proposed permit was held by EPA staff at Clare High School on July 25, 2017. Bill Tong (the staff permit writer) and Steve Jann (EPA hearing officer and UIC Branch Chief) were present to answer questions. As noted in EPA's prior response (above), the permit applicant, Muskegon Development Company, was not required to appear or speak at the public meeting or hearing. See, 40 CFR Part 124. |
| 6. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Leak accident response | These are a few examples of the questions we would like have answered by Muskegon Development Company please: In the event of an Oil related accident, will Muskegon Development Company please outline the local safety procedures. | In the event of a well leak, the permit specifies that the permittee (Muskegon Development Company) must shut-in (cease injection to) the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), the well must pass a Mechanical Integrity Test. Muskegon must transmit the test results to and request permission from EPA for written authorization to resume injection. |
| 7. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Nature of chemicals in injected waste | Would Muskegon Development Company please disclose the "chemicals used and the effect of them being displaced" in the injection well waste disposal process. | The proposed permit only allows fresh water to be injected into the Holcomb 1-22 well for enhanced oil recovery, not for waste disposal. No chemicals or any other substances are authorized for injection. |
| 8. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Maximum injection pressure calculation | Would an expert from the EPA explain how the injection pressure was selected and why it is safe? We have concerns that the injection pressure might induce formation fracturing and allow migration of the disposed waste into our aquafers and lakes. | The limitation on wellhead pressure serves to prevent confining-formation fracturing, calculated using the following formula: [{1.112 *psi/ft* - (0.433 *psi/ft*)(specific gravity)} x depth] - 14.7 *psi*. The maximum injection pressure is dependent upon depth and specific gravity of the injected fluid. The Richfield Formation of the Detroit River Group at 4948 feet was used as the depth and a |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| | | | | specific gravity of 1.05 was used for the injected fluid. The fracture gradient of 1.112 psi/ft was determined from an acid-fracture job from a nearby well. The confining formations overlying the injection zone and underlying the underground source of drinking water consists of 922 feet of impermeable anydrite and salt. The maximum injection pressure was calculated to prevent the confining formation from fracturing. |
| 9. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Payment for regular water testing for nearby residents | Would Muskegon Development Company, agree to pay for regular water testing of individual property owners wells in close proximity to the Oil & Gas industries (before and after they drill)? | Out of scope:<br><br>EPA cannot speak for Muskegon Development Company regarding this question. |
| 10. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Payment of fair market value compensation of polluted property | Would Muskegon Development Company, agree to purchase landowner's property (at fair market value) if the ground water becomes contaminated with the displaced chemicals/brine waste used in the Oil exploration process? | Out of scope:<br><br>EPA cannot speak for Muskegon Development Company regarding potential compensation of property damage. The proposed permit only allows fresh water to be injected for enhanced oil recovery; no displaced chemicals or brine waste is allowed to be injected into the well for disposal. |
| 11. | Kirby Ancona foxviewfarm@earthlink.net (2/12/2017) | Legal disputes involving other wells | Are there any other wells in this area being legally disputed at this time? | Out of scope:<br>EPA has conducted a GeoWebFace search of other wells within the 0ne-quarter mile radius Area of Review (AOR) around the Holcomb 1-22 well location, and there are no other federally permitted injection wells. There are other producing wells and abandoned wells outside of EPA juridisction. Regarding legally disputed wells, EPA does not have this information, which may include state and/or local disputes and privately owned wells outside of EPA jurisdiction. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 12. | Kathrin Schrouder SchrouderK@michigan.gov<br><br>MDEQ Fisheries Biologist<br><br>(2/14/2017) | Groundwater feeds Middle Branch Tobacco River, a designated trout stream. | This appears to be a deep injection well in Clare County near the headwaters of the Middle Branch Tobacco River. I have not reviewed anything like this before and am not certain how to understand all the potential impacts. I went to the listed website and did look at that. I would have concerns over anything which could impact the groundwater input to the Middle Branch Tobacco River as it is a designated trout stream. Any impacts that could possibly change the flows or temperatures would a problem and negatively impact the trout stream.<br><br>I forwarded this to our habitat unit and they also were unsure of potential harmful impacts on fish in the nearby streams. My guess is the deep injection would mostly impact groundwater and possibly drinking water for nearby wells.<br><br>Thank you for my chance to comment and know about this application. | Based upon EPA's technical review of the permit application, the well and plugging design, site geology, and endangered species review, the well will be protective of Underground Sources of Drinking Water (USDWs) and the environment. In the event of a leak, multiple well casings, cement between casings, and annulus fluid serve to confine the leak. There is little chance that the well will cause ground water pollution or affect the Middle Branch Tobacco River or any other surface water. |
| 13. | Jeffery Loman jefferyloman@mac.com<br><br>(2/27/2017) | Well design and construction is inadequate to protect USDWs | The permit applicant, Muskegon Development Company, and the EPA, have not sufficiently demonstrated that the proposed injection well will not endanger Underground Sources of drinking water (USDW) and may likely present a public nuisance – specifically as discussed in the comments that follow:<br><br>The proposed injection well and any nearby offset wells are not properly designed and constructed and may endanger USDWs. | EPA's technical review of the permit application included analysis of the engineering design of the injection well and cement plugs, evaluation of the site geology to determine the depth of the USDW and the suitability of the rock formation(s) for injection, calculation of the maximum injection pressure, and a search for and evaluation of any operating or plugged wells within the Area of Review (AOR) that penetrate the injection zone, to assure that USDWs are protected. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 14. | Jeffery Loman jefferyloman@mac.com<br><br>(2/27/2017) | Maximum Injection Pressure may allow fracturing in injection or confining zone | The maximum allowable injection pressure ("MAIP") may result in fracturing of the injection or confining zone, potentially creating pathways that may allow injected fluids to reach USDWs | The pressure at which the fluid is injected is limited (within the UIC permit - ?) to ensure safe operation of the well. The maximum injection pressure for each well is determined based on the depth of the well, the specific gravity of the injected fluid, and the fracture gradient. This is done to ensure that the confining zone is not fractured due to injection. In this case, the maximum injection pressure was set at 3238 psi. This limitation was calculated using the following formula:<br><br>**[{1.112 psi/ft - (0.433 psi/ft)(specific gravity)} x depth] - 14.7 psi = 3238 psig**<br><br>The maximum injection pressure is dependent upon depth and specific gravity of the injected fluid. The Richfield Formation of the Detroit River Group at 4948 feet was used as the depth and a specific gravity of 1.05 was used for the injected fluid. The fracture gradient of 1.112 psi/ft was determined from an acid-fracture job from a nearby well. Pursuant to the UIC permit, monthly reports of pressure and flow rates must be submitted to EPA for review. |
| 15. | Jeffery Loman jefferyloman@mac.com<br><br>(2/27/2017) | Area of Review is not sufficiently protective of USDW's | The described Area of Review ("AoR") evaluation is not sufficient and neither the applicant nor EPA has demonstrated that the proposed fixed radius, assuming thee is one, is appropriate to protect USDWs. | 40 C.F.R. § 147.1155 requires EPA to use a fixed radius Area of Review (AOR) of no less than ¼ mile for Class II wells in Michigan. EPA's technical review of the permit application included analysis of the engineering design of the injection well and cement plugs, evaluation of the site geology to determine the depth of the USDW and the suitability of the rock formation(s) for injection calculation of the maximum injection pressure, and a search for and evaluation of any operating or plugged wells within the AOR that penetrate the injection zone, to assure that USDWs are protected. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 16. | Jeffery Loman jefferyloman@mac.com<br><br>(2/27/2017) | Surface casing is not deep enough to protect the USDW | Consequently, the draft permit should not be approved unless and until these deficiencies are addressed. Well Construction: Neither the applicant nor EPA has demonstrated that the surface casing does not extend below the base of the USDW and the production casing cement does not extend above the base of either the USDW or the surface casing. This means that a portion of the annular space adjacent to the USDW is uncemented. Leaving this annular space uncemented puts both the USDW and well integrity at risk. The top of the production casing cement does not appear to extend above the base of the surface casing. Failing to extend surface casing in any well to below the base of the lowest USDW puts those USDWs below the base of the surface casing at significant risk of contamination. Cross flow may occur between the USDW and other formations, potentially leading to contamination of the USDW. Leaving a potential flow zone uncemented can also result in over pressurization of the annulus and/or result in casing corrosion, both of which may lead to a well integrity failure, further putting drinking water at risk. Properly constructed wells typically have at least two barriers between USDWs and fluids contained in the well: 1) the surface casing and 2) the production casing. The American Petroleum Institute recommends that "surface casing be set at least 100 feet below the deepest USDW encountered while drilling the well. Both UIC Class I and Class VI well rules require surface casing to extend below the base of the lowest USDW, indicating that EPA clearly recognizes this as an important standard to protect ground water. | Based upon the geological formation record obtained when the Holcomb 1-22 well was drilled for oil production, the USDW consists of the Glacial Drift, which extends from the surface to a depth of 464 feet. The surface casing and surface casing cement of the proposed injection well extends from the surface to 792 feet deep, which is 328 feet deeper than the bottom of the USDW, far exceeding 100 feet below the deepest USDW. The cemented portions of the annular space between the long string and intermediate well casings in the well extend from 2650' to 4082' – this cemented interval seals off the permeable rock formations known as the Traverse Formation (3034' to 3068'), Traverse Limestone (3068' to 3716') and Dundee Limestone (3782' to 4044'). Between 3034' and 1530', the formation record shows consecutive formations of impermeable shale, meaning that the depth interval between 2650' (top of the cement) and 1530' (top of the Coldwater Shale) consists of more than 1000 feet of impermeable rock acting as a barrier to potential upward migration of injected fluid. The depth interval between 1530' and 792' consists of shale and sandstone formations that are not USDWs. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 17. | Jeffery Loman jefferyloman@mac.com<br><br>(2/27/2017) | UIC regulations governing construction rules are insufficient to protect drinking water | Finally, I would remind EPA that a report by the General Accounting Office, an internal EPA Mid-Course Evaluation of the UIC program, and a federally chartered advisory committee found that Class II well construction rules were insufficient to protect drinking water and recommended that the rules be changed to require surface casing to extend below the base of protected water. EPA proposed to make these changes in the early 1990s, but to the best of my knowledge, they were never finalized. Nevertheless, these improvements are still needed in order to adequately protect USDWs and should be implemented in permitting decisions. | EPA must follow the relevant regulations as they currently exist, as they pertain to the proposed permit. |
| 18. | Wes Raymond, Administrator – Citizens for Alternatives to Chemical Contamination (CACC) admin@caccmi.org 989.544.3318<br><br>(3/15/2017) | Request for Public Hearing | This message is written on behalf of the membership of Citizens for Alternatives to Chemical Contamination (CACC).<br><br>CACC's membership and board of directors request a public hearing be held in Clare County Michigan regarding the permit MI-035-2R-0034 with a reasonable effort to make outreach and announcement of the meeting to the public.<br><br>Public understanding and participation is paramount in a functional democracy, and this fact alone is reason enough that a public meeting be held. Additionally, CACC members have approached the residents of Clare County with news of permit MI-035-2R-0034 and many residents have expressed a desire for a public meeting, both to voice their opinions and to ask questions.<br><br>Please see to this minor formality. We recommend the use of meeting facilities in the Pere Marquette District Library.<br><br>Thank you for your time and consideration. | A public meeting and hearing regarding this proposed permit was held by EPA staff at Clare High School on July 25, 2017. Bill Tong (the staff permit writer) and Steve Jann (EPA hearing officer and UIC Branch Chief) were present to answer questions. Further, on July 27, 2017, EPA extended the time period for opportunity for public comment through August 18, 2017. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 19. | Kirby Ancona (7/17/2017) | Nature of fluid to be injected into the well | Are we to understand (re: Holcomb - Muskegon Development Company-) you stated both in your EPA Permit Public Notice the intent of the permit is for injection of "fresh water" or "fluid" in the drilling/injection or disposal process. Which is correct? | Both are correct. The general language is "fluid" in most Class II permits, but this particular permit specifies that "fresh water" is to be the sole injection fluid. |
| 20. | Kirby Ancona (7/17/2017) | Nature of fluid to be injected into the well | What is the purpose of the permit? What fluid will EPA approve for the Muskegon Development Company? If approved will they be injecting or drilling (displaced chemicals & brine waste) or fresh water or both? Muskegon Development Company at Holcomb intends to inject what into rock formation 4948 feet below the surface through a well located near North Athey and E. Townline Lake Roads in Hamilton Township of Clare County? What are the liquid quantities used in this process? Where do these liquids come from? | The purpose of the permit is to authorize injection of fresh water for enhanced recovery of oil. The proposed permit is a "conversion" of an existing oil production well permitted by the State of Michigan in 2008. The permit only allows fresh water to be injected into the Richfield Formation; no displaced chemicals or brine waste is allowed to be injected for disposal. The proposed permit specifies that the maximum injection pressure allowed is 3238 psig. The maximum injection rate stated in the permit application is 350 barrels per day (5,365,500 gallons per year). The source of fresh water is the Glacial Drift aquifer at the surface. |
| 21. | Kirby Ancona (7/17/2017) | What about the state injection permit? | Muskegon Development Company has also applied for a permit from the Michigan Department of Environmental Quality (MDEQ). If approved could this injection well effect our ground water & lake water aquifers? | The state permit regulates the existing Holcomb 1-22 well (oil producing well, regulated only by the State of Michigan). The new state permit application is to reflect the change in status of the well from a conventional producing well to an enhanced recovery injection well. Compared to the known estimated rate of groundwater recharge (191,000,000 gallons per year) in the state data base, the maximum ground water usage for this well is less than 1/30 the recharge rate. The volume of freshwater to be pumped into this injection well is very unlikely to affect groundwater levels or aquifers. |
| 22. | Kirby Ancona (7/17/2017) | Heavy truck traffic near the well site | Our community would appreciate a public hearing: regarding Muskegon Development Company' responsibility in securing water safety, air quality & what the increase will be to the already existing heavy oil truck traffic on historical narrow roads, (when constructed not intended for heavy truck traffic). Many residents of the area feel this practice negatively impacts the roads (by breaking them up) and has safety concerns for the community. | A public hearing regarding this proposed permit was held by EPA staff at Clare High School on July 25, 2017. Because the Holcomb 1-22 well and access roads had already been constructed in 2008, no substantial new construction or ground disturbance is anticipated during the conversion from production to enhanced recovery injection. Fresh water is to be pumped via a pipeline for injection into the well, so no additional truck traffic is expected. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 23. | Kirby Ancona (7/17/2017) | Groundwater contamination | As you must know the water resources in this area "if contaminated by the oil industry" would be irreversible and could pollute ground water, could damage lives & our beloved lakes of Michigan. This negative impact on the environment, the fragile eco-system, the oil & gas industry is real and would affect property values. | The engineering design of the well and plugging and abandonment plan of this proposed permit underwent a thorough EPA technical review for adequacy and technical soundness in order to assure that underground sources of drinking water were protected, prior to publication of the draft permit. |
| 24. | Kirby Ancona (7/17/2017) | Public meeting request | The community would appreciate important questions to be directly answered by Muskegon Development Company in a public forum: they will agree to have Muskegon Development Company & the EPA, all experts to please be available to answer all questions/concerns. These are vital issues that could impact our community, our environment in the near future and in generations to come. | A public meeting and hearing regarding this proposed permit was held by EPA staff at Clare High School on July 25, 2017. Bill Tong (the staff permit writer) and Steve Jann (EPA hearing officer and UIC Branch Chief) were present to answer questions. The permit applicant, Muskegon Development Company, was not required to appear or speak at the public meeting or hearing. Further, on July 27, 2017, EPA also extended the time period for opportunity for public comment through August 18, 2017. |
| 25. | Kirby Ancona (7/17/2017) | Response to a leak incident | In the event of an Oil/Gas/injection well leak related accident, would Muskegon Development Company & the EPA please outline the local safety procedures for Holcomb. | In the event of a well leak, the permit specifies that the permittee (Muskegon Development Company) must shut-in (cease injection to) the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), the well must pass a Mechanical Integrity Test, and Muskegon must transmit the test results to and request permission from EPA for written authorization to resume injection. |
| 26. | Kirby Ancona (7/17/2017) | Nature of wastes being injected into the well | Would Muskegon Development Company disclose the "chemicals used and the effect of them being displaced" in the injection well waste disposal process? | The proposed permit only allows fresh water to be injected into the Holcomb 1-22 well for enhanced oil recovery, not for waste disposal. No chemicals or any other substances are authorized for injection. |
| 27. | Kirby Ancona (7/17/2017) | How maximum injection pressure was calculated | Would an expert from the EPA explain how the injection pressure was selected, its depth into the rock and why it is safe? We have concerns that the injection pressure might induce formation fracturing and allow migration of the disposed waste into our aquifers and lakes. | The maximum injection pressure was calculated to prevent the confining formation from fracturing, using the following formula: [{1.112 *psi/ft* - (0.433 *psi/ft*)(specific gravity)} x depth] - 14.7 *psi*. The maximum injection pressure is dependent upon depth and specific gravity of the injected fluid. The Richfield Formation of the Detroit River Group at 4948 feet was used as the depth and a specific gravity of 1.05 was used for the injected fluid. The fracture gradient of 1.112 psi/ft was determined from an acid-fracture job from a nearby well. The confining formations overlying the injection zone and underlying the underground source of drinking water consists of 922 feet of impermeable anydrite and salt |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 28. | Kirby Ancona (7/17/2017) | Payment for regular water testing for residents close to the well | Would Muskegon Development Company agree to pay for regular water testing of individual property owners wells in close proximity to the Oil & Gas industries (before and after they drill)? | Out of scope:<br><br>EPA cannot speak for Muskegon Development Company regarding this question. |
| 29. | Kirby Ancona (7/17/2017) | Purchase of landowner's property should ground water be contaminated | Would Muskegon Development Company agree to purchase landowner's property (at fair market value) if the ground water becomes contaminated with the displaced chemicals/or fresh water or brine waste used in the Oil exploration process? | Out of scope:<br>EPA cannot speak for Muskegon Development Company regarding potential compensation of property damage.<br>The proposed permit only allows fresh water to be injected for enhanced oil recovery; no displaced chemicals or brine waste is allowed to be injected into the well for disposal. |
| 30. | Kirby Ancona (7/17/2017) | Legal disputes for other wells | Are there any other wells in this area being legally disputed at this time? | Out of scope:<br>EPA has conducted a GeoWebFace search of other wells within the 0ne-quarter mile radius Area of Review (AOR) around the Holcomb 1-22 well location, and there are no other federally permitted injection wells. There are other producing wells and abandoned wells outside of EPA juridisction. Regarding legally disputed wells, EPA does not have this information, which may include state and/or local disputes and privately owned wells outside of EPA jurisdiction. |
| 31. | Kirby Ancona (7/17/2017) | Samples of fresh water and additives | Would Muskegon Development Company agree to provide "fresh water" samples used in the drilling process and disclose any additives? | The Holcomb 1-22 well was drilled for oil production in 2008. Any fresh water used during the drilling process was mostly used to mix with Bentonite clay for drilling mud. As an injection well, only fresh water will be injected, without additives. |
| 32. | Michigan Citizens for Water Conservation (7/23/2017) | Inadequate monitoring of injection wells | Michigan Citizens for Water Conservation (MCWC) is opposed to the issuance of a Class II injection Well permit for Holcomb 1-22 in Clare County, Michigan without satisfactory resolve of the following issues and questions. First, and foremost MCWC believes it is not legal for the EPA to issue any more Class II injection well permits in Michigan without a prior substantial EPA effort to address the existing permitted and unmonitored injection wells in Michigan. Permitting without a realistic expectation of the monitoring required by federal law is a violation of that same law, the Federal Safe Drinking Water Act. | Self-monitoring under permit conditions has been well-established for decades and is the basis of compliance with most federal and state environmental protection statutes. It is logistically impossible for environmental regulatory agencies to perform facility monitoring of all wells or facilities on a regular basis. Periodic environmental compliance inspections supplement regular self-monitoring data; permit violations are subject to enforcement action. Under federal law, there are severe criminal penalties for falsification of data and reports. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 33. | Michigan Citizens for Water Conservation (7/23/2017) | Infinite water withdrawal for injection is unsafe | MCWC is opposed to the infinite nature of these permits once granted. In March of 2016, the United States Geological Survey issued a major finding that injection wells can cause earthquakes. The EPA has not incorporated that finding into its injection well permitting activities. Considering the USGS finding, **infinity** is not a realistic or safe limit on injection well permits.<br><br>MCWC insists it is imperative the EPA develop a safe and realistic limit for the total amount of wastes injected allowed by EPA for each permit. Until the **infinity limit** problem is addressed, the EPA cannot legally issue injection well permits without violating both the letter and spirit of the Safe Drinking Water Act. | The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development. A water pump of equal or lesser capacity will extract groundwater for injection; groundwater cannot be extracted at a higher rate because there are no known facilities to store excess groundwater, and the UIC permit also limits the injection pressure that can be used, so there is very little chance that the Holcomb 1-22 well can trigger an earthquake. The proposed well is not a waste injection well; if permitted, the well will be injecting freshwater for enhanced oil recovery. |
| 34. | Michigan Citizens for Water Conservation (7/23/2017) | There are many inaccuracies in the permit application | MCWC has the following **specific issues** and/or questions concerning the pending Class II injection well permit for **Holcomb 1-22** in Clare County, Michigan.<br><br>**Basic ownership and facts**: Jerry and Mary Holcomb; application for replacement to old well on former drilling unit on June 30, 2008 by Northern Explorations, LLC; Sugarland, Texas. Permitted as oil/gas well on Amhurstberg formation @ 5200 total vertical depth. Reference for facts is Permit on Internet from 2008 Pursuant **R324.301 General Rule** for 40 acres (unit) Special spacing with 80 acres drilling unit 2 was applied for to achieve an 80-acre unit to include the array of existing oil wells for the Fanslau Unit with a "Fanslau Unit Spatial Interest" as contained on page 33 of 70 pages of the Permit application. A concern was cited and not addressed for how close the new well would be from the unit drilling lines and as various conditions cited in Part 615 of the Rules. From DEQ EQP 7200-7 form only a year after sluggish production, a transfer permit was granted to Muskegon Development Company of Mt. Pleasant. This Company is renowned for injection activities. Filed 4/07/09. | Out of scope: (NOT A COMMENT)<br><br>These comments actually pertain an-application for the state permit issued in 2008 by MDEQ for the oil producing well Holcomb 1-22, not the federal UIC permit application for the injection well. These comments reference documents and information that do not exist in the UIC permit application, and EPA does not have the authority to address them. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 35. | Michigan Citizens for Water Conservation (7/23/2017) | Brine injection permit | Where is the application for brine injection? Or did the injection refer to high pressure water to manipulate field pressure and get past lackluster production.<br><br>**Questions /concerns:** *(see Karen Turnbull's comments below, which were identical questions to those written by MCWC, Public Hearing Transcript, July 25, 2017)* | The proposed federal UIC permit only allows fresh water to be injected into the Holcomb 1-22 well for enhanced oil recovery, not for injection of brine. |
| 36. | Karen Turnbull (Public Hearing Transcript, Page 20-21) (7/25/2017)<br><br>and<br><br>Michigan Citizens for Water Conservation (7/23/2017) | There are many inaccuracies in the permit application | We believe that there are many errors in this application, and we believe that the permit application should be returned to the applicant for completion prior to further EPA approval considerations. And I have 14 errors in the application.<br><br>Number 1 is that EIA is furnished by William Sikkema, an Osceola County surveyor. The portion of the permit in 2008 does not actually make a certifying statement that it will not impact the environment. It cites soil makeup and various topographical considerations in an elaborate plot plan. Surveyors are not qualified to make such EIA and perhaps Mr. Sikkema readily acknowledged this by the omission. The certifying statement must be reviewed for compliance.<br><br>Number 2, proposed construction of a flow line routed along a new well access is depicted on the plot plan, but no statement as what will be -- what will be done with the old flow line is made. Without removal of the old flow line there exists the potential safety hazard of trapped volatile liquids that could make this field unsafe. | Out of scope:<br><br>These comments reference a "permit in 2008," which is actually the application for the state permit issued by MDEQ for the oil producing well Holcomb 1-22, not the federal UIC permit application for the injection well An EIS is not required for a federal injection well permit. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 37. | Karen Turnbull (Public Hearing Transcript, Page 20-21) (7/25/2017) and Michigan Citizens for Water Conservation (7/23/2017) | There are many inaccuracies in the permit application | Number 3, plot plan depicts secondary wetlands due east as part of the Cedar Creek watershed, but fails to indicate the broader pattern outlying Decker Lake. This statement is not accurate.<br><br>Plan to cite conditions slightly beyond the quarter mile zone? Is this not the real influence and spirit of the 615 rules? | Out of scope:<br><br>These comments reference a "permit in 2008," which is actually the application for the state permit issued in 2008 by MDEQ for the oil producing well Holcomb 1-22, not the federal UIC permit application for the injection well |
| 38. | Karen Turnbull (Public Hearing Transcript, Page 21-22) (7/25/2017)<br><br>and<br><br>Michigan Citizens for Water Conservation (7/23/2017) | There are many inaccuracies in the permit application | Number 4, the Cranberry and Cedar Creeks greater confluence is also impacted by the proposed gas plant upon the Michigan gas storage property in nearby section 8 to the northwest. Would it have been better on the plot<br><br>Number 5, there is no reference for H2S sour gas potency other than that it is believed to be somewhat less than 330 parts per million. Though the full contingency of emergency evac and blowout preventer forms are compiled in the permit, the permit needs to contain real data, not the beliefs of the applicant.<br><br>Number 6, what is the plan for water well monitoring beyond the specific site of Holcomb?<br><br>Number 7, an actual EIA must be provided via a qualified environmentalist or professional.<br><br>Number 8, primary wetlands are at 1400 feet east/southeast abutting Decker Lake. They are not depicted and need to be.<br><br>Number 9, Decker Lake needs to be depicted upon a revised plot plan for this new permit. | Out of scope:<br><br>These comments refer to the application for the state permit issued in 2008 by MDEQ for the oil producing well Holcomb 1-22, not the federal UIC permit application for the injection well. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 39. | Karen Turnbull (Public Hearing Transcript, Page 21-22) (7/25/2017)<br><br>and<br><br>Michigan Citizens for Water Conservation (7/23/2017) | There are many inaccuracies in the permit application | Number 10, as part of a revised evac plan, wind socks need to be secured at least 20 feet above facilities; Number 11, independent lab evaluations need to make a chemical analysis of this site.<br><br>Number 12, the westerly extremity of Decker Lake scales at 1340 feet from the Holcomb well, and it is not depicted in the application.<br><br>Number 13, area has a confining impact for H2S migration in the surrounding woods. The size of the opening to the woods needs to be depicted in the application. | Out of scope:<br><br>These comments refer to the application for the state permit issued in 2008 by MDEQ for the oil producing well Holcomb 1-22, not the federal UIC permit application for the injection well. |
| 40. | Karen Turnbull (Public Hearing Transcript, Page 22) (7/25/2017)<br><br>and<br><br>Michigan Citizens for Water Conservation (7/23/2017) | Calculated Maximum Injection Pressure is not safe | Number 14, proposed 3238 psig for injection is highly dangerous and unsafe without safety measures. What are the safety precautions proposed by the applicant? | The maximum injection pressure was calculated to prevent the confining formation from fracturing, using the following formula: [{1.112 *psi/ft* - (0.433 *psi/ft*) x (specific gravity)} x depth] - 14.7 *psi*. The maximum injection pressure is dependent upon depth and specific gravity of the injected fluid. The Richfield Formation of the Detroit River Group at 4948 feet was used as the depth and a specific gravity of 1.05 was used for the injected fluid. The fracture gradient of 1.112 psi/ft was determined from an acid-fracture job from a nearby well. The confining formations overlying the injection zone and underlying the underground source of drinking water consists of 922 feet of impermeable anydrite and salt. |
| 41. | Jeff Ostahowski (Public Hearing Transcript, Page 24) (7/25/2017) | Self-monitoring of injection wells is inadequate | You are currently permitting wells, injection wells, in Michigan that you do not have a realistic expectation of being able to site monitor. And we feel that's a violation of the Safe Drinking Water Act. So we would hope that you could suspend your activities on permitting until such time as you have caught up with the backload -- log of unmonitored wells, which is quite substantial. | Self-monitoring under permit conditions has been well-established for decades and is the basis of compliance with most federal and state environmental protection statutes. It is logistically impossible for environmental regulatory agencies to perform facility monitoring of all wells or facilities on a regular basis. Periodic environmental compliance inspections supplement regular self-monitoring data; permit violations are subject to enforcement action. Under federal law, there are severe criminal penalties for falsification of data and reports. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 42. | Jeff Ostahowski (Public Hearing Transcript, Page 24) (7/25/2017) | Injection wells can cause earthquakes | I mentioned the earthquake that occurred in May of 2015. This is not the closest well that you are currently considering. You have one in Barry County that is less than 20 miles from the original earthquake site, but this is within the area that earthquakes can routinely affect. And the size of the earthquake was 4.2 or 4.3. And that size of earthquake easily can affect the confining strata within a 200-plus area from the epicenter. So asking that there be some collaboration or substantiation that there wasn't a problem with the earthquake on any well within that 200-mile radius I think is reasonable. And I am not sure that it has occurred. In terms of another problem that you have in this well, and in particular with the Class II D wells, you have an infinity limitation. In March of 2016, I am not telling you things you don't know, but you haven't implemented. The U.S. Geological Survey -- the United States Geological Survey made a finding that injection wells do, in fact, cause earthquakes. And if you live in Oklahoma you don't have to wonder about that finding at all. | EPA considered seismic risk as part of its technical review of the permit application. The May 6, 2015 earthquake epicenter was located more than 200 miles away in Kalamazoo County with a Richter magnitude of 4.3. News reports of surface damage were minimal.<br><br>Studies have documented that certain injection wells in Oklahoma can cause earthquakes. However, there are a number of prerequisite factors that must exist: 1) excessively high injection pressures and fluid volumes, and 2) the existence of fault zones. The injection pressure and fluid volume for the proposed well in Michigan, combined with the general lack of fault zones make injection-induced earthquakes unlikely. Also, the geology of Michigan is very different than that of Oklahoma; and the studies from Oklahoma, where hydraulic fracturing is used extensively, cannot reasonably be extrapolated to the proposed well site in Michigan. |
| 43. | Jeff Ostahowski (Public Hearing Transcript, Pages 25-26) (7/25/2017) | Injection wells can cause earthquakes | In terms of another problem that you have in this well, and in particular with the Class II D wells, you have an infinity limitation. In March of 2016, I am not telling you things you don't know, but you haven't implemented. The U.S. Geological Survey -- the United States Geological Survey made a finding that injection wells do, in fact, cause earthquakes. And if you live in Oklahoma you don't have to wonder about that finding at all. | Earthquakes associated with hydraulic fracturing (fracking) oil producing wells in Oklahoma were attributed to high volume, high rate injection of fluid for oil extraction, which triggered slippage along existing fault zones. The proposed Class IIR well will not be used for fracking. Congress did not give EPA the authority to regulate hydraulic fracturing (fracking), nor producing wells. The rate of injection for the proposed Class IIR well is well below what was used for fracking in the Oklahoma producing wells. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 44. | Jeff Ostahowski (Public Hearing Transcript, Page 27) (7/25/2017) | Freshwater should not be withdrawn at an unlimited rate for injection; this may deplete the aquifer and cause earthquakes. | But with an unlimited infinity limitation on your Class D wells, you have not adjusted the maximum limitation, and you are, in fact, permitting earthquakes by doing that. It may take 40 or 50 or 100 years, but if someone wants to put down as much as they -- infinity. Infinity will catch up with whatever is there and physics will take over and you will have an earthquake. So the EPA must redo that standard so that disposal wells do not have infinity.<br><br>The back side of that deals with the issue of water withdrawal for this purpose of production enhancement. And because there is no limitation, in essence there is no coordination with the aquifer that's going to provide them the fresh water, so you basically are allowing the permittee to drain the aquifer. And that shouldn't happen. That should be a violation of the Safe Water Drinking Act. The Safe Water Drinking Act says you are supposed to protect all of the aquifers from loss or contamination. In Michigan we have a little bit more than 4 million people who draw their water every day from an aquifer, and we need to protect them all as far as I'm concerned, and I know that's exactly what you want to do. So I do think you need to readjust the standard that you have for these -- this class of injection to consider the aquifer that is -- to consider where the fresh water is coming from. Well, frankly, you should not use fresh water. You should do what they do in region 10 or region 9 or region 8. | It is inaccurate to say that there is an "unlimited infinity limitation" regarding groundwater withdrawal for injection. The State of Michigan requires a permit for large users of ground water (exceeding 70 gallons per minute or 2400 barrels per day withdrawal), and is the primary regulatory authority over ground water. The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development. A water pump of equal or lesser capacity will extract groundwater for injection; groundwater cannot be extracted at a higher rate because there are no facilities to store excess ground water, and the UIC permit also limits the injection pressure that can be used, so there is very little chance that the Holcomb 1-22 well can trigger an earthquake. 350 barrels per day pumped non-stop (not realistic, because water pumps are not designed to operate continuously at maximum rate without damage or premature wear) yields about 5,600,000 gallons of water per year; this is less than 3% of the estimated 191,000,000 gallons of annual groundwater recharge documented in maps by the State of Michigan. Thus, there is little chance that the proposed injection well can deplete the aquifer or lower the ground water table. There is no prohibition in UIC regulations to using fresh water or ground water for injection. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 45. | Jeff Ostahowski<br><br>(Public Hearing Transcript, Page 27) (7/25/2017) | Fresh water should not be used for injection | In the EPA they at this time do not allow fresh water. Of course, those are state regulations, but if you live in New Mexico, and there is a lot more gas wells in New Mexico than there are Wolverines in Michigan. I can say that all of those wells do not use fresh water and they operate every day. And some of them are involved in these enhancement activities. So it's clearly a possibility that produced brine or produced water, or toxic brine, I don't care what you call it, it should be used a second time in these, in these things, and fresh water ought to be used at -- not for this, for drinking and other uses that are appropriate. But I'm not sure this is an appropriate use. | There is no legal prohibition in UIC regulations to using fresh water or ground water for injection. The State of Michigan is the primary regulatory authority regarding ground water withdrawals. The state requires a special "large user" permit for withdrawing 70 or more gallons per minute of groundwater; that equals 2400 barrels per day. Muskegon Development can only pump up to 350 barrels per day, well below the threshold for a large user state groundwater permit. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 46. | Jeff Ostahowski<br><br>(Public Hearing Transcript, Page 28) (7/25/2017) | There may be orphaned wells within the Area of Review that were not mentioned in the permit application | So, having said all of that, the last piece deals with the condition of the application. From my perspective the operator here is not the riskiest operator that has ever applied for a permit. We have one in the southern part of Michigan that has only a couple injection wells and an operating income of less than a million dollars, and that company scares me because they are starting out. And if they do have a problem, they will do what companies need to do, and that is to cover up what they can to stay in business. So I think this Muskegon company has been -- this Muskegon Development has a long record in injection wells. And that is to the advantage of the people of the county. And so I do not worry about them submitting inaccurate data. They might submit it, but they wouldn't do it intentionally, I am sure of that. And so what I'm trying to say is that we need to have a close look at the application that they have submitted. It does have omissions. It does have errors. And between the two it should be a document that's more or less accurate to a fairly large extent. And I'm not sure that that's what we have in front of us. If you were to submit that back to them and do a fast track of some kind, I'm pretty sure that we could find out if the microfiche at the Clark Library in Mt. Pleasant has any ancient wells before 1950 that are within the quarter mile confining area. We probably could do that in a matter of a few weeks. It's not an easy process. It takes probably an hour-and-a-half or so per roll, and there is 14 rolls. So you have got some time on the machines. There are only two machines. So it will take a couple weeks to go through with what they have doing it two/three times a week. And that's my concluding remark is that this should be sent back for completion of the errors that are in it and the omissions that are in it, and hopefully that can be the case. I do want to thank you for coming. | EPA has reviewed and determined the permit application to be complete, with enough data and information to support a permit decision to approve the injection well. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. EPA considers the impact of other wells within the ¼ mile radius area of review, but this is limited to those wells that are sufficiently deep enough to penetrate the proposed injection zone. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 47. | Rebecca Terpening<br><br>(hand-written letter dated 7/27/2017) | Public hearing notification procedures were flawed | I attended your public hearing on July 25th regarding the permit for the Holcomb injection well 1-22. I spoke during the public hearing but thought about the meeting into the night, and thought of a few more important things to bring to your attention.<br><br>Aside from the incorrect information and poor meeting location choice (printed on the hearing notice), when were Hamilton Township officials or county officials notified of the hearing? The Township Supervisor stated the Township Hall would have been the perfect location. Why was the meeting held in the City of Clare, 26 miles away from the area affected by the injection well? | EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA's selection of Clare High School as the venue was determined by the limited availability of a suitably large local meeting hall to hold the public hearing. |
| 48. | Rebecca Terpening<br><br>(hand-written letter dated 7/27/2017) | Location of injection well | Does the EPA take into consideration the soil quality for site locations? This area is very swampy in many areas, as noted on the survey for the well, around the Cedar River and area lakes/ponds. Clare County has over 110 lakes, over 56,000 acres of state land. Again, wondering why any well would be approved in a residential area? | The surface facilities (well head, well pad, surrounding soil, location of the well) of the well are within the jurisdiction of the state of Michigan, not EPA. Many underground injection wells have been permitted and have operated in residential areas for decades without incident. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 49. | Rebecca Terpening<br><br>(hand-written letter dated 7/27/2017) | Excessive ground water withdrawal may lower water levels in private wells. | My biggest concern is the fact that EPA expressed that the State controls the amount of ground water than can be extracted and then used in the well. The DEQ was not present at the hearing to answer our questions on how this may affect the aquifer that feeds so many wells for residents' drinking water. We are not experts in this area, so we look to you for explanation on the subject, which is something you could not do, because it doesn't fall under your jurisdiction. You deal with the permit process. I get that. But, this public hearing was for us to get a better understanding and I think many were left with more questions vs. answers. | The State of Michigan requires a permit for large users of ground water (exceeding 70 gallons per minute or 2400 barrels per day withdrawal), and is the primary regulatory authority over ground water. The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development. A water pump of equal or lesser capacity will extract groundwater for injection; groundwater cannot be extracted at a higher rate because there are no facilities to store excess ground water, and the UIC permit also limits the injection pressure that can be used, so there is very little chance that the Holcomb 1-22 well can trigger an earthquake. 350 barrels per day pumped non-stop (not realistic, because water pumps are not designed to operate continuously at maximum rate without damage or premature wear) yields about 5,600,000 gallons of water per year; this is less than 3% of the estimated 191,000,000 gallons of annual groundwater recharge documented in maps by the State of Michigan. Thus, there is little chance that the proposed injection well can deplete the aquifer or lower the ground water table. |
| 50. | Rebecca Terpening<br><br>(hand-written letter dated 7/27/2017) | Request for a second public hearing/and, MDEQ involvement. | I ask that you consider extending the public comment period, that you hold a public hearing at the Hamilton Township Hall, that you public the correction information on the notice to citizens and publish it in the Clare County Cleaver as well as cc: to the Hamilton Township Board and Zoning & Coding Officer (he was not aware of this at all). Another paper "more local" is the Gladwin Record Eagle out of Gladwin, MI. I also ask that a representative specialized in water matters from our District DEQ office in Saginaw is present. | EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 51. | Deb Sherrod debsherrod@gmail.com (7/27/2017) | Excessive ground water withdrawal may lower water levels in private wells. | I am a resident of Clare County, and I totally oppose the injection well that is planned for Dodge City. It could contaminate the local wells in the area, and by drawing out the local water in the aquifer it may seriously deplete the wells of the local residents. These residents are some of the poorest in Clare County. They could not afford to install new wells!!! To do this would be unconscionable! | The State of Michigan requires a permit for large users of ground water (exceeding 70 gallons per minute or 2400 barrels per day withdrawal), and is the primary regulatory authority over ground water. The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development. |
| 52. | Deb Sherrod debsherrod@gmail.com (7/27/2017) | Request to extend public comment period and hold a second public hearing | Please extend the Public Comment period because the Public Meeting the EPA held on Tuesday, July 26, was poorly publicized, and the wrong time and location were posted in the newspaper and on the EPA's website. Please extend the Public Comment period and reschedule a Public Meeting with correct times, dates, and locations publicized online and in newspapers that are linked more directly to the people who are affected by this aquifer like the Clare County Cleaver and the Gladwin County Record. | EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 53. | Rep. Jason Wentworth (District 97) Jason.Wentworth@house.mi.gov (7/27/2017) | Request to extend public comments period and hold a second public hearing | I am respectfully requesting that you extend the public comment period for this proposed project and reschedule a public meeting that is correctly advertised with a location that is close to the actual proposed project. If this request is granted I will ask the DEQ to be present at this new meeting to answer questions that pertain to them. I strongly believe it is important that the community is provided accurate information that would allow them to be present and voice their concerns. | EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |
| 54. | Stephanie Terpening Stephanie.terpening@gmail.com (forwarded by Jason Wentworth (7/27/2017) | Request to deny the permit | Thank you to you and your colleagues for coming to Clare this week to inform us of the injection well that has been proposed for north eastern Clare county. While I made a public comment at the meeting, I felt I wanted an opportunity to write you as well, because I did not say everything that I intended to at the meeting. I ask you and the EPA to consider denying this permit because after hearing what you and the public had to say about it. | EPA has reviewed and determined the permit application to be complete, with enough data and information to support a permit decision to approve the injection well. EPA has also reviewed and considered the public comments received during the initial public comment period, the public hearing, and the extended public comment period. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 55. | Stephanie Terpening Stephanie.terpening @gmail.com (forwarded by Jason Wentworth<br><br>(7/27/2017) | Excessive ground water withdrawal may lower water levels in private wells. | I truly feel that there is insufficient data available regarding whether the output of this aquifer will be able to keep up with the water needed for this project. When you were asked if the aquifer would be able to keep up, you didn't know and if the water table in this region lowers below the existing wells there, it will cause catastrophic hardships for the family's in this region who are already struggling. Because many of the wells in this area were seasonal homes at one time, or because they were dug by property owners with limited resources, the wells in this area are shallow, and I am concerned that this project is going to make water unavailable to hundreds of families, and would therefore be in violation of the safe drinking water act. Furthermore, oil prices have stabilized, electric cars/alternative fuel vehicles are becoming more affordable, and the demand for domestic oil sources is not a pressing need at this time. | The State of Michigan requires a permit for large users of ground water (exceeding 70 gallons per minute or 2400 barrels per day withdrawal), and is the primary regulatory authority over ground water. The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development. |
| 56. | Stephanie Terpening Stephanie.terpening @gmail.com (forwarded by Jason Wentworth<br><br>(7/27/2017) | Permit application contains many errors | It was also very disturbing to find out that this Muskegon gas company had not accurately answered all the questions on the permit application, and for this reason alone the EPA should consider denying this permit. If fourteen questions were either not answered or inaccurately answered, this should be a red flag to the EPA about how honest and forthcoming this gas company will be in the future when disclosing information to the EPA. | Out of scope:<br>Many of the alleged "errors and inaccuracies" that were referenced in the document submitted by the Michigan Citizens for Water Conservation are actually complaints about the permit application to the State of Michigan (not the federal UIC injection permit application) for the oil producing well Holcomb 1-22, for which the state issued a permit in 2008, not the injection well application on EPA based the draft permit. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 57. | Stephanie Terpening Stephanie.terpening @gmail.com (forwarded by Jason Wentworth<br><br>(7/27/2017) | Public hearing notification procedures were flawed | I do believe this meeting would have had WAY more citizens attend if the EPA had released accurate date, time, and meeting location of this meeting, but the Clare county review shared that it would be on Thursday (instead of Tuesday), at Clare middle school (instead of the high school). Even the EPA website and your hand out at the meeting listed the wrong meeting date. The public deserves to know about this permit and be informed, but so do the people who depend on this aquifer, and those people reside more in northern Clare county and Gladwin county. | The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |
| 58. | Stephanie Terpening Stephanie.terpening @gmail.com (forwarded by Jason Wentworth<br><br>(7/27/2017) | Request to extend public comments period and hold a second public hearing | So I ask the EPA to extend your window for public comment AND reschedule the meeting in a geographically more appropriate location (like Harrison or Gladwin). These are the towns and residents that will be more directly affected by this injection well, and they deserve to know about this proposed project and how it could affect their property. Many people in this region live below the poverty line and they do not have the money to travel to a meeting in Clare, nor to pay for internet access at home so they are able to be informed about this project or communicate disapproval of it. Most of the people on the aquifer do not even read the Clare County Review, where you attempted to announce this meeting from. More appropriate papers for this group of citizens who will be affected by this project would be the Clare County Cleaver in Harrison, or the Gladwin County Record. Thank you again for considering our thoughts about this proposed project, and for coming to our community to discuss this issue. | The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 59. | Wayne Terpening thebrooksidcrealtor @gmail.com<br><br>(7/27/2017) | Low income population of the well site area | Thank you for coming to Clare Michigan to provide the public hearing on this matter on July 25, 2017. My additional comments may or may not fit into categories of consideration that the EPA is allowed to consider. My hope is that you and your staff will understand the human condition that surrounds this well site and give due consideration to those concerns if any of the other conditions of approval are in question.<br><br>If you look at the demographics of Michigan you will note that Lake County and Clare County are the most impoverished area within our state. The northern half of Clare County is the most impoverished area within our county. The last numbers I saw the median income in that area was under $20,000 per household. The Dodge City area is likely the most impoverished area in northern Clare County and it is located 2 miles west of the Holcomb 1-22 well site.<br><br>I have been a full time realtor in Clare, Gladwin and Isabella County for over 25 years and I have seen this poverty first hand. Last year (per the Clare/Gladwin MLS) there were 239 home sales in the Harrison Area. 105 of those sales were under $50,000. Most of these sales are in residential areas served by private well and septic systems. Most of the wells we see in that area are 1 or 1.5 inch hand driven wells that were put in prior to the health department permit requirements and they remain in use today because of the cost of upgrading and the homeowner's inability to fund improvements. The loss of a safe and adequate water supply would be serious for many of these families. While I understand that contamination from this project is unlikely the unlimited use of excessive and unlimited quantities of water from the water table is a concern. THE WATER SUPPLY IS LIMITED EVEN HERE IN THE CENTER OF THE FRESH WATER WORLD! | EPA considers a number of factors in review of a UIC Class II permit. One of those factors is the income level of the affected community, as well as other factors including evaluation of the well design; plugging and abandonment plan; and, geological suitability of the rock formations for injection. EPA balances all of these factors in making a permit decision. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 60. | Wayne Terpening thebrooksiderealtor @gmail.com<br><br>(7/27/2017) | Request to hold a second public hearing | Since the hearing I have been in touch with many of the area officials and commissioners that I felt should have been at your hearing. I am shocked to note that only 1 has stated that he knew of this meeting but could not attend. I think this meeting should be rescheduled, and that Hamilton Township, Arthur Township and Clare County officials, as well as officials from Sage Township, Grout Township and Gladwin County should specifically invited. Further, I feel the meeting should be at the Hamilton Township Hall or in another facility nearby as public transportation in that area is very limited and many-many families do not have a car. Thank you for your consideration please feel free to contact me if clarification is needed! | The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |
| 61. | Leigh Clarke (leighlaker@gmail.com)<br>7/27/2017 | Public hearing notification procedures were flawed | It has come to my attention that a public meeting regarding issuing a permit for enhanced oil recovery from the Holcomb 1-22 well was held on Tuesday, July 25th at Clare High School. I am a taxpayer in Hamilton Township, and received no notification of this meeting. I am requesting an extension to the public comment period, as well as an additional public meeting to be held at the Hamilton Township Hall for the following reasons:1. I spoke with Mr. David Wright, Hamilton Township Supervisor on the evening of 07/26/17. He stated that he was aware of the proposed project, but didn't remember receiving a letter notifying him of the meeting. Upon further discussion, he stated that he was concerned why the meeting with the EPA was held outside of Hamilton Township. He stated that the Hamilton Township Hall would have been a much more appropriate location, considering the proposed injection well would be located within our township. In my opinion, the meeting taking place away from Hamilton Township seems to be a bit underhanded. | The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. EPA's selection of Clare High School as the venue was determined by the limited availability of a suitably large local meeting hall to hold the public hearing. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 62. | Leigh Clarke (leighlaker@gmail.com) Out 7/27/2017 | Public hearing notification procedures were flawed | 2. I spoke with Mark Janeczko, Hamilton Township Zoning Administrator & Code Enforcement on the evening of 07/26/17. He indicated that he was not aware of any such meeting being held with the EPA in regards to a proposed injection well in Hamilton Township. He stated that had he been notified, he absolutely would have been in attendance.<br>3. There were multiple errors in advertisement of the date of the meeting. The local newspaper, and even the EPA's website and handouts displayed a meeting date of "Thursday, July 25th" as opposed to "Tuesday, July 25th". This caused confusion, and could have misled individuals who may have been interested in attending.<br>4. As a Hamilton Township taxpayer, I am concerned that no one from our Board of Directors was present to ask questions or raise concerns on behalf of the Township. | The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |
| 63. | Leigh Clarke (leighlaker@gmail.com) Out 7/27/2017 | Excessive ground water withdrawal may lower water levels in private wells. | I am very concerned with the amount of fresh groundwater that will be used for the proposed injection well, and supposedly only the MI-DEQ can answer questions relating to that. Since this proposed project involves many levels of government (federal, state and local), it would be advantageous for all involved to have representatives of each level of government present at a meeting so that all questions from those in attendance could be answered. | The State of Michigan requires a permit for large users of ground water (exceeding 70 gallons per minute or 2400 barrels per day withdrawal), and is the primary regulatory authority over ground water. The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development. A water pump of equal or lesser capacity will extract groundwater for injection; groundwater cannot be extracted at a higher rate because there are no facilities to store excess ground water, and the UIC permit also limits the injection pressure that can be used, so there is very little chance that the Holcomb 1-22 well can trigger an earthquake. 350 barrels per day pumped non-stop (not realistic, because water pumps are not designed to operate continuously at maximum rate without damage or premature wear) yields about 5,600,000 gallons of water per year; this is less than 3% of the estimated 191,000,000 gallons of annual groundwater recharge documented in maps by the State of Michigan. Thus, there is little chance that the proposed injection well can deplete the aquifer or lower the ground water table. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 64. | Sue Rees (7/31/2017) | Request EPA to deny issuance of the permit | Please do NOT vote for the injection well in Dodge City in Clare County. It's not natural and not worth it, risking contamination. | EPA has reviewed the relevant technical information submitted, as well as all timely received public comments, and has determined the permit application to be complete, with enough data and information to support a permit decision to approve the injection well. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. EPA considers the impact of other wells within the ¼ mile radius area of review, but this is limited to those wells that are sufficiently deep enough to penetrate the proposed injection zone. |
| 65. | Rebecca Terpening (8/1/2017) | Other Class II wells in Clare County | Thank you for extending the public comment period regarding the Holcomb 1-22 Well in Clare County, MI. I had a question regarding the Class II well. Did you say at the hearing there are no other Class II wells in Clare County currently? The Township Supervisor is letting residents know they will have someone at the August 3rd Township Hall meeting to answer questions on the well but they are neither from the EPA or DEQ. He said he is fine with the well because there is another well like this in Franklin Township to the North that has been there for 25 years with no problems. I just wanted clarification that it could be another well, but not a Class II well. If you can provide any information before the August 3rd meeting at the Hall, I would appreciate it, and will share with the residents who attend. | At the July 25, 2017 public hearing, EPA discussed the existence of other wells within the one-quarter mile radius of the Holcomb 1-22 well. EPA did not specifically discuss the existence of absence of other Class II wells outside of the one-quarter mile radius, except as a brief reference on a map of the area of review. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 66. | Sheryl Judd (8/1/2017) | Excessive ground water withdrawal may lower water levels in private wells./Request for extension of public comment period and second public hearing. | As a Clare County resident, I am opposed to the proposed injection well that is planned for Dodge City. Taking water out of the local aquifer would deplete local residents wells and could contaminate these wells. These are some of the poorest residents of Clare Co. They could not afford new wells.<br><br>Also, please extend the public comment period and schedule another public meeting, publicizing the correct date, time, and location this time. Thank you. | The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. The State of Michigan requires a permit for large users of ground water (exceeding 70 gallons per minute or 2400 barrels per day withdrawal), and is the primary regulatory authority over ground water. The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development maps by the State of Michigan. Thus, there is little chance that the proposed injection well can deplete the aquifer or lower the ground water table. |
| 67. | Matthew Stephenson (8/5/2017) | Request for extension of public comment period./Excessive ground water withdrawal may lower water levels in private wells. | Please extend the comment period for the new well. This will affect our drinking water and dry up existing wells. This is a poor area. People don't have money to replace these wells. This area relies on our freshwater lakes and wilderness for economic prosperity and family farms for food. Please cancel this project. | The comment period for public hearing was extended from July 28 to August 18, 2017. The State of Michigan requires a permit for large users of ground water (exceeding 70 gallons per minute or 2400 barrels per day withdrawal), and is the primary regulatory authority over ground water. The maximum possible injection rate of 350 barrels per day is the physical rate limitation of the injection pump to be used by Muskegon Development. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 68. | Snooks (snooks@ironbay.net) (8/8/2017) | Please protect the water supply. | Thank you for extending the comment period, although I sense it was unintended. With that said, I would like to add to the comments not in favor of extending this well's output by forcing fresh water or brine to disperse its remaining reserves into the existing oilfield. The cost seems too high for the area residents. They are concerned about their drinking water. I would be; wouldn't you if you lived there? I know the science speaks otherwise in terms of depth, etc. But we are living in interesting times and people trust their government less and less. We often feel like victims, second to corporate interests. Yes, I am an environmentalist as I imagine you are too. Why else would have signed on to the EPA? You have a difficult job to do. Please protect the water first and foremost. "Only when the last tree has died & the last river has been poisoned & the last fish has been caught will we realize that we cannot eat money." Please choose wisely. | EPA has reviewed the technical information of record, and the comments received during the public comment period, and determined the permit application to be complete, with enough data and information to support a permit decision to approve the injection well. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. |
| 69. | Tom & Martha Fisher (8/8/2017) | Excessive ground water withdrawal may lower water levels in private wells. | We have been coming to Hamilton Township (Clare Co.) since we were children. We have resided here for the past 18 years. We enjoy a beautiful view of our 68-acre lake (Springwood) every day. The slogan in Harrison, MI is "20 lakes in 20 miles." Even as this is a fact, it does not begin to include the multitude of private lakes and ponds in this country. To allow Muskegon Development permission to inject an unrestricted amount of fresh water into an abandoned oil well with the intent of recovering oil is unacceptable. It strikes at the very heart of livelihood of recreation in this county. | Ground water is regulated by the State of Michigan. The state requires a large user permit for withdrawing 70 or more gallons of ground water per minute (100,800 gallons per day). The State of Michigan has published maps showing estimated annual groundwater recharge down to the section (1 square mile) level. The square mile section containing the Holcomb 1-22 well is estimated to receive 11 inches of groundwater recharge per year, which equates to about 191,000,000 gallons of water. The maximum rate of groundwater that Muskegon Development can inject is physically limited by the size of the pump that they use; at 350 barrels (14,700 gallons) per day, that translates to about 5,600,000 gallons of water per year; which is less than 3 percent of the supply. Thus, there is little chance of significant lowering of groundwater levels in nearby private water wells. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 70. | Tom & Martha Fisher (8-8-2017) | Excessive ground water withdrawal may lower water levels in private wells. | Our lake is a natural spring fed lake. We reside approximately 5 miles from the site where the rig is located. One of our concerns is that the springs will be deprived of the underground water. How long will it take before fresh drinking water supplies are diminished? | The State of Michigan has published maps showing estimated annual groundwater recharge down to the section (1 square mile) level. The square mile section containing the Holcomb 1-22 well is estimated to receive 11 inches of groundwater recharge per year, which equates to about 191,000,000 gallons of water. The maximum rate of groundwater that Muskegon Development can inject is physically limited by the size of the pump that they use; at 350 barrels (14,700 gallons) per day, that translates to about 5,600,000 gallons of water per year; which is less than 3 percent of the supply. Thus, there is little chance of significant lowering of groundwater levels in nearby private water wells. |
| 71. | Tom & Martha Fisher (8-8-2017) | Groundwater contamination response | What will happen if the ground water becomes contaminated? Or contaminated? Are you aware of the crisis in Flint, MI? It is merely 140 miles from here. There are also well water contamination issues north of Tawas, MI. | Groundwater contamination attributed to the proposed well is unlikely, because it is injecting freshwater for enhanced oil recovery, not for disposal. A properly constructed injection well has multiple safeguards to contain any leaks: multiple well casings (steel pipe), annulus fluid surrounding the injection tubing), cement between the well casings, a packer to seal off the well annulus, and a thick (over 900 feet for this well) confining zone of impermeable rock above the injection zone. The Flint crisis concerned drinking water drawn from the polluted Flint River, a surface source, not a groundwater source. |
| `. | Tom & Martha Fisher (8-8-2017) | Permit decision should be deferred | There are so many other sources of oil in the U.S. Ask yourself if it is a real necessity at this time to allow this permit to proceed. Why destroy OUR lakes, rivers, and streams? | EPA only has authority to issue or deny the permit. The permit decision must be based upon whether EPA believes the permit will protect underground sources of drinking water, based upon information in the permit application and existing information available to EPA. Necessity is not a factor that EPA can consider. |
| 73. | Linda Secco linda.secco@gmail.com (8-10/2017) | Against fracking | I am a resident of Harrison Township, Mi. I am against the fracking plan. Please do not let this happen in my community. | Fracking is an abbreviation of "hydraulic fracturing." This well and this proposed permit only authorizes the injection of fresh water for enhanced recovery of oil and gas, not for disposal, and the well will not be fracked. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 74. | Michael & Diane Prior (8-10-2017) | Risk of water pollution at Holcomb 1-22 well | The price of crude and shale oil is so low it is not economical to risk water pollution at Holcomb 1-22 well, #MI-035-2R-0034 in Clare County, MI. I read the Wall Street daily. Again, the risk outweighs the economics. Fresh water is worth more. There is no oil shortage. | A properly constructed injection well has multiple safeguards to contain any leaks: multiple well casings (steel pipe), annulus fluid surrounding the injection tubing), cement between the well casings, a packer to seal off the well annulus, and a thick (over 900 feet for this well) confining zone of impermeable rock above the injection zone. Economics is not a factor EPA can consider. |
| 75. | Barbara Lambdin (8/11/2017) | Request for a second public hearing | As a Hamilton Township resident in Clare County, Michigan, I implore you to reconsider the water injection well at the Holcomb 1-22 site. At the very least, a meeting with Hamilton Township residents should be rescheduled, with the correct date and time in OUR township – with ample notice to our township board members so that correct information can be given to our community at the monthly meeting. | EPA held public a hearing on July 25, 2017 for the draft permit for the Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA was not required to conduct a second public hearing. |
| 76. | Barbara Lambdin (8/11/2017) | Excessive ground water withdrawal may lower water levels in private wells. | We hear and read about water injection wells from various sources, and, of course, much of the information is conflicting. Please take the opportunity to alleviate or confirm our fears or concerns. Water is a precious link to life and thus, this matter should not be taken lightly. We must protect water quality and sources for today and for those who follow after us. The tragedy of Michigan's Flint water supply is vivid in our minds. The brain damage to so many of our Michigan children cannot be thought of as trifle. It does, however, substantiate our mistrust in government agencies that we assume will protect us. In Hamilton Township, we already have many who cannot use their well water for drinking and/or bathing. Our residents don't wish to risk the contamination or depletion of our water supply. We want and need hard facts: **How much water is to be used? For what time period, and what is the source?** We have many questions! The wells in this particular area already emit an unpleasant odor and cause irritation to the eyes and lungs. Perhaps this well should just be plugged? Bring explanatory films/pictures – show us, prove to us that this is a completely safe procedure. We are willing to listen and learn if given the chance. | The proposed permit will allow only injection of fresh water (groundwater drawn from the local Glacial Drift surficial aquifer) with no additives for enhanced oil recovery into an existing conventional oil production well. A properly constructed injection well has multiple safeguards to contain any leaks: multiple well casings (steel pipe), annulus fluid surrounding the injection tubing), cement between the well casings, a packer to seal off the well annulus, and a thick confining zone of impermeable rock above the injection zone. The maximum rate of groundwater that Muskegon Development can inject is physically limited by the size of the pump that they use; at 350 barrels (14,700 gallons) per day, that translates to about 5,600,000 gallons of water per year. State of Michigan groundwater maps indicate about 191 million gallons of groundwater recharge into the aquifer each year; this greatly exceeds by at least a factor of 30 the maximum amount of groundwater that can be pumped from the surficial Glacial Drift aquifer by Muskegon Development, based upon the injection rate stated in the permit application. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 77. | Mary Galford<br>Terry Galford<br>5920 Trout Ave.<br>Gladwin, MI 48624<br><br>(8/11/2017) | Request for second public hearing | Please do not agree to a proposed injection well for my township. I have a well and do not want my water to become unusable due to what I believe would happen with injection. I live in the county and don't have any way to get good drinking water except from my well. We need a properly noticed hearing on the Holcomb 1-22 well to be held at Hamilton Township Hall. | |
| 78. | Terry Maki<br>terrynmic@charter.net<br>9211 B Harrison Ave.<br>Farwell, MI 48622<br><br>(8/14/17) | Orphaned wells | Hi! As a 40 year resident of Clare County, Michigan, I am strongly opposed to injection well drilling in Hamilton Township (the Holcomb 1-22 well). We demand a properly noticed hearing on the well, and that it be held in Hamilton Township, because that is where the well is. It is a bad idea. All of the other "orphan" wells were "plugged" in a ridiculous manner, if you can call it plugging. Now Muskegon Development Company wants to compound the potential risk and damage to the area. Nobody seems to know where all of the old wells are, or in what shape they're in. It is a mess waiting to happen. Thank you. | Orphaned wells include abandoned oil and gas producing wells (regulated by the state) and abandoned injection wells (regulated by the state and/or EPA). During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 79. | Sue Addison<br>Butch.addison@gmail.com<br><br>17210 Maple Hill Dr.<br>Northville, MI 48168<br><br>(8/16/2017) | Request second public hearing | As a vacation home owner in Hamilton Township who depends on well water, I have serious concerns as to the significant risk of the proposed Class II injection well, Holcomb 1-22. I am mainly concerned that this injection well could one day contaminate our ground water and drinking water, as well as cause residents who depend on well water to lose water pressure. I am also concerned for all the people who depend on "flow well" located near this site. I am aware of the statistics regarding well failures, and given enough time, this injection well most likely will, one day, leak into our ground water. Michigan is home to 21% of the world's supply of surface fresh water. We have a moral obligation to protect our water source. All life depends upon "good non-contaminated" water. Why take a chance?<br><br>Also, due to the fact that the EPA messed up on the date and location of the previous hearing, I request that a "legal" hearing be held in Hamilton Township, with adequate and correct notice given to all residents. (After all, we are tax payers.) The township board (all members of the board) should be notified at least one month prior to the proposed hearing. Why wasn't this done? And why hold a hearing in Clare, not in Hamilton Township? Please schedule another hearing, and please, do not grant this permit. Thank you. | |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 80. | Bryan Cummings Environmental Health & Safety Director/Professional/Consultant DeWitt, MI. (USA) 517-819-2209<br><br>bryan.cummings18@gmail.com<br><br>(8/15/2017) | Object to permit issuance | I am Bryan Cummings Environmental Science Major working Environmental Health & Safety, commercial, industrial construction and this is the my back yard of my cottage. I absolutely object. As the owner has mentioned that the well is at its end. That being said, its dead cap it. Instead of me fumbling in my own words, I would like to offer the below article in the Clare County Review volume 70 # 15 the letter to the editor. I read the article and it holds all of my exact concerns. Please remember the well is dead per the owner's own admission. Why are we attempting anything that could cause real problems? We don't have enough information and certainty to proceed. Our water and land in the area is our natural resource. That is why my wife and I bought and plan to retire there. In the last 3 months we just put spent over $30,000 on remodel work on our property. Please don't make us find another location. Feel free to contact me with any questions or concerns. My contact information is below in my signature. | Out of scope |
| 81. | Bryan Cummings Environmental Health & Safety Director/Professional/Consultant DeWitt, MI. (USA) 517-819-2209<br><br>bryan.cummings18@gmail.com<br><br>(8/15/2017) | Muskegon Development Company can't be trusted | Proposed injection well is bad news for locals' Environmental Quality who attended an August 3 township meeting, there are technically 3 producing wells.) In other words, Muskegon Development Company was allowed to provide its own numbers, and they say there are only 3 other wells nearby, only 2 of which are producing, and that these wells are perfectly safe. This isn't exactly the proverbial fox guarding the hen house; it's more like the fox auditing the hen house before it eats the chickens. The numbers Muskegon Development Company provided could easily be wrong. And I'm sure the company knows this. | Out of scope |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 82. | Bryan Cummings Environmental Health & Safety Director/Professional/Consultant DeWitt, MI. (USA) 517-819-2209<br><br>bryan.cummings18@gmail.com<br><br>(8/15/2017) | Orphaned wells | Hamilton Township has a history with the oil and gas industry that goes back at least to the 1930s. At the Hamilton Township Trustee Meeting held on August 3, 2017, it was acknowledged that there could be numerous old wells in the area that have been abandoned and forgotten. The industry refers to them as "orphan wells." These are OLD wells. And nobody seems to know where all of them are. They aren't on the maps. And we don't know how deep they are, either. Or how they were constructed. Or how many there are. There could be hundreds of these orphan wells. The Michigan Department of Environmental Quality acknowledged as much during the meeting, where, in response to the question of how many orphan wells were in the area, residents were told: "There could be wells in the area that we don't know exist. Only time will tell… I hope there's not." Reassuring, no? In addition to being hidden, these orphan wells are likely to be leaking. | Orphaned wells include abandoned oil and gas producing wells (regulated by the state) and abandoned injection wells (regulated by the state and/or EPA). During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water. |
| 83. | Bryan Cummings Environmental Health & Safety Director/Professional/Consultant DeWitt, MI. (USA) 517-819-2209<br><br>bryan.cummings18@gmail.com<br><br>(8/15/2017) | Modern oil and gas wells can fail | Modern oil and gas wells use steel and cement. Yet at least 6% – 7% of modern wells have failures upon installation, and that is a conservative estimate. One recent study conducted in the Marcellus region of Pennsylvania determined that 6.3% of wells drilled between 2005 and 2013 had "a well-barrier or integrity failure." This finding was consent with another recent study that put the failure rate at 6.2%. Another study, which included wells drilled in 2012 throughout the entire Marrcellus region, put the initial failure rate at 8.9%. Statistics from the United States Mineral Management Service indicate that, in the Gulf of Mexico, approximately 5% of all gas wells failed immediately. These are NEW wells. But the really scary part is that the rate of failure increases exponentially with age. According to the United States Mineral Management Service, by the second year of operation, over 20% of Gulf wells have failed. After 30 years, approximately 60% of wells have failed. But the old wells in Hamilton Township are obviously a little different. | Out of scope<br><br>EPA does not regulate oil and gas producing wells. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 84. | Bryan Cummings<br>Environmental Health & Safety Director/Professional/Consultant<br>DeWitt, MI. (USA)<br>517-819-2209<br><br>bryan.cummings18@gmail.com<br><br>(8/15/2017) | Old abandoned wells are unsafe | Back in the 1930s, 40s, and 50s, they used timber or corn posts in these wells, and they didn't seal them with steel and concrete. Actually, it was common practice to use garbage from the site to plug the well when they were done with it. At the township meeting held on August 3, a representative from the Michigan Department of Environmental Quality told us he had seen all sorts of crazy things used to plug old wells. "We've pulled up rope, we've pulled up wood, trash, you name it, we've pulled it up. Wrenches." He described the old process of plugging wells as such: "Basically, when they plugged these wells, that was part of the plan. We take everything we had here, and we put it in the hole." Does anyone really think these orphan wells that are literally plugged with garbage have withstood the test of time? Does anyone really know what will happen when they use high pressure to inject water into the ground underneath them? Hamilton Township has already had more than its share of problems with this industry. I know families in Hamilton Township who have dangerous methane levels in their well water, probably due to old wells. And I've heard plenty of the old stories of the mysterious exploding basements of Hamilton Township. But I'm sure the oil and gas industry, under the "supervision" of our various "regulatory" agencies, will get it right this time. Why wouldn't they? | Orphaned wells include abandoned oil and gas producing wells (regulated by the state) and abandoned injection wells (regulated by the state and/or EPA). During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 85. | Bryan Cummings Environmental Health & Safety Director/Professional/Consultant DeWitt, MI. (USA) 517-819-2209<br><br>bryan.cummings18@gmail.com<br><br>(8/15/2017) | Request for second public hearing | And we should definitely have faith in the EPA. I mean, just because it couldn't even inform the township of the correct meeting time for the July 25 public hearing on the draft permit for this operation (which, strangely, was held in Clare, not Hamilton Township), doesn't mean it shouldn't be trusted now to address the far more complicated issues of ground water contamination and orphan wells plugged with garbage. Forgive me for being skeptical. And very concerned. But there's hope. Because of the confusion regarding the meeting time, the EPA has extended the Public Comment Period for the proposed Class II Injection Well. We now have until August 18, 2017 to write or email the EPA with concerns. I encourage every resident of Clare County AND Gladwin County (because this affects you, too) to write the EPA. Demand a properly noticed hearing on the Holcomb 1-22 well. Demand that this hearing be held in Hamilton Township, because the well is in Hamilton Township. Include all of your concerns in the letter, especially your concerns that are grounded in science. And remember to include: "RE: Holcomb 1-22 well, #MI-035-2R-0034." Address your letters as follows: William Tong U.S. EPA, Water Division UIC Branch (WU – 16J) 77 W. Jackson Blvd. Chicago, IL 60604-3590 email: tong.william@ epa.gov RE: Holcomb 1-22 well, #MI-035-2R-0034 Sincerely, E. Joseph Addison | EPA held public a hearing on July 25, 2017 for the draft permit for tbe Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |
| 86. | Gertrude Geeraerts gxcube@verizon.net<br><br>(8/17/2017) | Against fracking | I am appalled!!!! This cannot be true. We moved here from California, bought a house a year and a half ago. We were happy to move to a nice quite area. And now this: FRACKING!! All the wells will be poisoned and we can start getting earthquakes, just what we were running away from..... Please let me know how this project can be stopped. If this happens we will have to try and sell the house. I am sure that most residents here are not aware of the consequences. Our neighbors Richard and Margaret Malcolm who do not have e-mail also strongly oppose fracking in our area. We live here full time and do not want fracking and well poisoning and subsequent earthquakes. | Fracking is an abbreviation of "hydraulic fracturing" This proposed permit only authorizes the injection of fresh water for enhanced recovery of oil. The well will not be fracked. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 88. | Emerson Joseph Addison (8/18/2017) | Permit application does not contain enough information to support a permit decision | I am writing to oppose the issuance of a Class II Injection Permit to Muskegon Development Company (Holcomb 1-22 well, #MI-035-2R-0034). I would also like to request new surveys and studies be done where and when appropriate, new permit applications required, and that this process be generally reset to the starting point, which should include a new Public Hearing Transcript, as there have been problems throughout the application process. | EPA has reviewed the technical information of record, and the comments received during the public comment period, and determined the permit application to be complete, with enough data and information to support a permit decision. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. EPA considers the impact of other wells within the ¼ mile radius area of review, but only those wells that are sufficiently deep enough to penetrate the proposed injection zone. |
| 88. | Emerson Joseph Addison (8/18/2017) | Permit application contains many errors | There are numerous problems with this permit application, but foremost among them are the large number of mistakes in the draft permit, the folly of allowing companies to provide their own numbers when applying for permits, the problem of undiscovered orphan wells in Hamilton Township, the alarming statistics on well failures, and the failure of the EPA to properly notify the community of the last public comment hearing. First, I would like to draw attention to the fact that the draft permit provided by Muskegon Development Company contains at least 14 errors and inaccuracies, and therefore, should not be granted on legal grounds. This information was provided by the Michigan Citizens for Water Conservation. This group has already submitted a detailed listing of these mistakes to the EPA for the comment period. I would therefore like to include this group's findings in my official comments. I would also like to point out that the claim that there are 2 producing wells within the 1/4-mile radius, which is made in the Draft Permit Application, is inaccurate. According to Coty Whithorn, the area geologist for the Michigan Department of Environmental Quality, there are technically 3 producing wells in this area. I contend that, due to the presence of these errors, it is impossible to assess the full impact of this project. To better estimate the impact, the permit would have to be reapplied for, with the errors addressed and the application appropriately amended whenever necessary. | Out of scope:<br><br>Many of the alleged "errors and inaccuracies" that were referenced in the document submitted by the Michigan Citizens for Water Conservation are actually complaints about the permit application to the State of Michigan (not the federal UIC injection permit application) for the oil producing well Holcomb 1-22, for which the state issued a permit in 2008. During EPA technical review of a well permit application, the data submitted by the applicant is verified for accuracy. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 89. | Emerson Joseph Addison (8/18/2017) | Self-monitoring of environmental compliance by the permittee is not trustworthy | In addition to the numerous errors in the permit, I would also like to voice my concerns with several other aspects of the permit process. The idea that a company would be allowed to provide its own data and studies for any part of the permit process is completely absurd. At no point in any permit application should a company be trusted to provide its own numbers. It should be obvious that Muskegon Development Company has a financial incentive for providing low and possibly inaccurate numbers. | Self-monitoring under permit conditions has been well-established for decades and is the basis of compliance with most federal and state environmental protection programs. It is logistically impossible for environmental regulatory agencies to perform facility monitoring of all wells or facilities on a regular basis. Periodic environmental compliance inspections supplement regular self-monitoring data; permit violations are subject to enforcement action. Under federal law, there are severe criminal penalties for falsification of data and reports. |
| 90. | Emerson Joseph Addison (8/18/2017) | Self-monitoring of environmental compliance by the permittee is not trustworthy | Making matters worse, if approved, Muskegon Development Company will be trusted to self-monitor and file regular reports on well operation, as stipulated in the Draft Permit: *Monitoring and Reporting Requirements: In accordance with 40 C.F.R. §§ 144.54 and 146.23, the applicant will be responsible for observing and recording injection pressure, flow rate, annulus pressure, and cumulative volume on a weekly basis and reporting this to* EPA on *a monthly basis. The applicant will also be responsible for observing, recording and reporting annulus liquid loss on a quarterly basis. An analysis of the injected fluid must be submitted on an annual basis. In addition, the applicant is required to conduct and pass a two-part Mechanical Integrity Test (MIT), in accordance with 40 C.F.R. § 146.8, before authorization to inject is granted, and after the well is completed. The applicant is also required to repeat the annulus pressure test, which is the first part of the MIT, at least once every five (5) years thereafter. If a temperature or noise log or another method as approved by the Director is used to determine the second part of the MIT (i.e., the absence of fluid movement), then the applicant will be required to repeat this test at least once every five (5) years thereafter. These tests will provide EPA with an evaluation of the integrity of the tubular goods (casing, tubing and packer) as well as documentation as to the absence or presence of fluid movement behind the casing.* | Self-monitoring under permit conditions has been well-established for decades and is the basis of compliance with most federal and state environmental protection programs. It is logistically impossible for environmental regulatory agencies to perform facility monitoring of all wells or facilities on a regular basis. Periodic environmental compliance inspections supplement regular self-monitoring data; permit violations are subject to enforcement action. Under federal law, there are severe criminal penalties for falsification of data and reports. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 91. | Emerson Joseph Addison (8/18/2017) | Self-monitoring of environmental compliance by the permittee is not trustworthy | Once again, it is absurd to trust any business to self-regulate. Should problems occur, there is an obvious profit motive for negligence in monitoring, reporting, and even for taking corrective actions to address potential issues. Can the residents of Hamilton Township really trust this company to self-regulate? Even if Muskegon Development Company intends to be completely honest in its efforts, given the alarming number of errors and inaccuracies already observed in the Draft Permit, I question whether Muskegon Development Company is even *capable* of self-monitoring. | Self-monitoring under permit conditions has been well-established for decades and is the basis of compliance with most federal and state environmental protection programs. It is logistically impossible for environmental regulatory agencies to perform facility monitoring of all wells or facilities on a regular basis. Periodic environmental compliance inspections supplement regular self-monitoring data; permit violations are subject to enforcement action. Under federal law, there are severe criminal penalties for falsification of data and reports. |
| 92. | Emerson Joseph Addison (8/18/2017) | Orphaned oil and gas wells are a hazard and should be factored into the permit decision. | At the very least, I have already established that Muskegon Development Company has made many mistakes in the draft permit application, so we know that this company has a tendency to report incorrect figures. But what really concerns me are the mistakes, inaccuracies, and omissions that we don't know about... yet. In particular, I am concerned about the issue of orphan wells in the area.<br><br>As the EPA is hopefully aware, Hamilton Township has a history with the oil and gas industry that goes back at least to the 1930s. This is a long and tumultuous history. I personally know families in the area who have dangerous levels of methane in their drinking water; also, there are a number of incidents of exploding homes and basements due to old wells leaking methane and other gases. | Out of scope:<br><br>Orphaned wells include abandoned oil and gas producing wells (regulated by the state) and abandoned injection wells (regulated by the state and/or EPA). During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water.. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 92. Continued | Emerson Joseph Addison (8/18/2017) | Orphaned oil and gas wells are a hazard and should be factored into the permit decision. | Because of numerous problems relating to these orphan wells (such as inadequate plugs, substandard construction, and poor or non-existent monitoring), I believe it is extremely dangerous to grant this permit. Especially considering that techniques and standards for construction, operation, disposal conversion, and plugging have changed considerably. Often in the 30s and 40s, instead of plugging wells with cement and steel, they used garbage from the site and wooden poles, at least, that's what the area geologist for the Michigan Department of Environmental Quality, Mr. Whithorn, tells us.<br>*"Basically, when they plugged these wells, [disposing of garbage] was part of the plan. We take everything we had here, and we put it in the hole,"* Mr. Whithorn stated at a recent Hamilton Township meeting. He went on to describe his experiences with orphan wells, finding objects such as wrenches, garbage, and wooden poles. In other words, finding inadequate pluggings.<br>*"We've pulled up rope, we've pulled up wood, trash, you name it, we've pulled it up. Wrenches."*<br>There are likely hundreds of these inadequately-plugged and abandoned wells that litter Hamilton Township, and it very possible that there are unknown orphan wells within the 1/4-mile radius. | Out of scope:<br><br>Orphaned wells include abandoned oil and gas producing wells (regulated by the state) and abandoned injection wells (regulated by the state and/or EPA). During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 92. continued | Emerson Joseph Addison (8/18/2017) | Orphaned oil and gas wells are a hazard and should be factored into the permit decision. | John T. Fierst, the reference librarian in charge of the Michigan Oil and Gas News archives at the Central Michigan University Clarke Historical Library, which houses most of the records for oil and gas drillings in Hamilton Township, has stated that he is aware that independent researchers have discovered a number of orphan wells NOT included in most of the archives, and I am aware of the existence of orphan wells that are NOT included on the DEQ maps for Hamilton Township. Thus, it is very possible that Muskegon Development Company has failed to account for all the wells in the 1/4 mile AOR radius. I would like to know if there is a plan to locate these orphan wells before this permit is issued and the injection well becomes operational. Or should we just chance it, and hope nothing bad happens, as the MDEQ seems to suggest.<br><br>During a Hamilton Township meeting, Mr. Whithorn (MDEQ geologist) recently stated: *"there could be wells in the area that we don't know exist. Only time will tell... I hope there's not."* Please tell me that this is not the EPA's plan, too.<br><br>If there is no plan to locate these orphan wells, I request that a full survey of the area be conducted to rule out the presence of orphan wells and ensure that all wells within the 1/4 mile AOR are adequately plugged.<br><br>It should also be noted that any undiscovered orphan wells in the area are almost certainly leaking. In fact, many of the listed wells are likely to be leaking, perhaps even if they have been recently inspected (as wells deteriorate quickly). | Out of scope:<br><br>Orphaned wells are abandoned oil and gas producing wells regulated by the state; EPA does not regulate these type of wells. During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 93. | Emerson Joseph Addison (8/18/2017) | Oil wells have a documented history of failure in Pennsylvania | I am sure you are aware of the statistics regarding well failures. I would like to draw your attention to some of the numbers I have come across:<br>A study featured in the January 2013 issue of *Physicians Scientists and Engineers for Healthy Energy, "FLUID MIGRATION MECHANISMS DUE TO FAULTY WELL DESIGN AND/OR CONSTRUCTION: AN OVERVIEW AND RECENT EXPERIENCES IN THE PENNSYLVANIA MARCELLUS PLAY,"* estimated that approximately 6% -7% of modern oil and gas wells have failures upon installation.<br>Another study, *Davies RJ, et al. (2014) Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. Mar Pet Geol, 10.1016/j.marpetgeo.2014.03.001,* which focused on the Marcellus region of Pennsylvania, determined that 6.3% of wells drilled between 2005 and 2013 had "a well-barrier or integrity failure."<br>This finding was consistent with the findings of *Ingraffea (Ingraffea AR, Wells MT, Santoro RE,, Shonkoff SBC (2014), Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000-2012. Proc Natl Acad Sci USA 111:10955-10960),* who put the rate at 6.2%. And the estimate of 8.9% is attained from the revised results of a survey of leaking wells drilled in 2012 throughout the entire Marcellus region, in the Pennsylvania Marcellus play based on violations issued by the DEP *and well inspector comments (Violations and comments data from http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/OG_Compliance).* This initial failure rate of 8.9% actually marks the third year in a row of worsening initial failure rates. Statistics from the *United States Mineral Management Service* indicate that, in the Gulf of Mexico, approximately 5% of all gas wells failed immediately. | Out of scope:<br><br>The wells referred to are oil and gas producing wells in Pennsylvania. EPA does not regulate producing wells. The geology of Pennsylvania is very different from and not applicable to a UIC permit in Michigan. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 94. | Emerson Joseph Addison (8/18/2017) | Gulf oil wells have a history of failure. | As I wrote in a recent article: *These are NEW wells. But the really scary part is that the rate of failure increases exponentially with age. According to the United States Mineral Management Service, by the second year of operation, over 20% of Gulf wells have failed. After 30 years, approximately 60% of wells have failed.* Although there may be differences between the wells in these studies and the orphan wells in Hamilton Township, we can't be certain what these differences might be. We know very little about these wells, but, given that many of them date back to the 1930s and 1940s, it is safe to assume that they are inadequate by modern standards and would fail to meet modern regulations. | Out of scope:<br><br>Oil producing wells and fluid injection wells are different types of wells. EPA does not regulate producing wells. Gulf wells are off-shore producing wells drilled into open water through ocean sediments under completely different geological conditions from land-based UIC wells in Michigan drilled into sedimentary bedrock. |
| 95. | Emerson Joseph Addison (8/18/2017) | Request for a second public hearing | In addition to the issues listed above, I would also like to demand a new public hearing on this matter on the grounds that the previous public hearing was improperly noticed and held at an inconvenient and at a location outside of Hamilton Township. As noted in the EPA comment period extension announcement, which cited *Title 40 of the Code of Federal Regulations §§ 124.10 and 124.12(c): Due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review* and on our *web site identified the correct day of the week for the hearing.* I would like to also note that Hamilton Township is a rural community, one in which many residents lack reliable transportation or the ability or time to travel extra distance for a permit hearing. Therefore, I would like to request that the new public hearing be held in Hamilton Township. | EPA held public a hearing on July 25, 2017 for the draft permit for tbe Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 96. | Letha Raymond, (8/18/2017) | Excessive pumping of groundwater for injection may lower the water table and affect private drinking water wells | I am highly concerned about the impact of the infinite withdrawal of fresh groundwater on area drinking water wells. It is the EPA's job to protect our drinking water. Mr. Withorn stated that the DEQ does not yet have the hydraulic study needed to answer this question. The required hydraulic study would be conducted and provided by the Muskegon Development Co.; the permit applicant for the injection well. Given that the EPA is charged with protecting our drinking water, the process of considering a permit that addresses only the quality of drinking water and not the continued availability of drinking water seems to miss the mark. The proposed permit would place no limit on the amount of water that can be withdrawn to be used in the injection well process; fresh water that will never be fresh water again, but will become brine. At this point, neither the EPA nor the DEQ can tell us definitively that area residents will not lose their well water due to this infinite withdrawal of fresh ground water. The potential impact on the availability of drinking water for area residents, the potential for area drinking water to be contaminated due to improperly closed ancient/orphan wells and the potential failure of the new injection well, and the errors in the draft application, result in multiple reasons for the EPA to deny this permit. | The State of Michigan has published maps showing estimated annual groundwater recharge down to the section (1 square mile) level. The square mile section containing the Holcomb 1-22 well is estimated to receive 11 inches of groundwater recharge per year, which equates to about 191,000,000 gallons of water. The maximum rate of groundwater that Muskegon Development can inject is physically limited by the size of the pump that they use; at 350 barrels per day, that translates to about 5,600,000 gallons of water per year; which is less than 3 percent of the supply. Thus, there is little chance of significant lowering of groundwater levels in nearby private water wells. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 97. | Letha Raymond<br><br>(8/18/2017) | There are many inaccuracies in the permit application | There are multiple problems with this permit application; the large number of mistakes in the draft permit, the potential for undiscovered ancient/orphan wells in Hamilton Township, the failure of the Environmental Protection Agency (EPA) to properly notify the community of the Public Hearing Transcript, the alarming statistics on well failures, and the weakness in the process that requires and allows the use of data submitted by the permit applicant, rather than the EPA and MI Department of Environmental Quality (DEQ) obtaining and maintaining their data. Due to these errors, how can the EPA assess the full impact of this project? To properly estimate the impact, the permit would have to be reapplied for, with the errors addressed. The draft permit lists one (1) plugged and abandoned well within the % mile radius of the Area of Review (AOR). However, the MI DEQ GeoWebFace map shows a plugged and abandoned well just north of the west edge of Decker Lake. This well appears to be within % of the Holcomb 1-22 well. If it is not, it is beyond 1/4 mile by just a few feet, and given the extremely small radius of the area of review (AOR) that a permit applicant must address, it would be in keeping with the spirit of the law to include this well in the AOR as well. | EPA has reviewed the technical information of record, and the comments received during the public comment period, and determined the permit application to be complete, with enough data and information to support a permit decision. The information contained in the permit application is reviewed and verified by EPA, including active and abandoned wells within the Area of Review. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. EPA considers the impact of other wells within the ¼ mile radius area of review, but this is limited to those wells that are sufficiently deep enough to penetrate the proposed injection zone. |
| . | Letha Raymond<br><br>(8/18/2017) | Errors and inaccuracies in the permit application | There are at least 14 errors and inaccuracies in the permit application submitted by the Muskegon Development Company. This permit should not be granted on legal grounds. The Michigan Citizens for Water Conservation has already submitted a detailed list of these errors to the EPA during the comment period (please see attached). I would like to include this group's findings in my official comments.<br><br>According to area geologist for the MI DEQ, Cody Withorn, there are technically three producing wells in the AOR, not two, as stated in the draft permit. | Out of scope:<br>Many of the alleged "errors and inaccuracies" that were referenced in the document submitted by the Michigan Citizens for Water Conservation are actually complaints about the state permit application to the State of Michigan (not the federal UIC permit) for the oil producing well Holcomb 1-22, for which the state issued a permit in 2008. EPA does not have the authority to address complaints about the state permit application nor about conditions of the state permit for the oil producing well. GeoWebFace shows only 2 producing wells, 2 dry holes (plugging approved) with the AOR. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 99. | Letha Raymond<br><br>(8/18/2017) | Orphaned wells that were not documented in the permit application | I am very concerned about ancient wells unknown to the EPA and to the DEQ and the unintended leaks that may result when this area is exposed to the high pressure of the injection well. When asked about old wells unknown to the DEQ, Mr. Withorn answered at the August 3rd Hamilton Township meeting *"There could be wells in the area that we don't know exist. Only time will tell... I hope there's not."* Is there a plan to locate these orphan wells before this permit is issued and the injection well becomes operational? Will the EPA require a survey to assure that all ancient/orphan wells have been found and properly closed? To fail to do so would be taking a highly inappropriate chance.<br>I have been researching the microfilm Oil and Gas News, Mt. Pleasant, housed at Central Michigan University's Clarke Historical Library, and have found several wells close to the Holcomb 1-22 well. It is difficult for me to tell if the DEQ is already aware of these wells. These wells were drilled in the 1930s and 1940s, a time when well drilling and closing standards were far from what is required today. We know that the DEQ has found ancient and improperly closed wells; wells plugged with garbage, timbers, whatever was available to fill the hole, rather than the cement and steel that is required today. Taking this into consideration along with well failure statistics of modern wells, leaves an alarming question as to whether or not this area is truly appropriate for injection wells and the high pressure used in such wells. | Out of scope:<br><br>Orphaned wells are abandoned oil and gas producing wells; EPA does not regulate these type of wells. During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water.<br><br>Underground injection wells that are abandoned must eventually be plugged as specified by regulation or permit. |
| 100. | Letha Raymond<br><br>(8/18/2017) | Self-monitoring of injection wells is inadequate | I am appalled that the regulations of the permitting process leave the EPA and DEQ to rely on data submitted by the permit applicant and that the EPA and DEQ do not obtain and maintain their own data | For many decades, self-monitoring under permit conditions has been the basis of compliance with most federal and state environmental protection statutes. It is logistically impossible for environmental regulatory agencies to perform facility monitoring of all wells or facilities on a regular basis. Periodic environmental compliance inspections supplement regular self-monitoring data; permit violations are subject to enforcement action. Under federal law, there are severe criminal penalties for falsification of data and reports. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 101. | Letha Raymond<br><br>(8/18/2017) | Oil wells in Pennsylvania have failed. | I am sure you have the following references regarding well failure statistics. I would like to draw your attention to these references and include them in my comments. These statistics pertain to modern wells and serve to drive home the importance of assuring all ancient/orphan wells are found and adequately tested prior to approving any injection well permit:<br>- A study featured in the January 2013 issue of *Physicians Scientists and Engineers for Healthy Energy, "FLUID MIGRATION MECHANISMS DUE TO FAULTY WELL DESIGN AND/OR CONSTRUCTION: AN OVER AND RECENT EXPERIENCES IN THE PENNSYLVANIA MARCELLUS PLAY, "estimated* that approximately 6% -7% of modern oil and gas wells have failures upon installation. Another study, *Davies R1, et al. (2014) Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. Mar Pet Geol, 10.1016/j.marpetgeo.2014.03.001,* which focused on the Marcellus region of Pennsylvania, determined that 6.3% of wells drilled between 2005 and 2013 had "a well-barrier or integrity failure."<br>- This finding was consistent with the findings of *Ingraffea (Ingraffea AR, Wells MT, Santoro RI., Shonkoff SBC (2014), Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000-2012. Proc Nati Acad Sci USA 111:10955-10960),* who put the rate at 6.2%.<br>- And the estimate of 8.9% is attained from the revised results of a survey of leaking wells drilled in 2012 throughout the entire Marcellus region, in the Pennsylvania Marcellus play based on violations issued by the *DEP and well inspector comments (Violations and comments data fromhttp://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil Gas/OG Compliance ).* This initial failure rate of 8.9% actually marks the third year in a row of worsening initial failure rates. | Out of scope:<br><br>The wells referred to in your comments are oil and gas producing wells in Pennsylvania. EPA does not regulate producing wells. The geology of Pennsylvania is very different from that of Michigan and is not applicable to a UIC permit in Michigan. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 102. | Letha Raymond<br><br>(8/18/2017) | Gulf Oil wells have failed | Statistics from the *United States Mineral Management Service* indicate that, in the Gulf of Mexico, approximately 5% of all gas wells failed immediately. | Out of scope:<br>Oil producing wells and injection wells are different types of wells. Gulf wells are off-shore oil wells drilled into open water through unconsolidated ocean sediments under completely different geological conditions from land-based UIC wells in Michigan drilled into sedimentary bedrock. |
| 103. | Letha Raymond<br><br>(8/18/2017) | Excessive ground water withdrawal may lower water levels in private wells. | I am highly concerned about the impact of the infinite withdrawal of fresh groundwater on area drinking water wells. It is the EPA's job to protect our drinking water. Mr. Withorn stated that the DEQ does not yet have the hydraulic study needed to answer this question. The required hydraulic study would be conducted and provided by the Muskegon Development Co.; the permit applicant for the injection well. Given that the EPA is charged with protecting our drinking water, the process of considering a permit that addresses only the quality of drinking water and not the continued availability of drinking water seems to miss the mark. The proposed permit would place no limit on the amount of water that can be withdrawn to be used in the injection well process; fresh water that will never be fresh water again, but will become brine. At this point, neither the EPA nor the DEQ can tell us definitively that area residents will not lose their well water due to this infinite withdrawal of fresh ground water.<br>The potential impact on the availability of drinking water for area residents, the potential for area drinking water to be contaminated due to improperly closed ancient/orphan wells and the potential failure of the new injection well, and the errors in the draft application, result in multiple reasons for the EPA to deny this permit. | The State of Michigan has published maps showing estimated annual groundwater recharge down to the section (1 square mile) level. The square mile section containing the Holcomb 1-22 well is estimated to receive 11 inches of groundwater recharge per year, equal to about 191,000,000 gallons of water. The maximum rate of groundwater that Muskegon Development can inject is physically limited by the size of their water pump; at 350 barrels (14,700 gallons) per day, that equals about 5,600,000 gallons of water per year; which is less than 3 percent of the supply. In other words, groundwater recharges at a rate at least 30 times faster than the highest possible rate of withdrawal by Muskegon Development. For this reason, it is very unlikely that injection into Holcomb 1-22 will cause lowering of levels in private water wells. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 104. | Martin Johnson<br>mpjohnson3@sbcglobal.net<br><br>7271 Springwood Lake Rd<br>Harrison, MI 48625 | Improperly abandoned oil and gas wells | I am writing to state that I am not in favor of the injection well at this site if there is a chance that any old oil or gas wells exist in the area that are unknown and thus may not have been properly capped. My concern is that the gas is will be forced up by the water may enter those old wells along with the ones Muskegon Development wishes to use, and thus contaminate the water supply of residents. | Orphaned wells include abandoned oil and gas producing wells (regulated by the state) and abandoned injection wells (regulated by the state and/or EPA). During review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the ¼ mile radius Area of Review, and if they are sufficiently deep enough to penetrate the Underground Source of Drinking Water. Underground injection wells that are abandoned must eventually be plugged as specified by regulation or permit. |
| 105. | LuAnne Kozma,<br>President,<br>Ban Michigan Fracking<br>luanne.kozma@gmail.com<br><br>(8/18/2017) | Request to deny the permit | I write to oppose the issuance of a Class II Injection Permit to Muskegon Development Company (Holcomb 1-22 well, #MI-035-2R-0034). EPA should and must deny the permit. My comments and questions are regarding the failure of EPA to hold a properly noticed Public Hearing Transcript, as well as process, geologic siting, well engineering, and operation and monitoring standards. | EPA has reviewed the technical information of record, and the comments received during the public comment period, and determined the permit application to be complete, with enough data and information to support a permit decision. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. EPA considers the impact of other wells within the ¼ mile radius area of review, but only those wells that are sufficiently deep enough to penetrate the proposed injection zone. |
| 106. | LuAnne Kozma,<br>President,<br>Ban Michigan Fracking<br>luanne.kozma@gmail.com<br><br>(8/18/2017) | Request for a second public hearing | **The EPA must hold a properly-noticed hearing for the public.** With both the date and place stated **incorrectly** in the newspaper, the public did not receive proper legal notice and therefore a new, properly-noticed hearing must be held. Many people who would have participated had no opportunity to do so. EPA has already determined that a hearing is necessary. But a properly-noticed hearing was not held. An extended comment period is not a hearing. It certainly is not the same as a community-based meeting in which people can interact with EPA and others in the community, learn about the proposal, ask questions and have questions answered, and then relay their concerns. | EPA held public a hearing on July 25, 2017 for the draft permit for the Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA was not required to conduct a second public hearing. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 107. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8/18/2017) | Request to deny the permit and hold a second public hearing | The EPA needs to deny the current permit and hold another public hearing so that the public can have further information about major concerns about the health and environmental impacts of the proposed well include:<br>-the danger of H2S gas that could permanently poison and harm the health of people in the area<br>-orphan wells in the area<br>-core samples that must be taken as described at the hearing so that it can be determined if recent earthquakes in Mich. have altered the geology affecting the Holcomb well<br>--the radioactivity of any proposed waste materials projected to go into the Holcomb well<br>--well casing failures in Michigan. The question was asked of the EPA at a recent hearing in Barry County (Michigan): What is the injection well failure rate of Michigan's injection wells, and the EPA staff's answer was that they did not know it. The public deserves to have that information prior to a public hearing. | EPA extended the public comment period to August 18, 2017, after holding a public hearing at Clare High School on July 25, 2017. EPA was not required to hold a second public hearing. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 108. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8/18/2017) | Orphaned wells that were not documented in the permit application | **Hydrogen Sulfide Gas:**<br>The likelihood of H2S gas being present is a clear and present danger to the community. EPA must conduct health impact studies to the community should the well or wells affected by the Holcomb well emit this dangerous, lethal gas into the atmosphere. Michigan is a high hydrogen sulfide area. It endangers the communities and workers alike. People are permanently poisoned by exposure to H2S.<br><br>I place into the record the following studies on H2S, with links provided.<br>1. Skritc, Lana. "Hydrogen Sulfide, Oil and Gas and People's Health," Energy and Resource Group, University of California Berkeley, 2006.<br>LINK: http://banmichiganfracking.org/wp-content/uploads/2014/07/HEALTH-Hydrogen_sulfide_from_oilgas_report1.pdf<br>2. Schindler, Dana, *Survey of Accidental and Intentional Hydrogen Sulfide (H2S) Releases Causing Evacuations and/or Injury in Manistee and Mason Counties from 1980 to 2002*, March 2002.<br>LINK: http://banmichiganfracking.org/wp-content/uploads/2014/07/MichiganReport-HydrogenSulfideReleases.pdf<br>Also: Kilburn, Kaye, *Brain Robber: The Poisoning of America by Rotten Egg Gas* (Westport, CT: Greenwood Publishing, 2011. | Out of scope:<br><br>Federal regulations governing Underground Injection Control (UIC) wells do not provide authority to EPA to monitor for hydrogen sulfide in advance of a permit decision for a proposed well. |
| 109. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8/18/2017) | | **Orphan Wells in the Area:**<br>I incorporate the concerns about orphan wells in the immediate area expressed by Emerson Joseph Addison, who wrote: *(see Comment # __, by Emerson Joseph Addison)*<br>I agree with Mr. Addison that a full survey of the area be conducted to locate orphan wells and make sure that they are adequately plugged and if they are in fact leaking from well casing failure or other failure. | Out of scope:<br><br>Orphaned wells are abandoned oil and gas producing wells; EPA does not regulate these type of wells.<br><br>Underground injection wells that are abandoned must eventually be plugged as specified by regulation or permit. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 110. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com (8/18/2017) | Earthquake hazards should require core samples | **Core Samples**<br>Earthquakes in Michigan were felt in the past few years. Core samples of the Holcomb well need to be taken to determine if there was any effect on the well casing integrity due to this seismic activity. Given that the USGS has found that injection wells do in fact cause earthquakes, EPA needs to take the entirety of Michigan's existing oil and gas wells and injection wells into account, and do a complete survey of orphan wells and their conditions, before issuing any new injection well permits.<br>See LINK: https://www.usgs.gov/news/new-usgs-maps-identify-potential-ground-shaking-hazards-2017 | EPA considered seismic risk as part of its technical review of the permit application. The May 6, 2015 earthquake epicenter was located more than 200 miles away from Clare County, in Kalamazoo County, with a Richter magnitude of 4.3. News reports of surface damage were minimal. Based upon technical review of available information, no concerns related to seismicity were identified. |
| 111. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com (8/18/2017) | Radioactivity in fracking waste | **Radioactivity**<br>EPA fails to analyze Class II injection wells' waste stream, including this one, for the radioactivity which permeates oil and gas drilling wastes. Regardless of whether an injection well's engineering allows it to leak, there is no safeguard against radioactive contamination. There is no showing of any scrutiny of the question of whether any drill wastes will be contaminated routinely with "radioactive waste," which is defined at 40 C.F.R. § 144.3 as "any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR part 20, appendix B, table II, column 2." The referenced table and column specify threshold contamination levels for Ra-226, Ra-228, several Uranium isotopes associated with drilling wastes, and Th-232. It is incumbent upon the EPA to require sourced, predictive information of the likely radiological characteristics of the waste stream before a permit can even be considered for the proposed site. An entirely new permit must then be required of the operator, and the new process should afford the public the opportunity to scrutinize the underlying radioactive waste data along with another public hearing. See the entire letter by Terry Lodge to the EPA, attached to this email. | The purpose of the permit is to authorize injection of fresh water for enhanced recovery of oil. The proposed permit is a "conversion" of an existing oil production well permitted by the State of Michigan in 2008. The permit only allows fresh water to be injected into the Richfield Formation; no chemicals, brine, or any other wastes are allowed to be injected for disposal under the Safe Drinking Water Act regulations that govern injection wells. There is no waste stream, and there is no evidence of radioactivity. The drilling process does not generate any "routine radioactive waste" unless the local rocks contain naturally occurring radioactive minerals. Radioactive minerals are rare overall in the earth's crust, and do not occur with any uniformity. There is no evidence of such radioactivity in the vicinity of the well location. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 112. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8-18-2017 | Radioactivity in fracking waste | A compilation by attorney Rachel Treichler of studies and articles on radioactive frack waste, including liquid wastes that are sent to injection wells can be found here: **http://treichlerlawoffice.com/radiation/**<br>Individual Studies and articles:<br>**Oil and Gas Wastes are Radioactive – and Lack Regulatory Oversight LINK:** https://www.fractracker.org/2017/03/oil-gas-wastes-radioactive-regulation/<br>**No Time to Waste: Effective Management of Oil & Gas Field Radioactive Waste** LINK: http://www.notimetowastereport.org<br>**Fracking Produces More Radioactive Waste than Nuclear Power Plants** LINK: http://www.alternet.org/environment/fracking-can-expose-you-radioactive-waste-even-youre-far-away-drilling-site?akid=11773.1242108.f57YDQ&rd=1&src=newsletter988709&t=3&paging=off&current_page=1#bookmark<br>**Hot Mess: States Struggle to Deal with Radioactive Fracking Waste** LINK: https://www.commondreams.org/news/2016/06/20/hot-mess-states-struggle-deal-radioactive-fracking-waste<br>University of Missouri: ***Endocrine Disrupting Activity in Surface Water Associated with a West Virginia Oil and Gas Industry Wastewater Injection Disposal Site, Science of the Total Environment.*** **LINK:** http://www.ecowatch.com/high-levels-of-endocrine-disrupting-chemicals-found-near-fracking-wast-1891078193.html<br>**Terry Jonathan Lodge, public comment letter to EPA** re Trendwell Energy Corp's Secord #D4-18 SWD well draft permit #MI-115-2D-0001, May 22, 2015.<br>(ATTACHED) **Wasting Away: Four states' failure to manage gas and oil field waste from the Marcellus and Utica Shale.** Earthworks. LINK: https://www.earthworksaction.org/files/publications/WastingAway-FINAL-lowres.pdf | The purpose of the permit is to authorize injection of fresh water for enhanced recovery of oil. The proposed permit is a "conversion" of an existing oil production well permitted by the State of Michigan in 2008. The permit only allows fresh water to be injected into the Richfield Formation; no chemicals, brine, or any other wastes are allowed to be injected for disposal under the Safe Drinking Water Act regulations that govern injection wells. There is no waste stream, and there is no evidence of radioactivity. The drilling process does not generate any "routine radioactive waste." The origin of any radioactivity comes from naturally rare radioactive mineral deposits that may occur sporadically in certain rock formations. There is no evidence of such radioactivity in the vicinity of the well location. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 113. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com (8/18/2017) | Radioactivity of injectates | **My Questions:**<br><br>*Regarding geologic siting, what is the capacity of the targeted geologic formation for the Holcomb well to take radioactive waste from other formations and other drilling operations? Will the permit allow the operator to take such wastes in the future?<br><br>*Does EPA monitor the radioactivity of the injectates going into an injection well or the radioactivity of the injection well site? | Federal regulations prohibit the disposal of radioactive wastes into deep injection wells that are below the Underground Source of Drinking Water; such proposed wells cannot be approved by EPA to receive a permit. The proposed Holcomb 1-19 well is not a brine disposal well; it is a secondary recovery well allowing only freshwater injection to enhance the extraction of crude oil |
| 104. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com (8/18/2017) | Injection well failure rate | **Injection Well Failure in Michigan and elsewhere**<br>Injection well integrity does fail and the toxic materials inside the wells do reach and contaminate the water supply. I put the following studies by Dr. Ingraffea and others into the record on this topic:<br><br>Regarding well engineering in Michigan: EPA monitors injection wells throughout the state. What is the well casing failure rate of Michigan's injection wells? What is the likelihood based on EPA's monitoring of Michigan injection wells that the proposed Holcomb injection well will fail in 10 years? In 20 years? In 100 years? Forever? EPA should require the operator to post a bond high enough that if contamination happens, ever, that will pay to clean up contaminations. | In the event of a well leak (loss of mechanical integrity), the permit specifies that the permittee (Muskegon Development Company) must shut-in (cease injection to) the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), Muskegon must pressure test the well, pass a mechanical integrity test, transmit the test results to and request permission from EPA for written authorization to resume injection.<br><br>EPA has no authority to require bonds for contamination, but does have authority under SDWA to prevent imminent endangerment of USDWs. |
| 5. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com (8/18/2017) | Well leak detection and response | In a 2012 investigative report by ProPublica, EPA groundwater specialist Gregory Oberley is quoted as saying "It's assumed that the monitoring rules and requirement are in place and are protective—that's assumed.... You're not going to know what's going on until someone's well is contaminated and they are complaining about it." What is your response to Mr. Obereley's observation about the necessity of a contamination coming to light as your first indication that something is wrong? | A leak (loss of mechanical integrity) in an injection well causes a loss in pressure, which is detected by monitoring equipment on the well. Also, the well is only authorized for fresh water injection. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 116. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com (8/18/2017) | Abandoned wells and impact on injection zone | What studies have you done to see if old and/or abandoned wells and existing other wells in the same formation will not intersect with the proposed well. Because if they do intersect, whatever you are saying about the so-called "natural protections" of the geology of target formation for the Holcomb well no longer exist. | GeoWebFace, the online Geographic Information System (GIS) created and maintained by the Michigan Department of Environmental Quality (MDEQ) displays the location and technical details of wells in the vicinity of the area of review (1/4 mile in radius around the well location). All wells deep enough to penetrate the injection zone formation were evaluated by EPA using GeoWebFace for potential effects during the technical review of the permit application. For this proposed well, no wells were found within the AOR to have potential effects on the USDW of the present well. |
| 117. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com (8/18/2017) | Well casing failures | I urge EPA to reject the permit well because of the known rates of well-casing failures. Because all well casings of injection wells (and frack wells) eventually fail--some right away, some in a few years, and all eventually--this guarantees that the toxic waste in the injection well will eventually endanger drinking water and aquifers. I put the following scientific study by Anthony Ingraffea, Ph.D., P.E., into the record: "Fluid Migration Mechanisms Due to Faulty Well Design and/or Construction: An Overview and Recent Experiences in the Pennsylvania Marcellus Play," January 2013. Physicians, Scientists & Engineers for Healthy Energy. **LINK: http://www.psehealthyenergy.org/data/PSE_Cement_Failure_Causes_and_Rate_Analaysis_Jan_2013_Ingraffea1.pdf** | The proposed permit limits well injection to only fresh water for enhanced oil recovery; the injection of any other substances (including any wastes) for disposal is prohibited. EPA has determined the permit application to be complete, with enough data and information to support a permit decision to approve the injection well. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. A properly constructed injection well has multiple safeguards to contain any leaks: multiple well casings (steel pipe), annulus fluid surrounding the injection tubing), cement between the well casings, a packer to seal off the well annulus, and a thick (over 900 feet for this well) confining zone of impermeable rock above the injection zone. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 118. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8/18/2017) | Failures documented in oil and gas wells in Pennsylvania | I also submit the same study as it appeared in Proceedings of the National Academy of Sciences in the following link. The abstract of the report is attached, and I put the entire study into the record by way of the link below:<br>Ingraffea, A., Wells, M., Santoro, R., & Shonkoff, S. Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000–2012. *Proceedings of the National Academy of Sciences*. doi: 10.1073/pnas,<br><br>LINK: http://www.pnas.org/content/early/2014/06/25/1323422111.<br>"Injection Wells: The Poison Beneath Us" by Abrahm Lustgarten, by way of this link, and it is attached to this email. Abrahm Lustgarten, "Injection Wells: The Poison Beneath Us," ProPublica, June 21, 2012.<br><br>LINK: http://www.propublica.org/article/injection-wells-the-poison-beneath-us<br>EPA Report on Fracking, December 13, 2016, specifically says injection wells are a source of contamination.<br>Press release: https://www.epa.gov/newsreleases/epa-releases-final-report-impacts-hydraulic-fracturing-activities-drinking-water<br>Report link: https://www.epa.gov/hfstudy<br><br>**Reversing Course, E.P.A. Says Fracking Can Contaminate Drinking Water, New York Times, Dec 13, 2016.**<br>LINK:<br>https://www.nytimes.com/2016/12/13/us/reversing-course-epa-says-fracking-can-contaminate-drinking-water.html?_r=0 | Out of scope:<br><br>The wells referred to are oil and gas producing wells in Pennsylvania. EPA does not have authority of regulate oil and gas (?) producing wells. The geology of Pennsylvania is very different from and not applicable to a UIC permit in Michigan.<br><br>The proposed injection well is not a fracking well; there is no hydraulic fracturing involved. |

## Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 119. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8/18/2017) | Well failures and groundwater contamination | Finally, I give the following comments regarding the known failures of injection wells and the resulting leaks into groundwater.<br><br>**Engineering**<br>Structurally, a disposal well is the same as an oil or gas well: tubes of concrete and steel extend from a few hundred feet to two miles into the earth. At the bottom, the well opens into a natural rock formation, with no container. Waste seeps out, "filling tiny spaces left between the grains in the rock like the gaps between stacked marbles," according to ProPublica.[3] | A properly constructed injection well has multiple safeguards to contain any leaks: multiple well casings (steel pipe), annulus fluid surrounding the injection tubing), cement between the well casings, a packer to seal off the well annulus, and a thick (over 900 feet for this well) confining zone of impermeable rock above the injection zone. The proposed permit allows only the injection of fresh water for enhanced oil recovery; injection of any waste for disposal is prohibited. Mechanical Integrity Tests are required prior to initiating injection for a newly constructed or newly converted injection well, and following any detection of leaks (loss of mechanical integrity); after the leak(s) are repaired, the well must pass a mechanical integrity test before injection can be resumed. |
| 120. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8/18/2017) | Well failures and groundwater contamination | **Structural failures:** A ProPublica review of well records, case histories, and government summaries of more than 220,000 well inspections from October 2007 to October 2010 found that structural failures inside injection wells are routine. From late 2007 to late 2010, one well integrity violation was issued for every six deep injection wells examined — more than 17,000 violations nationally. More than 7,000 wells showed signs that their walls were leaking. Records also showed wells are frequently operated in violation of safety regulations and under conditions that greatly increase the risk of fluid leakage and the threat of water contamination. ProPublica's analysis showed that, when an injection well fails, it is most often because of holes or cracks in the well structure itself.[3] | The proposed permit allows only the injection of fresh water for enhanced oil recovery; injection of any wastes for disposal is prohibited.<br><br>A properly constructed injection well has multiple safeguards to contain any leaks: multiple well casings (steel pipe), annulus fluid surrounding the injection tubing), cement between the well casings, a packer to seal off the well annulus, and a thick (over 900 feet for this well) confining zone of impermeable rock above the injection zone.<br><br>In the event of a well leak (loss of mechanical integrity), the permit specifies that the permittee (Muskegon Development Company) must shut-in (cease injection to) the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), Muskegon must pressure test the well, pass a mechanical integrity test, transmit the test results to and request permission from EPA for written authorization to resume injection. |

# Muskegon Development Company Holcomb 1-22 Draft Permit – Raw Verbatim Comments & Draft Responses

| # | Name & Date | Category | Verbatim (Raw) Comments | Draft Response |
|---|---|---|---|---|
| 121. | LuAnne Kozma, President, Ban Michigan Fracking luanne.kozma@gmail.com<br><br>(8/18/2017) | Well failures and groundwater contamination | **Injection and waste migration:** Once wastewater is underground, there are few ways to track how far it goes, how quickly, or where it winds up, raising concerns that it may migrate upward back to the surface. The hard data that does exist comes from well inspections conducted by federal and state regulators, who can issue citations to operators for injecting illegally, for not maintaining wells, or for operating wells at unsafe pressures, yet the EPA has acknowledged that it has done very little with the data it collects.[3] A 1987 General Accountability Office review tallied ten cases in which waste had migrated from Class 1 hazardous waste wells into underground aquifers. Two of those aquifers were considered potential drinking water sources. In 1989, the GAO reported 23 more cases in seven states where oil and gas injection wells had failed and polluted aquifers. After the findings, the federal government drafted more rules aimed at strengthening the injection program. The government outlawed certain types of wells above or near drinking water aquifers, mandating that most industrial waste be injected deeper. In response, the energy industry lobbied and won a critical change in the federal government's legal definition of waste: Since 1988, all material resulting from the oil and gas drilling process is considered non-hazardous, regardless of its content or toxicity, making it subject to less strict standards than hazardous waste (Class I wells). | The proposed permit allows only the injection of fresh water for enhanced oil recovery; injection of any wastes for disposal is prohibited.<br><br>A properly constructed injection well has multiple safeguards to contain any leaks: multiple well casings (steel pipe), annulus fluid surrounding the injection tubing), cement between the well casings, a packer to seal off the well annulus, and a thick (over 900 feet for this well) confining zone of impermeable rock above the injection zone<br><br>In the event of a well leak (loss of mechanical integrity), the permit specifies that the permittee (Muskegon Development Company) must shut-in (cease injection to) the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), Muskegon must pressure test the well, pass a mechanical integrity test, transmit the test results to and request permission from EPA for written authorization to resume injection. |

(60)

**Response to Comments on Draft Class II Permit in Clare County, Michigan, Issued to Muskegon Development Company (Permit No. MI-035-2R-0034), Holcomb 1-22 Well**

## Introduction

This response is issued in accordance with Section 124.17(a), (b), and (c) of Title 40 of the Code of Federal Regulations (40 C.F.R. § 124.17(a), (b), and (c)), which require that at the time any final United States Environmental Protection Agency (EPA) permit decision is issued, the Agency shall: (1) briefly describe and respond to all significant comments on the draft permit decision raised during the public comment period; (2) specify which provisions, if any, of the draft decision have been changed and the reasons for the change; (3) include in the administrative record any documents cited in the response to comments; and (4) make the response to comments available to the public.

## Background

On February 10, 2017, EPA issued a draft Class II permit to inject fresh water for the purpose of enhanced oil recovery (Permit Number MI-035-2R-0034) to Muskegon Development Company for its Holcomb 1-22 well, and invited public comment. The public comment period ended March 15, 2017. Public comments were received indicative of significant interest in the draft permit, and EPA scheduled and held a public meeting and public hearing at Clare High School, in Clare, Michigan, on July 25, 2017. Following the public hearing, EPA extended the July 28 deadline for comments to August 18, 2017. The comments compiled include those received from the first comment period (February 10 to March 15, 2017), the July 25, 2017 public hearing (from the court reporter transcript), and the second comment period (June 21 to August 18, 2017). The first comment period lasted 34 days and the second comment period lasted 59 days, for a total of 93 days.

## General and Out of Scope Comments

EPA regulations at 40 C.F.R. Parts 144 and 146 state the requirements and standards that a permit applicant must meet to have an Underground Injection Control (UIC) permit application approved. These regulations define the general scope of EPA's authority and review process, which include standards for geologic siting, well engineering, operation and monitoring, and plugging and abandonment of deep injection wells.

EPA received many comments directed at matters outside the scope of the UIC Program's purview. EPA is not responding to the following comments because they do not relate to the UIC permit process, or to geologic siting, well engineering, operation and monitoring standards, or plugging and abandonment of the proposed secondary recovery well. These general comments are listed below without response. Specific comments that address topics that are relevant to this permitting decision, with responses, follow in subsequent sections. Although EPA is not responding to general statements of support and opposition to the permit individually, it did consider them in making the decision to issue the final permit.

The comments in the "out of scope" category focus on topics including:

a. Fresh water should not be withdrawn at an unlimited rate because it may lower water levels in private wells
b. Fresh water should not be withdrawn at an unlimited rate because it may deplete the aquifer
c. Fresh water should not be withdrawn at an unlimited rate because it may cause earthquakes
d. Will Muskegon Development Company pay for regular water testing for nearby residents?
e. Will Muskegon Development Company pay for fair market compensation or purchase of polluted property?
f. Increased truck traffic associated with well operations
g. UIC regulations governing construction are insufficient to protect drinking water
h. The well is not needed; oil prices are cheap
i. Legal disputes involving other wells
j. Inaccuracies in the permit application (commenters confused the 2008 state oil well permit application with the federal injection well permit application)
k. Oil and gas wells have a history of failure in Pennsylvania
l. Gulf oil wells have a history of failure
m. Fracking wells can lead to contamination and earthquakes
n. Location of injection well in residential area is questionable
o. Hydrogen sulfide gas emissions

EPA received extensive comments that were "in scope" of the UIC Program's purview:

1. Request for public hearing
2. Public hearing notification procedures were flawed
3. Request for time extension for public comments following hearing
4. Request for a second public hearing
5. Ground water contamination
6. Leak accident response
7. Muskegon Development Company providing fresh water samples and any additives
8. Nature of chemicals in injected waste
9. Maximum injection pressure calculation
10. Well design and construction inadequate to protect Underground Sources of Drinking Water (USDW's)
11. Area of Review not sufficiently protective of USDW's
12. Surface casing is not deep enough to protect USDW's
13. Fresh water should not be used for injection in lieu of brine
14. Self-monitoring of injection wells is inadequate
15. Excessive injection into wells can cause earthquakes
16. Injection wells can drain the aquifer and cause earthquakes
17. Earthquake hazards from injection wells
18. EPA must address permitted and unmonitored injection wells
19. There may be orphaned wells within the Area of Review that were omitted from the permit application

20. Low income population of the well site area should be factored into permit decision
21. Risk of water pollution at the well
22. Radioactivity of injectate
23. Injection well failure rate
24. Well casing failures
25. Structural failures inside injection wells are common
26. Please protect the water supply
27. There is insufficient information in the permit application to support a permit decision

## Request for public hearing

**Comment #1:** Our community would appreciate the questions we have, be directly answered by Muskegon in a public forum: that they will agree to have Muskegon Development Company, available to answer our questions/concerns, along with experts from the EPA. These are vital issues that could impact our community, our environment in the near future and in generations to come.

**Response #1:** A public meeting and public hearing regarding this proposed permit were held by EPA staff at Clare High School on July 25, 2017. EPA staff gave a presentation regarding the permit and answered questions during the public meeting, followed by the public hearing, where EPA received (but did not reply to) oral and written comments from the audience. Under the regulations governing public hearings for Underground Injection Control ('UIC') Permits (40 C.F.R. Part 124), the permit applicant, Muskegon Development Company, was not required to be present nor answer questions.

## Public hearing notification procedures were flawed

**Comment #2:** This meeting would have had many more citizens attend if the EPA had released accurate date, time, and meeting location of this meeting, but the Clare County Review shared that it would be on Thursday (instead of Tuesday), at Clare Middle School (instead of the high school). Even the EPA web site and your handout at the meeting listed the wrong meeting date. The public deserves to know about this permit and be informed, but so do the people who depend on this aquifer, and those people reside more in northern Clare County and Gladwin County. The Township Supervisor stated the Township Hall would have been the perfect location. Why was the meeting held in the City of Clare, 26 miles away from the area affected by the injection well?

**Response #2:** EPA held a public hearing on July 25, 2017 for the draft permit for the proposed Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under 40 C.F.R. §§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that

EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing and Clare High School as the location. On the evening of the hearing, it was discovered that the address published in the Fact Sheet was the mailing address, which differed from the physical address of Clare High School; EPA placed signs outside to direct people to the proper location. EPA's selection of Clare High School as the venue was determined by the limited availability of a suitably large local meeting hall to hold the public hearing.

**Request for time extension for public comments following hearing**

**Comment #3:** I ask that you consider extending the public comment period, that you hold a public hearing at the Hamilton Township Hall, that you publish the correction information on the notice to citizens and publish it in the Clare County Cleaver as well as cc: to the Hamilton Township Board and Zoning & Coding Officer (he was not aware of this at all). Another paper "more local" is the Gladwin Record Eagle out of Gladwin, MI. I also ask that a representative specialized in water matters from our District DEQ office in Saginaw is present.

**Response #3:** Subsequent to the hearing, EPA extended the public comment period on the draft permit to August 18, 2017. EPA took this action under 40 C.F.R. §§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing.

**Request for a second public hearing**

**Comment #4**: I demand a new public hearing on this matter on the grounds that the previous public hearing was improperly noticed and held at an inconvenient and at a location outside of Hamilton Township. I would like to also note that Hamilton Township is a rural community, one in which many residents lack reliable transportation or the ability or time to travel extra distance for a permit hearing. Therefore, I would like to request that the new public hearing be held in Hamilton Township.

**Response #4:** EPA held a public hearing on July 25, 2017 for the draft permit for the Holcomb 1-22 injection well. The public comment period that EPA established coincident with the public hearing was originally to conclude on Friday, July 28, 2017. EPA subsequently extended the public comment period on the draft permit to August 18, 2017. EPA took this action under 40 C.F.R. §§ 124.10 and 124.12(c) due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on the EPA web site identified the correct day of the week for the hearing. EPA's selection of Clare High School as the venue was determined by the limited availability of a suitably large local meeting hall to hold the public hearing.

## Ground water contamination

**Comment #5:** Injection and waste migration: Once wastewater is underground, there are few ways to track how far it goes, how quickly, or where it winds up, raising concerns that it may migrate upward back to the surface. The hard data that does exist comes from well inspections conducted by federal and state regulators, who can issue citations to operators for injecting illegally, for not maintaining wells, or for operating wells at unsafe pressures, yet the EPA has acknowledged that it has done very little with the data it collects. A 1987 General Accountability Office review tallied ten cases in which waste had migrated from Class 1 hazardous waste wells into underground aquifers. Two of those aquifers were considered potential drinking water sources. In 1989, the GAO reported 23 more cases in seven states where oil and gas injection wells had failed and polluted aquifers. After the findings, the federal government drafted more rules aimed at strengthening the injection program. The government outlawed certain types of wells above or near drinking water aquifers, mandating that most industrial waste be injected deeper. In response, the energy industry lobbied and won a critical change in the federal government's legal definition of waste: Since 1988, all material resulting from the oil and gas drilling process is considered non-hazardous, regardless of its content or toxicity, making it subject to less strict standards than hazardous waste (Class I wells).

**Response #5:** The proposed permit allows only the injection of fresh water for enhanced oil recovery; injection of any wastes for disposal is prohibited. The proposed injection well will have multiple safeguards to prevent any leaks: multiple well casings (steel pipe), annulus fluid (surrounding the injection tubing), cement between the well casings, and a packer to seal off the well annulus. A thick (over 900 feet for this well) confining zone of impermeable rock lies above the injection zone. In the event of a well leak (loss of mechanical integrity), the permit specifies that Muskegon Development Company must cease injection to the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), Muskegon Development Company must pressure test the well, pass a mechanical integrity test, transmit the test results to and request permission from EPA for written authorization to resume injection.

## Leak accident response

**Comment #6:** In the event of a well leak or related accident, will Muskegon Development Company please outline the local safety procedures.

**Response #6:** In the event of a well leak, the permit specifies that Muskegon Development Company must cease injection to the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), Muskegon must pressure test the well, pass a Mechanical Integrity Test, transmit the test results to and request permission from EPA for written authorization to resume injection.

**Muskegon Development Company providing fresh water samples and any additives**

**Comment #7:** Would Muskegon Development Company agree to provide "fresh water" samples used in the drilling process and disclose any additives?

**Response #7:** The Holcomb 1-22 well was drilled in 2008, and is still currently in use for oil production. After the well is converted for injection, the conditions of the permit take effect, and require Muskegon Development Company to inject only fresh water, drawn from the local aquifer, into the well; no additives or other fluids are allowed by the permit.

**Nature of chemicals in injected waste**

**Comment #8:** It is our understanding that the purpose of the permit is to inject fluid (displaced chemicals & brine waste) 2651 feet below the surface. Please disclose the "chemicals used and the effect of them being displaced" in the injection well waste disposal process.

**Response #8:** The proposed injection well permit only allows fresh water to be injected into the Holcomb 1-22 well for enhanced oil recovery, not for waste disposal. No chemicals, brine waste or any other substances are authorized for injection into the well.

**Maximum injection pressure calculation**

**Comment #9**: Explain how the injection pressure was selected, its depth into the rock and why it is safe. We have concerns that the injection pressure might induce formation fracturing and allow migration of the disposed waste into our aquifers and lakes.

**Response #9:** The limitation on wellhead pressure serves to prevent confining-formation fracturing, calculated using the following formula:

$$[\{1.112 \text{ psi/ft.} - (0.433 \text{ psi/ft.}) \times (\text{specific gravity})\} \times \text{depth}] - 14.7 \text{ psi}$$

Where psi = pounds/square inch

The maximum injection pressure is dependent upon depth and the specific gravity of the injected fluid. The Richfield Formation of the Detroit River Group at 4948 feet was used as the depth and a specific gravity of 1.05 was used for the injected fluid. The fracture gradient of 1.112 psi/ft. was determined from an acid-fracture job from a nearby well. The confining formations overlying the injection zone and underlying the underground source of drinking water consist of 922 feet of impermeable anydrite and salt. The maximum injection pressure was calculated to prevent the confining rock formation from fracturing.

**Well design and construction inadequate to protect USDW's**

**Comment #10**: The permit applicant, Muskegon Development Company, and the EPA, have not sufficiently demonstrated that the proposed injection well will not endanger Underground Sources of Drinking Water (USDW) and may likely present a public nuisance. The proposed injection well and any nearby offset wells are not properly designed and constructed and may endanger USDWs.

**Response #10:** EPA's technical review of the permit application included analysis of the engineering design of the injection well and cement plugs, evaluation of the site geology to determine the depth of the USDW and the suitability of the rock formation(s) for injection, calculation of the maximum injection pressure, and a search for and evaluation of any operating or plugged wells within the Area of Review (AOR) that penetrate the injection zone, to assure that USDWs are protected.

**Area of Review not sufficiently protective of USDW's**

**Comment #11**: The described Area of Review ("AoR") evaluation is not sufficient and neither the applicant nor EPA has demonstrated that the proposed fixed radius, assuming there is one, is appropriate to protect USDWs. The draft permit lists one (1) plugged and abandoned well within the 1/4-mile radius of the Area of Review (AOR). However, the MDEQ GeoWebFace map shows a plugged and abandoned well just north of the west edge of Decker Lake. This well appears to be within ¼ mile of the Holcomb 1-22 well. If it is not, it is beyond 1/4 mile by just a few feet, and given the extremely small radius of the area of review (AOR) that a permit applicant must address, it would be in keeping with the spirit of the law to include this well in the AOR as well.

**Response #11:** 40 C.F.R. § 147.1155 requires EPA to use a fixed radius AOR of no less than 1/4-mile for Class II wells in Michigan. EPA's technical review of the permit application included analysis of the engineering design of the injection well and cement plugs, evaluation of the site geology to determine the depth of the USDW and the suitability of the rock formation(s) for injection, calculation of the maximum injection pressure, and a search for and evaluation of any operating or plugged wells within the AOR that penetrate the injection zone, to assure that USDWs are protected.

Regarding the plugged and abandoned well just north of the west edge of Decker Lake, EPA has reviewed the available data on GeoWebFace and has identified the well to be the McKenna et al-4, a well drilled in 1944 to a depth of 3840 feet. The well proved to be a dry hole (non-oil producing) that was adequately plugged and abandoned. The McKenna et al-4 well did not penetrate the injection zone of the proposed Holcomb 1-22 well, and therefore would not serve as a conduit for the migration of fluids into the USDW.

**Surface casing is not deep enough to protect USDW's**

**Comment #12:** The draft permit should not be approved unless and until these deficiencies are addressed: Well Construction: Neither the applicant nor EPA has demonstrated that the surface casing extends below the base of the USDW and the production casing cement does not extend above the base of either the USDW or the surface casing. This means that a portion of the annular space adjacent to the USDW is uncemented. Leaving this annular space uncemented puts both the USDW and well integrity at risk. The top of the production casing cement does not appear to extend above the base of the surface casing. Failing to extend surface casing in any well to below the base of the lowest USDW puts those USDWs below the base of the surface casing at significant risk of contamination. Cross flow may occur between the USDW and other formations, potentially leading to contamination of the USDW. Leaving a potential flow zone uncemented can also result in over pressurization of the annulus and/or result in casing corrosion, both of which may lead to a well integrity failure, further putting drinking water at risk. Properly constructed wells typically have at least two barriers between USDWs and fluids contained in the well: 1) the surface casing and 2) the production casing. The American Petroleum Institute recommends that "surface casing be set at least 100 feet below the deepest USDW encountered while drilling the well. Both UIC Class I and Class VI well rules require surface casing to extend below the base of the lowest USDW, indicating that EPA clearly recognizes this as an important standard to protect ground water.

**Response #12:** Based upon the geological formation record obtained when the Holcomb 1-22 well was drilled for oil production, the USDW consists of the Glacial Drift, which extends from the surface to a depth of 464 feet. The surface casing and surface casing cement of the proposed injection well extends from the surface to 792 feet deep, which is 328 feet deeper than the bottom of the USDW, far exceeding 100 feet below the deepest USDW. The cemented portions of the annular space between the long string and intermediate well casings in the well extend from 2650' to 4082' – this cemented interval seals off the permeable rock formations known as the Traverse Formation (3034' to 3068'), Traverse Limestone (3068' to 3716') and Dundee Limestone (3782' to 4044'). Between 3034' and 1530', the formation record shows consecutive formations of impermeable shale, meaning that the depth interval between 2650' (top of the cement) and 1530' (top of the Coldwater Shale) consists of more than 1000 feet of impermeable rock acting as a barrier to potential upward migration of injected fluid. The depth interval between 1530' and 792' consists of shale and sandstone formations that are not USDWs. Underground injection wells are designed with multiple safeguards to prevent leaks from the well. Injection wells are constructed with multiple steel casings (pipe) cemented into place. Injection takes place through tubing located at the center of the innermost steel casing. A device called a packer seals off the bottom of the tubing, and the space between the innermost steel casing and tubing (annulus) is filled with a fluid containing a corrosion inhibitor. To assure that no leaking occurs in the well, the annulus space is tested after the well is completed and then re-tested periodically. If this test fails, the well is shut down immediately, and the cause of the leak is isolated and repaired. Once shut down, a successful pressure test must be demonstrated before EPA will allow the operator to resume well injection. Under the conditions of the permit, Muskegon Development is responsible for maintaining the well so that it works properly, and would be responsible for any contamination caused by any leaks. See 40 C.F.R. Part 146, Subpart C.

**Fresh water should not be used for injection in lieu of brine**

**Comment #13**: There is an issue regarding the level of ground water withdrawal for the purpose of oil production enhancement. Because there is no limitation, in essence there is no coordination with the aquifer that's going to provide the fresh water, so you basically are allowing the permittee to drain the aquifer. That shouldn't happen. That should be a violation of the Safe Water Drinking Act. The Safe Water Drinking Act says you are supposed to protect all of the aquifers from loss or contamination. In Michigan we have a little bit more than 4 million people who draw their water every day from an aquifer, and we need to protect them all as far as I'm concerned, and I know that's exactly what you want to do. So I do think you need to readjust the standard that you have for these -- this class of injection to consider the aquifer that is -- to consider where the fresh water is coming from. Well, frankly, you should not use fresh water. You should do what they do in EPA Region 10 or Region 9 or Region 8.

**Response #13:** There is no prohibition in the Safe Drinking Water Act (SDWA) or UIC regulations to using fresh water or ground water for injection to enhance recovery of oil or natural gas. The SDWA does not restrict the withdrawal of fresh water from an aquifer. The State of Michigan regulates ground water and the volume or rate of ground water withdrawal.

**Self-monitoring of injection wells is inadequate**

**Comment #14**: You are currently permitting wells, injection wells, in Michigan that you do not have a realistic expectation of being able to site monitor. We feel that is a violation of the Safe Drinking Water Act. We hope that EPA will suspend activities on permitting until such time as EPA has caught up with the backlog of unmonitored wells, which is quite substantial. The idea that a company would be allowed to provide its own data and studies for any part of the permit process is completely absurd. At no point in any permit application should a company be trusted to provide its own numbers. It is absurd to trust any business to self-regulate. Should problems occur, there is an obvious profit motive for negligence in monitoring, reporting, and even for taking corrective actions to address potential issues. It is appalling that the regulations of the permitting process leave the EPA and MDEQ to rely on data submitted by the permit applicant and that the EPA and MDEQ do not obtain and maintain their own data.

**Response #14:** Self-monitoring under permit conditions has been well-established for decades and is the basis of compliance with most federal and state environmental protection statutes. Periodic environmental compliance inspections supplement regular self-monitoring data; permit violations are subject to enforcement action. Under federal law, there are criminal penalties for falsification of data and reports. Congress enacted the SDWA to protect USDWs from endangerment from underground injection practices, thereby protecting human health and the environment. The UIC regulations at 40 C.F.R. Parts 144 and 146 specify the geological siting, engineering, construction, and operation and monitoring requirements which injection wells must meet in order to prevent contamination of USDWs. Parties that wish to use an injection well must obtain a UIC permit showing that they satisfy those requirements. For the Holcomb 1-22 well permit, EPA has determined that there will be no

impact to the drinking water aquifer as a result of injection into this well. The next step in the protection of a USDW is for the permit holder to be in compliance with the permit, which includes monitoring and reporting requirements. EPA reviews monthly operating reports and reports on periodic testing. EPA inspections and oversight verify the accuracy of the facility's self-monitoring and reporting, and the facility is subject to penalties and sanctions for failure to comply with its obligations. In federal fiscal year 2017, EPA inspected 518 wells, reviewed 13,560 monitoring reports, witnessed 226 mechanical integrity tests, reviewed reports from 32 well mechanical integrity or geologic reservoir tests, and issued four information collection orders. Failure to comply fully with permit conditions is a violation and may subject an owner/operator to an action under the enforcement provisions of the SDWA, 42 U.S.C. § 300h-2. Violations of the SDWA and UIC regulations are subject to Administrative Orders which may include penalties of up to $273,945, civil penalties of up to $54,789 per day of violation and criminal penalties of up to 3 years imprisonment and fines in accordance with Title 18 of the United States Code.

**Excessive injection into wells can cause earthquakes**

**Comment #15**: With an unlimited injection of ground water into your Class II wells, you have not adjusted the maximum limitation, and you are, in fact, permitting earthquakes by doing that. It may take 40 or 50 or 100 years, but infinity will catch up with whatever is there and physics will take over and you will have an earthquake. So, EPA must redo that standard so that disposal wells do not have infinity. In March of 2016, the United States Geological Survey issued a major finding that injection wells can cause earthquakes. The EPA has not incorporated that finding into its injection well permitting activities. Considering the USGS finding, infinity is not a realistic or safe limit on injection well permits. It is imperative the EPA develop a safe and realistic limit for the total amount of wastes injected allowed by EPA for each permit. Until the infinity limit problem is addressed, the EPA cannot legally issue injection well permits without violating both the letter and spirit of the Safe Drinking Water Act.

**Response #15:** The UIC permit limits the injection pressure that can be used. According to historical data compiled by the U.S. Geological Survey (USGS), the Clare County area is considered a low risk area regarding earthquakes, with no instances of property damage or fatalities due to earthquakes. Of the five historic earthquakes cited by the USGS in their web site report on Michigan earthquake history, none were located near Clare County. An earthquake in Michigan registered a Richter magnitude of 4.2 on May 2, 2015, but the epicenter was located 9 miles southeast of Kalamazoo, about 125 miles away from Hamilton Township, Clare County, Michigan, where the site of the proposed Holcomb 1-22 well is located. The depths of the earthquakes were determined by geologists to be more than 19,000 feet below ground, far deeper than any existing Class II injection wells. Based upon this data, and using the EPA Injection-Induced Seismicity Decision Model flow chart, no seismicity concerns related to proposed injection into the Holcomb 1-22 well were identified.

**Injection wells can drain the aquifer and cause earthquakes**

**Comment #16:** An earthquake of Richter Magnitude 4.2 occurred in Michigan during May of 2015. An earthquake easily can affect the confining strata within a 200 mile-plus area from the epicenter. Another problem with this well, and in particular, with the Class II wells, is that an infinity limitation on ground water withdrawal allows the permittee to drain the aquifer. The U.S. Geological Survey made a finding that injection wells do, in fact, cause earthquakes. If you live in Oklahoma, you don't have to wonder about that finding at all.

**Response #16:** EPA considered seismic risk as part of its technical review of the permit application. The May 2, 2015 earthquake epicenter was located about 125 miles away near Galesburg, Michigan, in Kalamazoo County with a Richter Magnitude of 4.2. News reports of surface damage were minimal. Upon technical review, no seismicity concerns related to proposed injection into the Holcomb 1-22 well were identified.

Studies have documented that certain injection wells in Oklahoma can cause earthquakes. However, there are a number of prerequisite factors that must exist: 1) excessively high injection pressures and fluid volumes, and 2) the existence of fault zones. The injection pressure and fluid volume for the proposed Holcomb 1-22 well, combined with the general lack of fault zones in the area, are an unlikely scenario for injection-induced earthquakes. Also, the geology of Michigan is very different than that of Oklahoma, and the studies from Oklahoma cannot reasonably be extrapolated to the proposed well site in Michigan.

**Earthquake hazards from injection wells**

**Comment #17:** Earthquakes in Michigan were felt in the past few years. Core samples of the Holcomb well need to be taken to determine if there was any effect on the well casing integrity due to this seismic activity. Given that the USGS has found that injection wells do in fact cause earthquakes, EPA needs to take the entirety of Michigan's existing oil and gas wells and injection wells into account, and do a complete survey of orphan wells and their conditions, before issuing any new injection well permits.

**Response #17:** EPA considered seismic risk as part of its technical review of the permit application. The May 2, 2015 earthquake epicenter was located about 125 miles away in Kalamazoo County with a Richter Magnitude of 4.2. News reports of surface damage were minimal. Upon technical review, no concerns related to the Holcomb 1-22 well and seismicity were identified. Studies have documented that certain injection wells in Oklahoma can cause earthquakes. However, there are a number of prerequisite factors that must exist: 1) excessively high injection pressures and fluid volumes, and 2) the existence of fault zones. The injection pressure and fluid volume for the proposed Holcomb 1-22 well in Michigan, combined with the general lack of fault zones, are an unlikely scenario for injection-induced earthquakes related to the Holcomb 1-22 well. Also, the geology of Michigan is very different than that of Oklahoma, and the studies from Oklahoma cannot reasonably be extrapolated to the proposed well site in Michigan. Under Part I 10(c) of the proposed permit, Muskegon Development cannot commence injection in the well until they demonstrate mechanical integrity, submit a report for EPA review, and receive a written authorization to inject from EPA.

**EPA must address permitted and unmonitored injection wells**

**Comment #18:** It is not legal for the EPA to issue any more Class II injection well permits in Michigan without a prior substantial EPA effort to address the existing permitted and unmonitored injection wells in Michigan. Permitting without a realistic expectation of the monitoring required by federal law is a violation of that same law.

**Response #18:** EPA expends effort to evaluate compliance by persons who own or operate injection wells. EPA inspects such wells, reviews monitoring reports submitted by owners or operators, witnesses well mechanical integrity and geologic reservoir tests performed by such persons, reviews reports from mechanical integrity and reservoir tests, and issues information collection orders to owners or operators under 42 U.S.C. § 300j-4. In federal fiscal year 2017, EPA inspected 518 wells, reviewed 13,560 monitoring reports, witnessed 226 mechanical integrity tests, reviewed reports from 32 well mechanical integrity or geologic reservoir tests, and issued four information collection orders. Neither the Safe Drinking Water Act nor regulations provide that a permit application should be denied on the basis of the scope of coverage of the compliance evaluation program administered by the permit-issuing agency.

**There may be orphaned wells within the Area of Review that were omitted from the permit application; they are a hazard and should be factored into permit decision**

**Comment #19:** Hamilton Township has a history with the oil and gas industry that goes back at least to the 1930s. This is a long and tumultuous history. Dangerous levels of methane have been found in homes in their drinking water; also, there are a number of incidents of exploding homes and basements due to old wells leaking methane and other gases. These wells were drilled in the 1930s and 1940s, a time when well drilling and closing standards were far from what is required today. We know that the DEQ has found ancient and improperly closed wells; wells plugged with garbage, timbers, whatever was available to fill the hole, rather than the cement and steel that is required today. Taking this into consideration along with well failure statistics of modern wells, leaves an alarming question as to whether or not this area is truly appropriate for injection wells and the high pressure used in such wells. That's what the area geologist for the Michigan Department of Environmental Quality tells us. Independent researchers have discovered a number of orphan wells NOT included in most of the archives, and there are orphan wells that are NOT included on the DEQ maps for Hamilton Township. Thus, it is very possible that Muskegon Development Company has failed to account for all the wells in the 1/4-mile AOR radius. Is there is a plan to locate these orphan wells before this permit is issued and the injection well becomes operational? There should be a full survey of the area be conducted to locate orphan wells and make sure that they are adequately plugged and if they are in fact leaking from well casing failure or other failure.

**Response #19:** During technical review of a UIC permit application, EPA evaluates the possible impact of abandoned wells if they are located within the 1/4-mile radius AOR, and if they are deep enough to penetrate the injection zone. If such wells are identified, a plan of corrective action to address these wells may be specified in the underground injection permit, to be implemented by the

permit holder to assure that injection operations do not cause ground water migration to spread contamination into the USDW. Underground injection wells that are abandoned must be plugged, as specified by regulation or permit; 40 C.F.R. §146.24 a (3) requires "a tabulation of data on all wells within the area of review which penetrate into the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require." Within the Area of Review, EPA analysis of available information shows one active oil producing well that penetrates the injection zone, and two dry holes (non-oil producing wells that have been plugged and abandoned) that did not penetrate the injection zone of the proposed Holcomb 1-22 well.

**Low income population of the well site area should be factored into permit decision**

**Comment #20:** My hope is that EPA staff will understand the human condition that surrounds this well site and give due consideration to those concerns if any of the other conditions of approval are in question. If you look at the demographics of Michigan, you will note that Lake County and Clare County are the most impoverished area within our state. The northern half of Clare County is the most impoverished area within our county. The last numbers I saw the median income in that area was under $20,000 per household. The Dodge City area is likely the most impoverished area in northern Clare County and it is located 2 miles west of the Holcomb 1-22 well site. As a full time realtor in Clare, Gladwin and Isabella County for over 25 years, I have seen this poverty first hand. Last year (per the Clare/Gladwin MLS) there were 239 home sales in the Harrison Area. 105 of those sales were under $50,000. Most of these sales are in residential areas served by private well and septic systems. Most of the wells we see in that area are 1 or 1.5-inch diameter hand-driven wells that were put in prior to the health department permit requirements and they remain in use today because of the cost of upgrading and the homeowner's inability to fund improvements. While I understand that contamination from this project is unlikely, the unlimited use of excessive and unlimited quantities of water from the water table is a concern.

**Response #20:** EPA considers a number of factors in review of a permit application, including environmental justice (EJ) screening to identify areas where people are most vulnerable or may be exposed to different types of pollution, in order to assure that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. One of those EJ screening factors identified by EPA was that 56% of the local population were in the low income level. Other factors include evaluation of the well design; plugging and abandonment plan; and, geological suitability of the rock formations for injection.

**Risk of water pollution at the well**

**Comment #21:** This appears to be a deep injection well in Clare County near the headwaters of the Middle Branch Tobacco River. I have not reviewed anything like this before and am not certain how to understand all the potential impacts. I went to the listed website and did look at that. I would have concerns over anything which could impact the ground water input to the Middle Branch Tobacco River as it is a designated trout stream. Any impacts that could possibly change the flows or temperatures would a problem and negatively impact the trout stream. I forwarded this to our habitat unit and they also were unsure of potential harmful impacts on fish in the nearby streams. My guess is the deep injection would mostly impact ground water and possibly drinking water for nearby wells. Thank you for my chance to comment and know about this application.

**Response #21:** Based upon EPA's technical review of the permit application, the well and plugging design, site geology, and endangered species review, the well will be protective of Underground Sources of Drinking Water (USDWs) and the environment, including surface water. EPA reviewed the permit application to determine that the geologic setting was appropriate for underground injection and that the proposed well, which already exists, was properly constructed. EPA evaluated the well's geological siting and construction, and established operating requirements in the permit that are protective of the USDW. EPA used several information sources in its review including the Michigan Hydrologic Atlas, the U.S. Geological Survey, and State of Michigan records of nearby injection wells. EPA's permit includes limits on the surface injection pressure to prevent the injected fluid from causing fractures in the rock, which could become conduits for the injected fluid to leave the injection zone. EPA calculated the surface injection pressure limit using conservative, site-specific figures for injected fluid, injection zone depth, and rock characteristics. EPA also reviewed all deep wells in the ¼-mile zone surrounding the well site, to assure that they do not act as potential conduits for injection fluids to move into the USDW. EPA determined that all other wells in the surrounding ¼-mile zone were either properly constructed or properly plugged and abandoned, and will not act as conduits for injection fluids under pressure to move into the USDW or surface water. In addition, the applicant is required to pass a mechanical integrity test, in accordance with 40 C.F.R. § 146.8, before authorization to inject is granted and after the well is completed. The operator is also required to repeat the test at least once every five years thereafter and to collect operating data and report to EPA monthly.

**Radioactivity of injectate**

**Comment #22:** EPA fails to analyze Class II injection wells' waste stream, including this one, for the radioactivity which permeates oil and gas drilling wastes. Regardless of whether an injection well's engineering allows it to leak, there is no safeguard against radioactive contamination. There is no showing of any scrutiny of the question of whether any drill wastes will be contaminated routinely with "radioactive waste," which is defined at 40 C.F.R. § 144.3 as "any waste which contains radioactive material in concentrations which exceed those listed in 10 C.F.R. part 20, appendix B, table II, column 2." The referenced table and column specify threshold contamination levels for Ra-226, Ra-228, several Uranium isotopes associated with drilling wastes, and Th-232. It is incumbent upon the EPA to require sourced, predictive information of the likely radiological characteristics of the

waste stream before a permit can even be considered for the proposed site. An entirely new permit must then be required of the operator, and the new process should afford the public the opportunity to scrutinize the underlying radioactive waste data along with another public hearing. Regarding geologic siting, what is the capacity of the targeted geologic formation for the Holcomb well to take radioactive waste from other formations and other drilling operations? Will the permit allow the operator to take such wastes in the future? Does EPA monitor the radioactivity of the injectates going into an injection well or the radioactivity of the injection well site?

**Response #22:** This permit only authorizes injection of fresh water for enhanced recovery of oil into the well. The proposed injection well will be a conversion of an existing oil production well that was permitted by the State of Michigan during 2008. No brine or any other wastes are allowed to be injected for disposal under this permit.

**Injection well failure rate**

**Comment #23:** Injection well integrity does fail and the toxic materials inside the wells do reach and contaminate the water supply. I put the following studies by Dr. Ingraffea and others into the record on this topic: Regarding well engineering in Michigan: EPA monitors injection wells throughout the state. What is the likelihood based on EPA's monitoring of Michigan injection wells that the proposed Holcomb injection well will fail in 10 years? In 20 years? In 100 years? Forever? EPA should require the operator to post a bond high enough that if contamination happens, ever, that will pay to clean up contaminations. I urge EPA to reject the permit well because of the known rates of well-casing failures. Because all well casings of injection wells (and frack wells) eventually fail--some right away, some in a few years, and all eventually--this guarantees that the toxic waste in the injection well will eventually endanger drinking water and aquifers. I put the following scientific study by Anthony Ingraffea, Ph.D., P.E., into the record: "Fluid Migration Mechanisms Due to Faulty Well Design and/or Construction: An Overview and Recent Experiences in the Pennsylvania Marcellus Play," January 2013. Physicians, Scientists & Engineers for Healthy Energy. A ProPublica review of well records, case histories, and government summaries of more than 220,000 well inspections from October 2007 to October 2010 found that structural failures inside injection wells are routine. From late 2007 to late 2010, one well integrity violation was issued for every six deep injection wells examined — more than 17,000 violations nationally. More than 7,000 wells showed signs that their walls were leaking. Records also showed wells are frequently operated in violation of safety regulations and under conditions that greatly increase the risk of fluid leakage and the threat of water contamination. ProPublica's analysis showed that, when an injection well fails, it is most often because of holes or cracks in the well structure itself. Once wastewater is underground, there are few ways to track how far it goes, how quickly, or where it winds up, raising concerns that it may migrate upward back to the surface. The hard data that does exist comes from well inspections conducted by federal and state regulators, who can issue citations to operators for injecting illegally, for not maintaining wells, or for operating wells at unsafe pressures, yet the EPA has acknowledged that it has done very little with the data it collects.

**Response #23:** The permit requires that the well will inject only fresh water, not wastewater. The permit requires that "the permittee must establish (prior to receiving authorization to inject), and shall maintain mechanical integrity of this well, in accordance with 40 C.F.R. § 146.8," and specifies monitoring requirements designed to detect conditions that indicate possible loss of mechanical integrity, and procedures for restoring mechanical integrity. In the event of a well leak (loss of mechanical integrity), the permit specifies that the permittee (Muskegon Development Company) must shut-in (cease injection to) the well, and notify EPA within 24 hours of the incident. After repair of the leak(s), Muskegon must pressure test the well, pass a mechanical integrity test, transmit the test results to and request permission from EPA for written authorization to resume injection.

**There is insufficient information in the permit application to support a permit decision**

**Comment #24:** I am writing to oppose the issuance of a Class II Injection Permit to Muskegon Development Company (Holcomb 1-22 well, #MI-035-2R-0034). I would also like to request new surveys and studies be done where and when appropriate, new permit applications required, and that this process be generally reset to the starting point, which should include a new Public Hearing Transcript, as there have been problems throughout the application process.

**Response #24:** EPA has reviewed the technical information of record, and the comments received during the two public comment periods, and determined the permit application to be complete, with enough data and information to support a permit decision. The basis of the permit decision relies primarily upon assessment of the local geology, well design and the plugging and abandonment plan of the existing well. EPA considers the impact of other wells within the ¼ mile radius area of review that are deep enough to penetrate the proposed injection zone. Please see the responses to comments 1-4 for information about the process for public participation on the draft permit decision.

**Determination**

After consideration of all public comments, EPA has determined that none of the comments submitted have raised issues which would alter EPA's basis for determining that it is appropriate to issue Muskegon Development a permit to operate the Holcomb 1-22 injection well. Therefore, EPA is issuing a final permit to Muskegon Development. No changes will be made to the final permit from the draft permit.

**Appeal**

In accordance with 40 C.F.R. § 124.19(a), any person who filed comments on the draft permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the final permit decision. Additionally, any person who failed to file comments on the draft permit may petition the EAB for administrative review of any permit conditions set forth in the final permit decision, but only to the extent that those final permit conditions reflect changes from the proposed draft permit. Any petition shall identify the contested permit condition or other specific

challenge to the permit decision and clearly set forth, with legal and factual support, petitioner's contentions for why the permit decision should be reviewed, as well as a demonstration that any issue raised in the petition was raised previously during the public comment period (to the extent required), if the permit issuer has responded to an issue previously raised, and an explanation of why the permit issuer's response to comments was inadequate as required by 40 C.F.R. § 124.19(a)(4). If you wish to request an administrative review, documents in EAB proceedings may be filed by mail (either through the U.S. Postal Service ("USPS") or a non-USPS carrier), hand-delivery, or electronically. The EAB does not accept notices of appeal, petitions for review, or briefs submitted by facsimile. All submissions in proceedings before the EAB may be filed electronically, subject to any appropriate conditions and limitations imposed by the EAB. To view the Board's Standing Orders concerning electronic filing, click on the "Standing Orders" link on the Board's website at www.epa.gov/eab. All documents that are sent through the USPS, except by USPS Express Mail, must be addressed to the EAB's mailing address, which is: Clerk of the Board, U.S. Environmental Protection Agency, Environmental Appeals Board, 1200 Pennsylvania Avenue, NW, Mail Code 1103M, Washington, DC 20460-0001. Documents that are hand-carried in person, delivered via courier, mailed by Express Mail, or delivered by a non-USPS carrier such as UPS or Federal Express must be delivered to: Clerk of the Board, U.S. Environmental Protection Agency, Environmental Appeals Board, 1201 Constitution Avenue, NW, WJC East Building, Room 3332, Washington, D.C. 20004.

A petition for review of any condition of a UIC permit decision must be filed with the EAB within 30 days after EPA serves notice of the issuance of the final permit decision. 40 C.F.R.§ 124.19(a)(3). When EPA serves the notice by mail, service is deemed to be completed when the notice is placed in the mail, not when it is received. However, to compensate for the delay caused by mailing, the 30-day deadline for filing a petition is extended by three days if the final permit decision being appealed was served on the petitioner by mail. 40 C.F.R.§ 124.20(d). Petitions are deemed filed when they are received by the Clerk of the Board at the address specified for the appropriate method of delivery. 40 C.F.R.§ 124.19(a)(3) and 40 C.F.R. § 124.19(i). The request will be timely if received within the time period described above. For this request to be valid, it must conform to the requirements of 40 C.F.R. § 124.19. This request for review must be made prior to seeking judicial review of any permit decision. Additional information regarding petitions for review may be found in the Environmental Appeals Board Practice Manual (August 2013) and A Citizen's Guide to EPA's Environmental Appeals Board, both of which are available at:

http://yosemite.epa. gov/oa/EAB_Web_Docket.nsf/General+Information/Environmental+Appeals+Board+Guidance+Documents?OpenDocument

The EAB may also decide on its own initiative to review any condition of any UIC final permit decision. The EAB must act within 30 days of the service date of notice of the Regional Administrator's action. Within a reasonable time following the filing of the petition for review, the EAB shall issue an order either granting or denying the petition for review. To the extent review is denied, the conditions of the final permit decision become final agency action when a final permit decision is issued by the EPA pursuant to 40 C.F.R. § 124.19(l).

**Final Permit**

The final permit and Response to Comments document are available for viewing at the Harrison District Library, 105 East Main Street, Harrison, MI 48625; Phone: (989) 539-6711.

Please contact William Tong of my staff at (312) 886-9380, or via email at tong.william@epa.gov if you have any questions about the Muskegon Development Company, Holcomb 1-22 Class II injection well permit.

Linda Holst Date 7/3/18

Linda Holst
Acting Director, Water Division
U. S. Environmental Protection Agency
Region 5

61

## Tong, William

**From:** Kirby North Ancona <foxviewfarm@earthlink.net>
**Sent:** Sunday, February 12, 2017 12:08 PM
**To:** Tong, William
**Subject:** FW: UIC Class II Public Notice: MI-035-2R-0034
**Attachments:** removed.txt; MI-035-2R-0034_fact sheet.pdf; EPA QA Clair Co.doc

Dear Mr. Tong,

Please find attached letter:
It will be greatly appreciated if you would
please acknowledge receipt of this document to you.

Best regards,

Kirby North Ancona
foxviewfarm@earthlink.net
Foxview Farm:
3154 Fox Mountain Road
Crozet, VA 22932
c. 434.996.7311
h. 434.975.1664
P.O. Box 324
Free Union, VA 22940

North Lake Farm:
9538 Peterson Rd & N. Lake Rd.
Brooklyn, MI 49230

(62)

## Tong, William

**From:** Tong, William
**Sent:** Tuesday, February 14, 2017 4:13 PM
**To:** Perenchio, Lisa
**Subject:** FW: UIC public notice per 124.10e MI-035-2R-0034

This is a comment on the Holcomb 1-22 draft permit from a MDNR fisheries biologist.

**From:** Simmons, Lilly
**Sent:** Tuesday, February 14, 2017 2:33 PM
**To:** Tong, William
**Subject:** FW: UIC public notice per 124.10e MI-035-2R-0034

**From:** Schrouder, Kathrin (DNR) [mailto:SchrouderK@michigan.gov]
**Sent:** Tuesday, February 14, 2017 2:03 PM
**To:** Simmons, Lilly <simmons.lilly@epa.gov>
**Cc:** Baker, Jim (DNR) <BakerJ5@michigan.gov>; Dexter, James (DNR) <DexterJ1@michigan.gov>
**Subject:** UIC public notice per 124.10e MI-035-2R-0034

This appears to be a deep injection well in Clare County near the headwaters of the Middle Branch Tobacco River. I have not reviewed anything like this before and am not certain how to understand all the potential impacts. I went to the listed website and did look at that. I would have concerns over anything which could impact the groundwater input to the Middle Branch Tobacco River as it is a designated trout stream. Any impacts that could possibly change the flows or temperatures would a problem and negatively impact the trout stream.

I forwarded this to our habitat unit and they also were unsure of potential harmful impacts on fish in the nearby streams.

My guess is the deep injection would mostly impact groundwater and possibly drinking water for nearby wells.

Thank you for my chance to comment and know about this application.

*Kathrin Schrouder*
Fisheries Biologist
Southern Lake Huron Management Unit
Bay City
989-686-2295

(63)

**Tong, William**

**From:** Jeffery Loman <jefferyloman@mac.com>
**Sent:** Monday, February 27, 2017 6:06 PM
**To:** Tong, William
**Subject:** Comments on Proposed Class II Permit MI-035-2R-0034 (Holcomb 1-22, Permit # MI-035-2R-0034)

Dear Mr. Tong:

The Environmental Protection Agency ("EPA") proposes to issue a permit to Muskegon Development Company of Mount Pleasant, Michigan to inject fluid deep underground. I have reviewed the applicable documents EPA provided online (draft permit and supporting documents) and detailed my comments below. My CV detailing my qualifications to provide this technical review is available upon request.

The permit applicant, Muskegon Development Company, and the EPA, have not sufficiently demonstrated that the proposed injection well will not endanger Underground Sources of drinking water (USDW) and may likely present a public nuisance – specifically as discussed in the comments that follow:

- The proposed injection well and any nearby offset wells are not properly designed and constructed and may endanger USDWs
- The maximum allowable injection pressure ("MAIP") may result in fracturing of the injection or confining zone, potentially creating pathways that may allow injected fluids to reach USDWs
- The described Area of Review ("AoR") evaluation is not sufficient and neither the applicant nor EPA has demonstrated that the proposed fixed radius, assuming there is one, is appropriate to protect USDWs.

Consequently, the draft permit should not be approved unless and until these deficiencies are addressed.

Well Construction: Neither the applicant nor EPA has demonstrated that the surface casing does not extend below the base of the USDW and the production casing cement does not extend above the base of either the USDW or the surface casing. This means that a portion of the annular space adjacent to the USDW is uncemented. Leaving this annular space uncemented puts both the USDW and well integrity at risk. The top of the production casing cement does not appear to extend above the base of the surface casing. Failing to extend surface casing in any well to below the base of the lowest USDW puts those USDWs below the base of the surface casing at significant risk of contamination. Cross flow may occur

between the USDW and other formations, potentially leading to contamination of the USDW. Leaving a potential flow zone uncemented can also result in over pressurization of the annulus and/or result in casing corrosion, both of which may lead to a well integrity failure, further putting drinking water at risk. Properly constructed wells typically have at least two barriers between USDWs and fluids contained in the well: 1) the surface casing and 2) the production casing.

The American Petroleum Institute recommends that "surface casing be set at least 100 feet below the deepest USDW encountered while drilling the well. Both UIC Class I and ClassVI well rules require surface casing to extend below the base of the lowest USDW, indicating that EPA clearly recognizes this as an important standard to protect ground water.

Finally, I would remind EPA that a report by the General Accounting Office, an internal EPA Mid-Course Evaluation of the UIC program, and a federally chartered advisory committee found that Class II well construction rules were insufficient to protect drinking water and recommended that the rules be changed to require surface casing to extend below the base of protected water. EPA proposed to make these changes in the early 1990s, but to the best of my knowledge, they were never finalized. Nevertheless, these improvements are still needed in order to adequately protect USDWs and should be implemented in permitting decisions.

Thank you for the opportunity to comment.

Sincerely,

Jeffery Loman

(64)

## Tong, William

**From:** Wes Raymond <admin@caccmi.org>
**Sent:** Wednesday, March 15, 2017 9:14 PM
**To:** Tong, William
**Subject:** comments re: permit MI-035-2R-0034 [WARNING: SPF validation failed]

This message is written on behalf of the membership of Citizens for Alternatives to Chemical Contamination (CACC).

CACC's membership and board of directors request a public hearing be held in Clare County Michigan regarding the permit MI-035-2R-0034 with a reasonable effort to make outreach and announcement of the meeting to the public.

Public understanding and participation is paramount in a functional democracy, and this fact alone is reason enough that a public meeting be held. Additionally, CACC members have approached the residents of Clare County with news of permit MI-035-2R-0034 and many residents have expressed a desire for a public meeting, both to voice their opinions and to ask questions.

Please see to this minor formality. We recommend the use of meeting facilities in the Pere Marquette District Library.

Thank you for your time and consideration.

--
Wes Raymond
Administrator - CACC
admin@caccmi.org
989.544.3318

(65)

**Tong, William**

**From:** Kirby North Ancona <foxviewfarm@earthlink.net>
**Sent:** Monday, July 17, 2017 10:07 AM
**To:** Tong, William
**Subject:** Holcomb1-22 well permit issues
**Attachments:** EPA Holcomb).doc

Dear Mr. Tong,

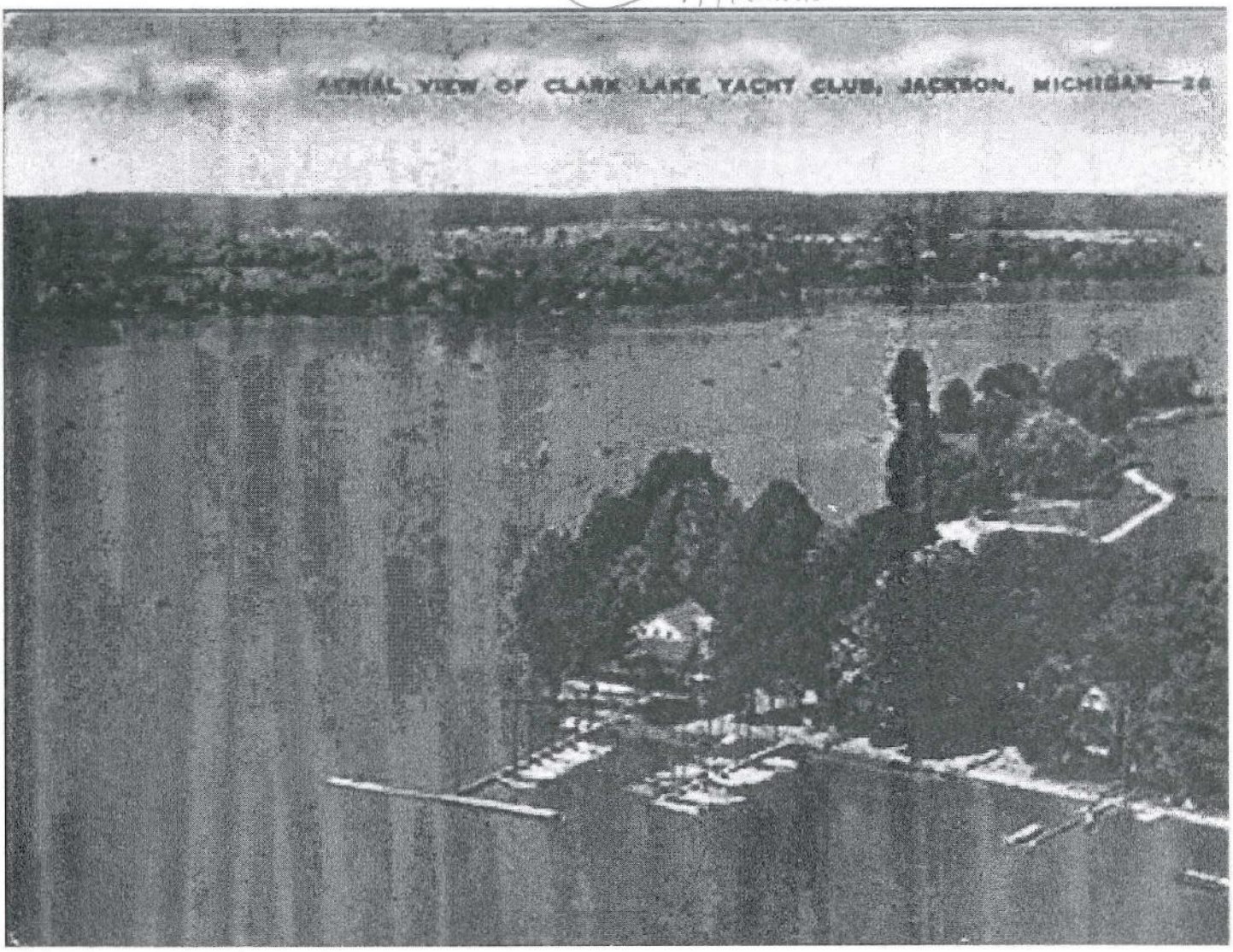
Thank you for protecting our fragile water quality
and at risk environment for generations to come.
Please find enclosed document for your review.
Would you please be so kind
as to acknowledge receipt?

Best regards,
Kirby

Kirby North Ancona
foxviewfarm@earthlink.net
Foxview Farm:
3154 Fox Mountain Road
Crozet, VA 22932
c. 434.996.7311
h. 434.975.1664
P.O. Box 324
Free Union, VA 22940

North Lake Farm:
9538 Peterson Rd & N. Lake Rd.
Brooklyn, MI 49230
p. 517.592.6829

(65) Attachment



(65) Attachment

EPA
United States
Environmental Protection
Agency

# EPA Seeks Comments on Draft Underground Injection Permit

## Muskegon Development Company

Clare County, Michigan — February 2017

### How to comment
You may comment on the proposed permit approval in writing. Please refer to Holcomb 1-22, Permit # MI-035-2R-0034

Mail, email or fax your comments to:
**William Tong**
U.S. EPA, Water Division
UIC Branch (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590
Email: tong.william@epa.gov
Fax: (312) 886-4235
Phone: (312) 886-9380

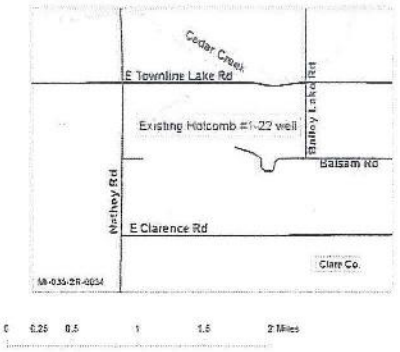
### Comment period
The Agency will accept written comments until **March 15** (midnight postmark).

### Information repository
You may see the draft permit at:
**Harrison District Library**
**105 East Main Street**
**Harrison, MI 48625**
Monday 10 am to 7 pm,
Tuesday-Friday 10 am to 6 pm, and
Saturday 10 am to 2 pm.
or at http://go.usa.gov/3JwFP.

### Administrative Record
You may see the full administrative record, including all data Muskegon Development Company submitted, at the EPA's Chicago regional office (*address above*), 9 a.m. to 4 p.m., weekdays. For an appointment to see the files, contact William Tong(*see above*).

### Right to appeal
You have the right to appeal any final permit decision if you make an official comment during the comment period or participate in the public hearing. A public hearing is not planned at this time. The first appeal must be made to the Environmental Appeals Board.

The U.S. Environmental Protection Agency plans to allow Muskegon Development Company, 1425 South Mission Road, Mount Pleasant, Michigan 48858 to inject fluid underground by approving the company's application for what EPA calls a Class II injection well permit.




If EPA makes its approval final, Muskegon Development Company may inject fresh water for enhanced oil recovery into a rock formation 4948 feet below the surface through a well at NW ¼ , Section 22, T19N, R3W, Clare County. Muskegon Development Company has also applied for a permit from the Michigan Department of Environmental Quality (MDEQ).

EPA is accepting comments from the public on this proposed permit approval (*see box, left*). The public comment period, which ends **Wednesday, March 15, 2017** includes 30 days for comments as required by law, plus an additional three days for any delay caused by mailing.

During the comment period, you may ask EPA – in writing – to hold a formal public hearing (*see address, left*). Be sure to say specifically what issues you want to raise. EPA will hold a hearing if there is significant interest. If there is a hearing, EPA will publish a notice at least 30 days prior. You will have an opportunity to make oral comments or submit written comments. EPA will consider all comments it receives, and then issue a final decision along with a response to significant comments.

The Safe Drinking Water Act requires EPA to regulate the underground injection of fluids through wells to protect the quality of underground sources of drinking water. Issuing permits is one way EPA does this. You can find the regulations governing underground injection wells at Title 40 of the Code of Federal Regulations, Parts 144 and 146.

EPA does not have the authority to change the surface location of the injection well. If you have questions or concerns about the well's location, contact the MDEQ, P.O. Box 30256, Lansing, Michigan 48909 and phone number (517) 284-6826.

To learn more about EPA's Underground Injection Control program, or to join our mailing list visit http://go.usa.gov/3JwFP.

(66)

**Tong, William**

**From:** Sheryl Judd <sherjudd@hughes.net>
**Sent:** Wednesday, July 26, 2017 10:00 PM
**To:** Tong, William
**Cc:** JasonWentworth@house.mi.gov
**Subject:** [SPAM] Public Comment: Proposed injection well in Clare County

Mr. Tong,

I live in Clare County and I am totally against to the proposed injection well that is planned for Dodge City.

It could contaminate the local wells in the area, and by sucking out the local water in the aquifer it may seriously deplete the wells of the local residents. These residents are some of the poorest in Clare County. They could not afford to install new wells!!!

To do this would be unconscionable.

Please extend the Public Comment period because the Public Meeting the EPA had on Tuesday, July 26th was poorly publicized, and the wrong time and location was posted in the newspaper and on the EPA's website. Please extend the public comment period, and reschedule a public meeting with correct times, dates, and locations publicized online and in newspapers that are linked more directly to the people who are affected by this aquifer like the Clare County Cleaver and the Gladwin County Record.

Thank you,
Sheryl Judd
2821 Cedar Rd.
Harrison, MI
989-539-9557

**Tong, William**

67

**From:** Deb Sherrod <debsherrod@gmail.com>
**Sent:** Thursday, July 27, 2017 5:48 AM
**To:** Tong, William
**Cc:** JasonWentworth@house.mi.gov
**Subject:** [SPAM] Public Comment: Proposed Injection Well in Clare County

Mr. Tong,

I am a resident of Clare County, and I totally oppose the injection well that is planned for Dodge City. It could contaminate the local wells in the area, and by drawing out the local water in the aquifer it may seriously deplete the wells of the local residents. These residents are some of the poorest in Clare County. They could not afford to install new wells!!!

To do this would be unconscionable!
Please extend the Public Comment period because the Public Meeting the EPA held on Tuesday, July 26, was poorly publicized, and the wrong time and location were posted in the newspaper and on the EPA's website. Please extend the Public Comment period and reschedule a Public Meeting with correct times, dates, and locations publicized online and in newspapers that are linked more directly to the people who are affected by this aquifer like the *Clare County Cleaver* and the *Gladwin County Record*.

Thank you,
Deborah L. Sherrod
2821 Cedar Rd.
Harrison, MI
989-539-9557

## Tong, William

(68)

**From:** Stephanie Terpening <stephterpening@gmail.com>
**Sent:** Thursday, July 27, 2017 7:56 AM
**To:** Tong, William
**Cc:** jasonwentworth@house.mi.gov; Dad Terp
**Subject:** Clare county, MI injection well comment

Mr. Tong,

Thank you to you and your colleagues for coming to Clare this week to inform us of the injection well that has been proposed for north eastern Clare county. While I made a public comment at the meeting, I felt I wanted an opportunity to write you as well, because I did not say everything that I intended to at the meeting. I ask you and the EPA to consider denying this permit because after hearing what you and the public had to say about it, I truly feel that there is insufficient data available regarding whether the output of this aquifer will be able to keep up with the water needed for this project. When you were asked if the aquifer would be able to keep up, you didn't know.....and if the water table in this region lowers below the existing wells there, it will cause catastrophic hardships for the family's in this region who are already struggling. Because many of the wells in this area were seasonal homes at one time, or because they were dug by property owners with limited resources, the wells in this area are shallow, and I am concerned that this project is going to make water unavailable to hundreds of families, and would therefore be in violation of the safe drinking water act. Furthermore, oil prices have stabilized, electric cars/alternative fuel vehicles are becoming more affordable, and the demand for domestic oil sources is not a pressing need at this time. It was also very disturbing to find out that this Muskegon gas company had not accurately answered all the questions on the permit application, and for this reason alone the EPA should consider denying this permit. If fourteen questions were either not answered or inaccurately answered, this should be a red flag to the EPA about how honest and forthcoming this gas company will be in the future when disclosing information to the EPA. I do believe this meeting would have had WAY more citizens attend if the EPA had released accurate date, time, and meeting location of this meeting, but the Clare county review shared that it would be on Thursday (instead of Tuesday), at Clare middle school (instead of the high school). Even the EPA website and your hand out at the meeting listed the wrong meeting date. The public deserves to know about this permit and be informed, but so do the people who depend on this aquifer, and those people reside more in northern Clare county and Gladwin county. So I ask the EPA to extend your window for public comment AND reschedule the meeting in a geographically more appropriate location (like Harrison or Gladwin). These are the towns and residents that will be more directly affected by this injection well, and they deserve to know about this proposed project and how it could affect their property. Many people in this region live below the poverty line and they do not have the money to travel to a meeting in Clare, nor to pay for internet access at home so they are able to be informed about this project or communicate disapproval of it. Most of the people on the aquifer do not even read the Clare county review, where you attempted to announce this meeting from. More appropriate papers for this group of citizens who will be affected by this project would be the Clare County Cleaver in Harrison, or the Gladwin County Record. Thank you again for considering our thoughts about this proposed project, and for coming to our community to discuss this issue.

Sincerely,

Stephanie Terpening

(69)

**Tong, William**

**From:** Wayne Terpening <thebrooksiderealtor@gmail.com>
**Sent:** Thursday, July 27, 2017 9:39 AM
**To:** Tong, William
**Subject:** Holcom #1-22 Injection Well Permit Application MI-035-2R-0034

Mr Tong,

Thank you for coming to Clare Michigan to provide the public hearing on this matter on July 25, 2017.

My additional comments may or may not fit into categories of consideration that the EPA is allowed to consider. My hope is that you and your staff will understand the human condition that surrounds this well site and give due consideration to those concerns if any of the other conditions of approval are in question.

If you look at the demographics of Michigan you will note that Lake County and Clare County are the most impoverished area within our state. The northern half of Clare County is the most impoverished area within our county. The last numbers I saw the median income in that area was under $20,000 per household. The Dodge City area is likely the most impoverished area in northern Clare County and it is located 2 miles west of the Holcomb 1-22 well site.

I have been a full time realtor in Clare, Gladwin and Isabella County for over 25 years and I have seen this poverty first hand. Last year (per the Clare/Gladwin MLS) there were 239 home sales in the Harrison Area. 105 of those sales were under $50,000. Most of these sales are in residential areas served by private well and septic systems. Most of the wells we see in that area are 1 or 1.5 inch hand driven wells that were put in prior to the health department permit requirements and they remain in use today because of the cost of upgrading and the homeowner's inability to fund improvements. The loss of a safe and adequate water supply would be serious for many of these families. While I understand that contamination from this project is unlikely the unlimited use of excessive and unlimited quantities of water from the water table is a concern. THE WATER SUPPLY IS LIMITED EVEN HERE IN THE CENTER OF THE FRESH WATER WORLD!

Since the hearing I have been in touch with many of the area officials and commissioners that I felt should have been at your hearing. I am shocked to note that only 1 has stated that he knew of this meeting but could not attend. I think this meeting should be rescheduled, and that Hamiltion Township, Aurther Township and Clare Counrty Officials,as well as, Officials from Sage Township, Grout Township and Gladwin County should specifically invited. Further, I feel the meeting should be at the Hamilton Township Hall or in another facility nearby as public transportation in that area is very limited and many-many families do not have a car.

Thank you for your consideration please feel free to contact me if clarification is needed!

Wayne Terpening
(989)339-0680
thebrooksiderealtor@gmail.com
or
wayneterpening@aol.com

(70)

## Tong, William

**From:** Rep. Jason Wentworth (District 97) <JasonWentworth@house.mi.gov>
**Sent:** Thursday, July 27, 2017 12:49 PM
**To:** Tong, William
**Cc:** ashton.bortz@mail.house.gov
**Subject:** RE: Clare county, MI injection well comment MI-035-2R-0034

Good afternoon William

I am respectfully requesting that you extend the public comment period for this proposed project and reschedule a public meeting that is correctly advertised with a location that is close to the actual proposed project. If this request is granted I will ask the DEQ to be present at this new meeting to answer questions that pertain to them. I strongly believe it is important that the community is provided accurate information that would allow them to be present and voice their concerns.

Thank you for your consideration,

Jason Wentworth
97th District State Representative

-----Original Message-----
From: Stephanie Terpening [mailto:stephterpening@gmail.com]
Sent: Thursday, July 27, 2017 8:56 AM
To: Tong.William@epa.gov
Cc: Rep. Jason Wentworth (District 97) <JasonWentworth@house.mi.gov>; Dad Terp <wayneterpening@aol.com>
Subject: Clare county, MI injection well comment

Mr. Tong,
Thank you to you and your colleagues for coming to Clare this week to inform us of the injection well that has been proposed for north eastern Clare county. While I made a public comment at the meeting, I felt I wanted an opportunity to write you as well, because I did not say everything that I intended to at the meeting. I ask you and the EPA to consider denying this permit because after hearing what you and the public had to say about it, I truly feel that there is insufficient data available regarding whether the output of this aquifer will be able to keep up with the water needed for this project. When you were asked if the aquifer would be able to keep up, you didn't know.....and if the water table in this region lowers below the existing wells there, it will cause catastrophic hardships for the family's in this region who are already struggling. Because many of the wells in this area were seasonal homes at one time, or because they were dug by property owners with limited resources, the wells in this area are shallow, and I am concerned that this project is going to make water unavailable to hundreds of families, and would therefore be in violation of the safe drinking water act. Furthermore, oil prices have stabilized, electric cars/alternative fuel vehicles are becoming more affordable, and the demand for domestic oil sources is not a pressing need at this time. It was also very disturbing to find out that this Muskegon gas company had not accurately answered all the questions on the permit application, and for this reason alone the EPA should consider denying this permit. If fourteen questions were either not answered or inaccurately answered, this should be a red flag to the EPA about how honest and forthcoming this gas company will be in the future when disclosing information to the EPA. I do believe this meeting would have had WAY more citizens attend if the EPA had released accurate date, time, and meeting location of this meeting, but the Clare county review shared that it would be on Thursday (instead of Tuesday), at Clare middle school (instead of the high school). Even the EPA website and your hand out at the meeting listed the wrong meeting date. The public deserves to know about this permit and be informed, but so do the people who depend on this aquifer, and those people reside more in northern Clare county and Gladwin

county. So I ask the EPA to extend your window for public comment AND reschedule the meeting in a geographically more appropriate location (like Harrison or Gladwin). These are the towns and residents that will be more directly affected by this injection well, and they deserve to know about this proposed project and how it could affect their property. Many people in this region live below the poverty line and they do not have the money to travel to a meeting in Clare, nor to pay for internet access at home so they are able to be informed about this project or communicate disapproval of it. Most of the people on the aquifer do not even read the Clare county review, where you attempted to announce this meeting from. More appropriate papers for this group of citizens who will be affected by this project would be the Clare County Cleaver in Harrison, or the Gladwin County Record. Thank you again for considering our thoughts about this proposed project, and for coming to our community to discuss this issue.
Sincerely,
Stephanie Terpening

71

## Tong, William

**From:** Leigh Clarke <leighlaker@gmail.com>
**Sent:** Thursday, July 27, 2017 7:18 PM
**To:** Tong, William
**Subject:** Letter for Public Comment Regarding Proposed Underground Injection Permit, Holcomb 1-22
**Attachments:** Public Comment Regarding Proposed Injection Well Holcomb 1-22 (1).pdf

Dear Mr. Tong,

Please see the attached letter requesting an extension to the public comment period, and and also a request to hold a public meeting at the Hamilton Township Hall in regards to the proposed underground injection permit of Holcomb 1-22.

Regards,
Leigh Clarke
(989) 400-0433

(71) Attachment

2280 East Pleasant Valley Road
Shepherd, Michigan 48883

July 27, 2017

Mr. William Tong
U.S. EPA, Water Division
UIC Branch (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Dear Mr. Tong,

It has come to my attention that a public meeting regarding issuing a permit for enhanced oil recovery from the Holcomb 1-22 well was held on Tuesday, July 25th at Clare High School. I am a taxpayer in Hamilton Township, and received no notification of this meeting. I am requesting an extension to the public comment period, as well as an additional public meeting to be held at the Hamilton Township Hall for the following reasons:

1. I spoke with Mr. David Wright, Hamilton Township Supervisor on the evening of 07/26/17. He stated that he was aware of the proposed project, but didn't remember receiving a letter notifying him of the meeting. Upon further discussion, he stated that he was concerned why the meeting with the EPA was held outside of Hamilton Township. He stated that the Hamilton Township Hall would have been a much more appropriate location, considering the proposed injection well would be located within our township. In my opinion, the meeting taking place away from Hamilton Township seems to be a bit underhanded.
2. I spoke with Mark Janeczko, Hamilton Township Zoning Administrator & Code Enforcement on the evening of 07/26/17. He indicated that he was not aware of any such meeting being held with the EPA in regards to a proposed injection well in Hamilton Township. He stated that had he been notified, he absolutely would have been in attendance.
3. There were multiple errors in advertisement of the date of the meeting. The local newspaper, and even the EPA's website and handouts displayed a meeting date of "Thursday, July 25th" as opposed to "Tuesday, July 25th". This caused confusion, and could have misled individuals who may have been interested in attending.
4. As a Hamilton Township taxpayer, I am concerned that no one from our Board of Directors was present to ask questions or raise concerns on behalf of the Township.

5. I am very concerned with the amount of fresh groundwater that will be used for the proposed injection well, and supposedly only the MI-DEQ can answer questions relating to that. **Since this proposed project involves many levels of government (federal, state and local), it would be advantageous for all involved to have representatives of each level of government present at a meeting so that all questions from those in attendance could be answered.**

Thank you for your time and consideration in granting an additional extension period for public comment and holding a public hearing at the Hamilton Township Hall.

Regards,

Leigh Clarke

72

## Tong, William

**From:** Sue Rees <suerees49@yahoo.com>
**Sent:** Monday, July 31, 2017 7:20 AM
**To:** Tong, William

Please do NOT vote for the injection well in Dodge City in Clare County. It's not natural and not worth it, risking contamination and depletion of local water sources.

Sent from Mail for Windows 10

73

## Tong, William

**From:** Sue Rees <suerees49@yahoo.com>
**Sent:** Monday, July 31, 2017 7:23 AM
**To:** Tong, William
**Subject:** Injection in Dodge city

Oops, in my previous note I neglected to put in my address, showing that I am a Clare County resident. I urge you to vote no on the injection well in Dodge City. It's not natural and could cause contamination to local ground water. Thanks.

Susan Rees
9271 Birch Isle
Farwell, MI 48622
989-588-8018

Sent from Mail for Windows 10

(74)

## Tong, William

**From:** Rebecca Terpening <rterpening@gmail.com>
**Sent:** Tuesday, August 01, 2017 8:46 PM
**To:** Tong, William
**Cc:** Stephanie Terpening
**Subject:** Public Notice: Public Hearing for Draft Class II Permit MI-035-2R-0034

Mr. Tong,

Thank you for extending the public comment period regarding the Holcomb 1-22 Well in Clare County, MI.

I had a question regarding the Class II well. Did you say at the hearing there are no other Class II wells in Clare County currently?

The Township Supervisor is letting residents know they will have someone at the August 3rd Township Hall meeting to answer questions on the well but they are neither from the EPA or DEQ. He said he is fine with the well because there is another well like this in Franklin Township to the North that has been there for 25 years with no problems. I just wanted clarification that it could be another well, but not a Class II well.

If you can provide any information before the August 3rd meeting at the Hall, I would appreciate it, and will share with the residents who attend.

Thank you,

Rebecca A. Terpening

75

## Tong, William

**From:** Tong, William
**Sent:** Monday, August 07, 2017 2:35 PM
**To:** Perenchio, Lisa
**Subject:** Transcriptions of post-hearing handwritten comments (includes PDF scans of original documents)
**Attachments:** Sheryl Judd_1.pdf; Rebecca_Terpening_7-27-2017_Transcribed.docx; Rebecca Terpening_2.pdf; Sheryl Judd comment transcription.docx

To make the handwritten comments compatible with e-mailed and word processor comments, I have transcribed two such comments that arrived last week when I was on annual leave.

*(Transcribed by Bill Tong from a hand written comments letter dated July 27, 2017)*

Rebecca Terpening
110 Witbeck Dr.
Clare, MI 48617

William Tong
U.S. EPA Water Division
UIC Branch (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590

7-27-17

Hello, Mr. Tong. I am Rebecca Terpening, citizen from Clare County, MI, and I attended your public hearing on July 25th regarding the permit for the Holcomb injection well 1-22.

I spoke during the public hearing but thought about the meeting into the night, and thought of a few more important things to bring to your attention.

Aside from the incorrect information and poor meeting location choice (printed on the hearing notice), when were Hamilton Township officials or county officials notified of the hearing? The Township Supervisor stated the Township Hall would have been the perfect location. Why was the meeting held in the City of Clare, 26 miles away from the area affected by the injection well?

I did look up the GeoWebFace page you mentioned at the hearing. I was able to pull up the well records on file, but only documents through 2008 (approximately). If currently in use for oil extraction, where are those records?

Does the EPA take into consideration the soil quality for site locations? This area is very swampy in many areas, as noted on the survey for the well, around the Cedar River and area lakes/ponds. Clare County has over 110 lakes, over 56,000 acres of state land. Again, wondering why any well would be approved in a residential area?

My biggest concern is the fact that EPA expressed that the State controls the amount of ground water than can be extracted and then used in the well. The DEQ was not proesent6 at the hearing to answer our questions on how this may affect the aquifer that feeds so many wells for residents' drinking water. We are not experts in this area, so we look to you for explanation on the subject, which is something you could not do, because it doesn't fall under your jurisdiction. You deal with the permit process. I get that. But, this public hearing was for us to get a better understanding and I think many were left with more questions vs. answers.

I ask that you consider extending the public comment period, that you hold a public hearing at the Hamilton Township Hall, that you public the correction information on the notice to citizens and publish it in the Clare County Cleaver as well as cc: to the Hamilton Township Board and Zoning & Coding Officer (he was not aware of this at all). Another paper "more local" is the Gladwin Record Eagle out of Gladwin, MI. I also ask that a representative specialized in water matters from our District DEQ office in Saginaw is present.

Thank you for your consideration.

Rebecca A. Terpening
Rterpening@gmail.com

(76)

## Tong, William

**From:** Snooks <snooks@ironbay.net>
**Sent:** Tuesday, August 08, 2017 12:19 PM
**To:** Tong, William
**Subject:** public comment regarding Holcomb 1-22 injection well

Dear Mr. Tong,

Thank you for extending the comment period, although I sense it was unintended. With that said I would like to add to the comments not in favor of extending this well's output by forcing fresh water or brine to disperse it's remaining reserves into the existing oilfield.

The cost seems to high for the area residents. They are concerned about their drinking water. I would be...wouldn't you if you lived there? I know the science speaks otherwise in terms of depth, etc. But we are living in interesting times and people trust their government less and less. We often feel like victims, second to corporate interests.

Yes, I am an environmentalist as I imagine you are too. Why else would have signed on to the EPA? You have a difficult job to do. Please protect the water first and foremost.

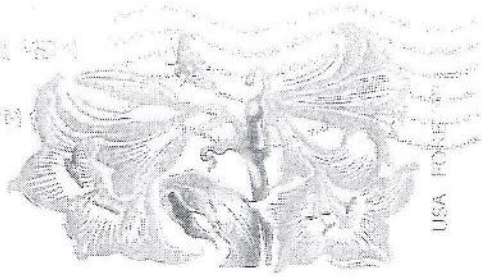
"Only when the last tree has died & the last river has been poisoned & the last fish has been caught will we realize that we cannot eat money"

Please choose wisely.

Thank you for your time...
Kathy Snooks
8059 Riley Road
Farwell, MI 48622
906-249-1020
snooks@ironbay.net

77

Mr. Matthew Stephenson
1010 W. Spruce St.
Harrison, MI 48625



WILLIAM TONG
U.S. EPA WATER DIV. (UIC BRANCH)
77 W. JACKSON BLVD.
CHICAGO, IL

TO: ATT: HAMILTON TWP. LAND SECTION WELL. 8-5-12.

DEAR MR. TONG,

HI, PLEASE EXTEND THE COMMENT PERIOD FOR THE NEW WELL.

THIS WILL AFFECT OUR DRINKING WATER + OF UP EXISTING WELLS. THIS IS A POOR AREA. PEOPLE DON'T HAVE MONEY TO REPLACE THESE WELLS.

THIS AREA RELIES ON OUR FRESH WATER LAKES & WILDERNESS FOR ECONOMIC PROSPERITY & FAMILY FARMS FOR FOOD. PLEASE CANCEL THIS PERMIT

Matt Stephenson

(77)


Michael and Diane Prior
2640 Ridge Rd
Harrison, MI 48625

Photos by John Penrod

The price of crude and shale oil is so low it is not economical to risk water pollution at Holcomb I-22 well # MI 035-2R-0034 in Clare county, MI. I read the wall street daily again, the risk outweighs the economics. Fresh water is worth more. There is no oil shortage.



AUG 10 2017

MR. William TONG

Post Card

U.S. EPA WATER DIV.
UIC BRANCH
(WU-16J)
77 W. Jackson Blvd.
Chicago, IL
60604

0 107199 3 11302

SPACE RESERVED FOR U.S. POSTAL SERVICE

78

## Tong, William

**From:** Linda Secco <linda.secco@gmail.com>
**Sent:** Thursday, August 10, 2017 6:46 PM
**To:** Tong, William
**Subject:** Townline and Athey Hamilton Township, mi

I am a resident at 7501 Lakeview Dr. Harrison Township, Mi. I am against the fracking plan. Please do not let this happen in my community.

Linda Secco

80

**Tong, William**

**From:** terrynmic@charter.net
**Sent:** Monday, August 14, 2017 1:20 PM
**To:** Tong, William
**Subject:** Holcomb 1-22 well

Hi! As a 40 year resident of Clare County, Michigan, I am strongly opposed to injection well drilling in Hamilton Township (the Holcomb 1-22 well). We demand a properly noticed hearing on the well, and that it be held in Hamilton Township, because that is where the well is.

It is a bad idea. All of the other "orphan" wells were "plugged" in a rediculous manner, if you can call it plugging. Now Muskegon Development Company wants to compound the potential risk and damage to the area.

Nobody seems to know where all of the old wells are, or in what shape they're in. It is a mess waiting to happen.

Thank you.

Terry Maki
9211 B Harrison Ave.
Farwell, MI 48622

81

## Tong, William

**From:** Bryan Cummings <bryan.cummings18@gmail.com>
**Sent:** Tuesday, August 15, 2017 1:22 PM
**To:** Tong, William
**Subject:** Objection Holocomb #1-22 well

I am Bryan Cummings Environmental Science Major working Environmental Health & Safety, commercial, industrial construction and this is the my back yard of my cottage. I absolutely object. As the owner has mentioned that the well is at its end. That being said, its dead **cap it**. Instead of me fumbling in my own words, I would like to offer the below article in the Clare County Review volume 70 # 15 the letter to the editor. I read the article and it holds all of my exact concerns. Please remember the well is dead per the owner's own admission. Why are we attempting anything that could cause real problems? We don't have enough information and certainty to proceed. Our water and land in the area is our natural resource. That is why my wife and I bought and plan to retire there. In the last 3 months we just put spent over $30,000 on remodel work on our property. Please don't make us find another location. Feel free to contact me with any questions or concerns. My contact information is below in my signature.

Proposed injection well is bad news for locals Environmental Quality who attended an August 3 township meeting, there are technically 3 producing wells.) In other words, Muskegon Development Company was allowed to provide its own numbers, and they say there are only 3 other wells nearby, only 2 of which are producing, and that these wells are perfectly safe. This isn't exactly the proverbial fox guarding the hen house; it's more like the fox auditing the hen house before it eats the chickens. The numbers Muskegon Development Company provided could easily be wrong. And I'm sure the company knows this. Hamilton Township has a history with the oil and gas industry that goes back at least to the 1930s. At the Hamilton Township Trustee Meeting held on August 3, 2017, it was acknowledged that there could be numerous old wells in the area that have been abandoned and forgotten. The industry refers to them as "orphan wells." These are OLD wells. And nobody seems to know where all of them are. They aren't on the maps. And we don't know how deep they are, either. Or how they were constructed. Or how many there are. There could be hundreds of these orphan wells. The Michigan Department of Environmental Quality acknowledged as much during the meeting, where, in response to the question of how many orphan wells were in the area, residents were told: "There could be wells in the area that we don't know exist. Only time will tell... I hope there's not." Reassuring, no? In addition to being hidden, these orphan wells are likely to be leaking. Modern oil and gas wells use steel and cement. Yet at least 6% – 7% of modern wells have failures upon installation, and that is a conservative estimate. One recent study conducted in the Marcellus region of Pennsylvania determined that 6.3% of wells drilled between 2005 and 2013 had "a well-barrier or integrity failure." This finding was consent with another recent study that put the failure rate at 6.2%. Another study, which included wells drilled in 2012 throughout the entire Marrcellus region, put the initial failure rate at 8.9%. Statistics from the United States Mineral Management Service indicate that, in the Gulf of Mexico, approximately 5% of all gas wells failed immediately. These are NEW wells. But the really scary part is that the rate of failure increases exponentially with age. According to the United States Mineral Management Service, by the second year of operation, over 20% of Gulf wells have failed. After 30 years, approximately 60% of wells have failed. But the old wells in Hamilton Township are obviously a little different. Back in the 1930s, 40s, and 50s, they used timber or corn posts in these wells, and they didn't seal them with steel and concrete. Actually, it was common practice to use garbage from the site to plug the well when they were done with it. At the township meeting held on August 3, a representative from the Michigan Department of Environmental Quality told us he had seen all sorts of crazy things used to plug old wells. "We've pulled up rope, we've pulled up wood, trash, you name it, we've pulled it up. Wrenches." He described the old process of plugging wells as such: "Basically, when they plugged these wells, that was part of the plan. We take everything we had here, and we put it in the hole." Does anyone really think these orphan wells that are literally plugged with garbage have withstood the test of time? Does anyone really know what will happen when they use high pressure to inject water into the ground underneath them? Hamilton Township has already had more than its share of problems with this industry. I know families in Hamilton Township who have dangerous methane levels in their well water, probably due to old wells. And I've heard plenty of the old stories of the mysterious exploding basements of Hamilton Township. But I'm sure the oil and gas industry, under the "supervision" of our various "regulatory" agencies, will get it right this time. Why wouldn't they? And we should defi- nitely have faith in the EPA. I mean, just because it couldn't even inform the township of the

correct meeting time for the July 25 public hearing on the draft permit for this operation (which, strangely, was held in Clare, not Hamilton Township), doesn't mean it shouldn't be trusted now to address the far more complicated issues of ground water contamination and orphan wells plugged with garbage. Forgive me for being skeptical. And very concerned. But there's hope. Because of the confusion regarding the meeting time, the EPA has extended the Public Comment Period for the proposed Class II Injection Well. We now have until August 18, 2017 to write or email the EPA with concerns. I encourage every resident of Clare County AND Gladwin County (because this affects you, too) to write the EPA. Demand a properlynoticed hearing on the Holcomb 1-22 well. Demand that this hearing be held in Hamilton Township, because the well is in Hamilton Township. Include all of your concerns in the letter, espe- cially your concerns that are grounded in science. And remember to include: "RE: Holcomb 1-22 well, #MI-035-2R-0034." Address your letters as follows: William Tong U.S. EPA, Water Division UIC Branch (WU – 16J) 77 W. Jackson Blvd. Chicago, IL 60604-3590 email: tong.william@ epa.gov RE: Holcomb 1-22 well, #MI-035-2R-0034 Sincerely, E. Joseph Addison

--

**Bryan Cummings**
Environmental Health & Safety Director/Professional/Consultant
DeWitt, MI: (USA)
517-819-2209
bryan.cummings18@gmail.com

## Tong, William

82

**From:** Andrew Verhage <verhage@msu.edu>
**Sent:** Tuesday, August 15, 2017 2:21 PM
**To:** Tong, William; verhage@msu.edu
**Subject:** Holcomb 1-22 well MI-035-2R-0034

Dear Mr. Tong,

We were unable to attend the July public comment meeting regarding the proposed Holcomb 1-22 injection well in Hamilton Township, Clare County, Michigan - we did not receive notice of the correct time and place. We live 6 miles south of this well in Arthur Township and have a ground well for our home's water supply.

We are greatly concerned about this proposal and ask the the EPA deny the request by the Muskegon Development Company to use water injection to recover more oil before capping the well. Our objections are based on the following points:

- There is definite risk of pollution to our freshwater aquifers which supply the drinking water to the residents of both Clare and Gladwin counties - with no resulting advantage to the public.
- Our supply of fresh water from the aquifers will be likely damaged by their unlimited draw of freshwater to be used in injecting the well - which is surely what they intend to do even though the application for that will go through Michigan Department of Environmental Quality and not EPA. Without the rapacious use of our public water resources the fracking will be economically unfeasible, and the public good should come first!
- There is a now known risk of earthquakes in areas that previously did not experience earthquakes at sites in the US where fracking has occurred. We expect our public officials who are responsible for protecting the public to be knowledgeable of this data and to act to protect us from man-caused earthquake risk.

After the tragic failure of the Michigan DEQ and EPA to protect the citizens of Flint from polluted public drinking water it would be very good if you could this time act on behalf of the citizens of our state to protect us from selfish and greedy requests by private companies who wish to profit at the public expense. Please deny the request by Muskegon Development Company.

Thank you,

Andrew & Perdita Verhage

9375 Amanda Drive

Clare, MI 48617

(83)

## Tong, William

**From:** Rick Fanslau <rickfanslau@gmail.com>
**Sent:** Thursday, August 17, 2017 4:58 PM
**To:** Tong, William
**Subject:** Holcomb 1-22 well,#MI-035-2R-0034

Mr. Tong, As a Hamitlton Township Clare County Michigan resident, in regards to the Holcomb 1-22 well I feel we need more information and meeting with the residence of the township.

## Tong, William

84

**From:** gxcube@verizon.net
**Sent:** Thursday, August 17, 2017 7:23 PM
**To:** Tong, William
**Subject:** Fwd: Holcomb 1-22 well, #MI-035-2R-0034

Dear Mr. Tong,
Our neighbors Richard and Margareth Malcolm who do not have e-mail also strongly oppose fracking in our area. We live here full time and do not want fracking and
well poisoning and subsequent earthquakes.
Richard and Margareth Malcom
5105 Lakewood Dr.
Harrison, MI 48625

gxcube@verizon.ne
t
-----Original Message-----
From: gxcube <gxcube@verizon.net>
To: tong.william <tong.william@epa.gov>
Sent: Thu, Aug 17, 2017 1:02 pm
Subject: re: Holcomb 1-22 well, #MI-035-2R-0034

Dear Mr. Tong,

I am appalled!!!! This can not be true. We moved here from California, bought a house a year and a half ago. We were happy to move to a nice quite area.
And now this: FRACKING!! All the wells will be poisoned and we can start getting earthquakes, just what we were running away from.....
Please let me know how this project can be stopped. If this happens we will have to try and sell the house. I am sure that most residents here are not aware of the consequences.
Best regards.

Gertrude Geeraerts
5101 Lakewood Dr.
Harrison, MI 48625
310-780-6349

gxcube@verizon.net

85

## Tong, William

**From:** Emerson Addison <joeaddison79@gmail.com>
**Sent:** Friday, August 18, 2017 1:07 PM
**To:** Tong, William
**Subject:** Holcomb 1-22 well, #MI-035-2R-0034
**Attachments:** Holcomb 1-22 well, #MI-035-2R-0034_comment_EJA.odt

Emerson Joseph Addison

17210 Maple Hill Drive

Northville, MI 48168

248-767-4465

emerson.addison@gmail.com

William Tong

U.S. EPA, Water Division

UIC Branch (WU – 16J)

77 W. Jackson Blvd.

Chicago, IL 60604-3590

tong.william@epa.gov

RE: Holcomb 1-22 well, #MI-035-2R-0034

William Tong,

I am writing to oppose the issuance of a Class II Injection Permit to Muskegon Development Company (Holcomb 1-22 well, #MI-035-2R-0034). I would also like to request new surveys and studies be done where and when appropriate, new permit applications required, and that this process be generally reset to the starting point, which should include a new public hearing, as there have been problems throughout the application process.

There are numerous problems with this permit application, but foremost among them are the large number of mistakes in the draft permit, the folly of allowing companies to provide their own numbers when applying for permits, the problem of undiscovered orphan wells in Hamilton Township, the alarming statistics on well failures, and the failure of the EPA to properly notify the community of the last public comment hearing.

First, I would like to draw attention to the fact that the draft permit provided by Muskegon Development Company contains at least 14 errors and inaccuracies, and therefore, should not be granted on legal grounds. This information was provided by the Michigan Citizens for Water Conservation. This group has already submitted a detailed listing of these mistakes to the EPA for the comment period. I would therefore like to include this group's findings in my official comments.

I would also like to point out that the claim that there are 2 producing wells within the 1/4 mile radius, which is made in the Draft Permit Application, is inaccurate. According to Coty Whithorn, the area geologist for the Michigan Department of Envinronmental Quality, there are technically 3 producing wells in this area.

I contend that, due to the presence of these errors, it is impossible to assess the full impact of this project. To better estimate the impact, the permit would have to be reapplied for, with the errors addressed and the application appropriately amended whenever necessary.

In addition to the numerous errors in the permit, I would also like to voice my concerns with several other aspects of the permit process.

The idea that a company would be allowed to provide its own data and studies for any part of the permit process is completely absurd. At no point in any permit application should a company be trusted to provide its own numbers. It should be obvious that Muskegon Development Company has a financial incentive for providing low and possibly inaccurate numbers.

Making matters worse, if approved, Muskegon Development Company will be trusted to self-monitor and file regular reports on well operation, as stipulated in the Draft Permit:

*Monitoring and Reporting Requirements: In accordance with 40 C.F.R. §§ 144.54 and*

*146.23, the applicant will be responsible for observing and recording injection pressure, flow*

*rate, annulus pressure, and cumulative volume on a weekly basis and reporting this to EPA on a*

*monthly basis. The applicant will also be responsible for observing, recording and reporting*

*annulus liquid loss on a quarterly basis. An analysis of the injected fluid must be submitted on*

*an annual basis. In addition, the applicant is required to conduct and pass a two-part Mechanical Integrity Test (MIT), in accordance with 40 C.F.R. § 146.8, before authorization to inject is granted, and after the well is completed. The applicant is also required to repeat the annulus pressure test, which is the first part of the MIT, at least once every five (5) years thereafter. If a temperature or noise log or another method as approved by the Director is used to determine the second part of the MIT (i.e., the absence of fluid movement), then the applicant will be required to repeat this test at least once every five (5) years thereafter. These tests will provide EPA with an evaluation of the integrity of the tubular goods (casing, tubing and packer) as well as documentation as to the absence or presence of fluid movement behind the casing.*

Once again, it is absurd to trust any business to self-regulate. Should problems occur, there is an obvious profit motive for negligence in monitoring, reporting, and even for taking corrective actions to address potential issues. Can the residents of Hamilton Township really trust this company to self-regulate? Even if Muskegon Development Company intends to be completely honest in its efforts, given the alarming number of errors and inaccuracies already observed in the Draft Permit, I question whether Muskegon Development Company is even *capable* of self-monitoring.

At the very least, I have already established that Muskegon Development Company has made many mistakes in the draft permit appication, so we know that this company has a tendency to report incorrect figures. But what really concerns me are the mistakes, inaccuracies, and omissions that we don't know about... yet. In particular, I am concerned about the issue of orphan wells in the area.

As the EPA is hopefully aware, Hamilton Township has a history with the oil and gas industry that goes back at least to the 1930s. This is a long and tumultous history. I personally know families in the area who have dangerous levels of methane in their drinking water; also, there are a number of incidents of exploding homes and basements due to old wells leaking methane and other gases.

Because of numerous problems relating to these orphan wells (such as inadequate plugs, substandard construction, and poor or non-existant monitoring), I believe it is extremely dangerous to grant this permit. Especially considering that techniques and standards for construction, operation, disposal conversion, and plugging have changed considerably. Often in the 30s and 40s, instead of plugging wells with cement and steel, they used garbage from the site and wooden poles, at least, that's what the area geologist for the Michigan Department of Environmental Quality, Mr. Whithorn, tells us.

*"Basically, when they plugged these wells, [disposing of garbage] was part of the plan. We take everything we had here, and we put it in the hole,"* Mr. Whithorn stated at a recent Hamilton Township meeting. He went on to describe his experiences with orphan wells, finding objects such as wrenches, garbage, and wooden poles. In other words, finding inadequate pluggings. *"We've pulled up rope, we've pulled up wood, trash, you name it, we've pulled it up. Wrenches."*

There are likely hundreds of these inadequately-plugged and abandoned wells that litter Hamilton Township, and it very possible that there are unknown orphan wells within the 1/4 mile radius.

John T. Fierst, the reference librarian in charge of the Michigan Oil and Gas News archives at the Central Michigan University Clarke Historical Library, which houses most of the records for oil and gas drillings in Hamilton Township, has stated that he is aware that independent researchers have discovered a number of orphan wells NOT included in most of the archives, and I am aware of the existence of orphan wells that are NOT included on the DEQ maps for Hamilton Township. Thus, it is very possible that Muskegon Development Company has failed to account for all the wells in the 1/4 mile AOR radius.

I would like to know if there is a plan to locate these orphan wells before this permit is issued and the injection well becomes operational. Or should we just chance it, and hope nothing bad happens, as the MDEQ seems to suggest.

During a Hamilton Township meeting, Mr. Whithorn (MDEQ geologist) recently stated:

*"there could be wells in the area that we don't know exist. Only time will tell... I hope there's not."*

Please tell me that this is not the EPA's plan, too.

If there is no plan to locate these orphan wells, I request that a full survey of the area be conducted to rule out the presence of orphan wells and ensure that all wells within the 1/4 mile AOR are adequately plugged.

It should also be noted that any undiscovered orphan wells in the area are almost certainly leaking. In fact, many of the the listed wells are likely to be leaking, perhaps even if they have been recently inspected (as wells deteriorate quickly).

I am sure you are aware of the statistics regarding well failures. I would like to draw your attention to some of the numbers I have come across:

A study featured in the January 2013 issue of *Physicians Scientists and Engineers for Healthy Energy, "FLUID MIGRATION MECHANISMS DUE TO FAULTY WELL DESIGN AND/OR CONSTRUCTION: AN OVERVIEW AND RECENT EXPERIENCES IN THE*

*PENNSYLVANIA MARCELLUS PLAY,"* estimated that approximately 6% – 7% of modern oil and gas wells have failures upon installation.

Another study, *Davies RJ, et al. (2014) Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. Mar Pet Geol, 10.1016/j.marpetgeo.2014.03.001,* which focused on the Marcellus region of Pennsylvania, determined that 6.3% of wells drilled between 2005 and 2013 had "a well-barrier or integrity failure."

This finding was consentent with the findings of *Ingraffea* (*Ingraffea AR, Wells MT, Santoro RL, Shonkoff SBC (2014), Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000–2012. Proc Natl Acad Sci USA 111:10955–10960*), who put the rate at 6.2%.

And the estimate of 8.9% is attained from the revised results of a survey of leaking wells drilled in 2012 throughout the entire Marrcellus region, in the Pennsylvania Marcellus play based on violations issued by the *DEP and well inspector comments* ( *Violations and comments data from* http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/OG_

*Compliance* ). This initial failure rate of 8.9% actually marks the third year in a row of worsening initial failure rates.

Statistics from the *United States Mineral Management Service* indicate that, in the Gulf of Mexico, approximately 5% of all gas wells failed immediately.

As I wrote in a recent article:

*These are NEW wells.*

*But the really scary part is that the rate of failure increases exponentially with age.*

*According to the United States Mineral Management Service, by the second year of operation, over 20% of Gulf wells have failed. After 30 years, approximately 60% of wells have failed.*

Although there may be differences between the wells in these studies and the orphan wells in Hamilton Township, we can't be certain what these differences might be. We know very little about these wells, but, given that many of them date back to the 1930s and 1940s, it is safe to assume that they are inadequate by modern standards and would fail to meet modern regulations.

In addition to the issues listed above, I would also like to demand a new public hearing on this matter on the grounds that the previous public hearing was improperly noticed and held at an inconvenient and at a location outside of Hamilton Township.

As noted in the EPA comment period extension announcement, which cited *Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c)*:

*Due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on our web site identified the conect day of the week for the hearing.*

I would like to also note that Hamilton Township is a rural community, one in which many residents lack reliable transportation or the ability or time to travel extra distance for a permit hearing. Therefore, I would like to request that the new public hearing be held in Hamilton Township.

Thank you for hearing my comments regarding Holcomb 1-22 well, #MI-035-2R-0034.

I am eager for your response.

Sincerely,

Emerson Joseph Addison III

(85) Attachment

Emerson Joseph Addison
17210 Maple Hill Drive
Northville, MI 48168
248-767-4465
emerson.addison@gmail.com

William Tong
U.S. EPA, Water Division
UIC Branch (WU – 16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590
tong.william@epa.gov

RE: Holcomb 1-22 well, #MI-035-2R-0034

William Tong,

I am writing to oppose the issuance of a Class II Injection Permit to Muskegon Development Company (Holcomb 1-22 well, #MI-035-2R-0034). I would also like to request new surveys and studies be done where and when appropriate, new permit applications required, and that this process be generally reset to the starting point, which should include a new public hearing, as there have been problems throughout the application process.

There are numerous problems with this permit application, but foremost among them are the large number of mistakes in the draft permit, the folly of allowing companies to provide their own numbers when applying for permits, the problem of undiscovered orphan wells in Hamilton Township, the alarming statistics on well failures, and the failure of the EPA to properly notify the community of the last public comment hearing.

First, I would like to draw attention to the fact that the draft permit provided by Muskegon Development Company contains at least 14 errors and inaccuracies, and therefore, should not be granted on legal grounds. This information was provided by the Michigan Citizens for Water Conservation. This group has already submitted a detailed listing of these mistakes to the EPA for the comment period. I would therefore like to include this group's findings in my official comments.

I would also like to point out that the claim that there are 2 producing wells within the 1/4 mile radius, which is made in the Draft Permit Application, is inaccurate. According to Coty Whithorn, the area geologist for the Michigan Department of Envinronmental Quality, there are technically 3 producing wells in this area.

I contend that, due to the presence of these errors, it is impossible to assess the full impact of this project. To better estimate the impact, the permit would have to be reapplied for, with the errors addressed and the application appropriately amended whenever necessary.

In addition to the numerous errors in the permit, I would also like to voice my concerns with several other aspects of the permit process.

The idea that a company would be allowed to provide its own data and studies for any part of the permit process is completely absurd. At no point in any permit application should a company be trusted to provide its own numbers. It should be obvious that Muskegon Development Company has a financial incentive for providing low and possibly inaccurate numbers.

Making matters worse, if approved, Muskegon Development Company will be trusted to self-monitor and file regular reports on well operation, as stipulated in the Draft Permit:

> *Monitoring and Reporting Requirements: In accordance with 40 C.F.R. §§ 144.54 and 146.23, the applicant will be responsible for observing and recording injection pressure, flow rate, annulus pressure, and cumulative volume on a weekly basis and reporting this to EPA on a monthly basis. The applicant will also be responsible for observing, recording and reporting annulus liquid loss on a quarterly basis. An analysis of the injected fluid must be submitted on an annual basis. In addition, the applicant is required to conduct and pass a two-part Mechanical Integrity Test (MIT), in accordance with 40 C.F.R. § 146.8, before authorization to inject is granted, and after the well is completed. The applicant is also required to repeat the annulus pressure test, which is the first part of the MIT, at least once every five (5) years thereafter. If a temperature or noise log or another method as approved by the Director is used to determine the second part of the MIT (i.e., the absence of fluid movement), then the applicant will be required to repeat this test at least once every five (5) years thereafter. These tests will provide EPA with an evaluation of the integrity of the tubular goods (casing, tubing and packer) as well as documentation as to the absence or presence of fluid movement behind the casing.*

Once again, it is absurd to trust any business to self-regulate. Should problems occur, there is an obvious profit motive for negligence in monitoring, reporting, and even for taking corrective actions to address potential issues. Can the residents of Hamilton Township really trust this company to self-regulate? Even if Muskegon Development Company intends to be completely honest in its efforts, given the alarming number of errors and inaccuracies already observed in the Draft Permit, I question whether Muskegon Development Company is even *capable* of self-monitoring.

At the very least, I have already established that Muskegon Development Company has made many mistakes in the draft permit appication, so we know that this company has a tendency to report incorrect figures. But what really concerns me are the mistakes, inaccuracies, and omissions that we don't know about... yet. In particular, I am concerned about the issue of orphan wells in the area.

As the EPA is hopefully aware, Hamilton Township has a history with the oil and gas industry that goes back at least to the 1930s. This is a long and tumultous history. I personally know families in the area who have dangerous levels of methane in their drinking water; also, there are a number of incidents of exploding homes and basements due to old wells leaking methane and other gases.

Because of numerous problems relating to these orphan wells (such as inadequate plugs, substandard construction, and poor or non-existant monitoring), I believe it is extremely dangerous to grant this permit. Especially considering that techniques and standards for construction, operation, disposal conversion, and plugging have changed considerably. Often in the 30s and 40s, instead of plugging

wells with cement and steel, they used garbage from the site and wooden poles, at least, that's what the area geologist for the Michigan Department of Environmental Quality, Mr. Whithorn, tells us.

*"Basically, when they plugged these wells, [disposing of garbage] was part of the plan. We take everything we had here, and we put it in the hole,"* Mr. Whithorn stated at a recent Hamilton Township meeting. He went on to describe his experiences with orphan wells, finding objects such as wrenches, garbage, and wooden poles. In other words, finding inadequate pluggings. *"We've pulled up rope, we've pulled up wood, trash, you name it, we've pulled it up. Wrenches."*

There are likely hundreds of these inadequately-plugged and abandoned wells that litter Hamilton Township, and it very possible that there are unknown orphan wells within the 1/4 mile radius.

John T. Fierst, the reference librarian in charge of the Michigan Oil and Gas News archives at the Central Michigan University Clarke Historical Library, which houses most of the records for oil and gas drillings in Hamilton Township, has stated that he is aware that independent researchers have discovered a number of orphan wells NOT included in most of the archives, and I am aware of the existence of orphan wells that are NOT included on the DEQ maps for Hamilton Township. Thus, it is very possible that Muskegon Development Company has failed to account for all the wells in the 1/4 mile AOR radius.

I would like to know if there is a plan to locate these orphan wells before this permit is issued and the injection well becomes operational. Or should we just chance it, and hope nothing bad happens, as the MDEQ seems to suggest.

During a Hamilton Township meeting, Mr. Whithorn (MDEQ geologist) recently stated:

*"there could be wells in the area that we don't know exist. Only time will tell... I hope there's not."*

Please tell me that this is not the EPA's plan, too.

If there is no plan to locate these orphan wells, I request that a full survey of the area be conducted to rule out the presence of orphan wells and ensure that all wells within the 1/4 mile AOR are adequately plugged.

It should also be noted that any undiscovered orphan wells in the area are almost certainly leaking. In fact, many of the the listed wells are likely to be leaking, perhaps even if they have been recently inspected (as wells deteriorate quickly).

I am sure you are aware of the statistics regarding well failures. I would like to draw your attention to some of the numbers I have come across:

A study featured in the January 2013 issue of *Physicians Scientists and Engineers for Healthy Energy, "FLUID MIGRATION MECHANISMS DUE TO FAULTY WELL DESIGN AND/OR CONSTRUCTION: AN OVERVIEW AND RECENT EXPERIENCES IN THE PENNSYLVANIA MARCELLUS PLAY,"* estimated that approximately 6% – 7% of modern oil and gas wells have failures upon installation.

Another study, *Davies RJ, et al. (2014) Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. Mar Pet Geol, 10.1016/j.marpetgeo.2014.03.001,* which focused

on the Marcellus region of Pennsylvania, determined that 6.3% of wells drilled between 2005 and 2013 had "a well-barrier or integrity failure."

This finding was consentent with the findings of *Ingraffea* (*Ingraffea AR, Wells MT, Santoro RL, Shonkoff SBC (2014), Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000–2012. Proc Natl Acad Sci USA 111:10955–10960*), who put the rate at 6.2%.

And the estimate of 8.9% is attained from the revised results of a survey of leaking wells drilled in 2012 throughout the entire Marcellus region, in the Pennsylvania Marcellus play based on violations issued by the *DEP and well inspector comments* ( *Violations and comments data from http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/OG_Compliance* ). This initial failure rate of 8.9% actually marks the third year in a row of worsening initial failure rates.

Statistics from the *United States Mineral Management Service* indicate that, in the Gulf of Mexico, approximately 5% of all gas wells failed immediately.

As I wrote in a recent article:

> *These are NEW wells.*
>
> *But the really scary part is that the rate of failure increases exponentially with age.*
>
> *According to the United States Mineral Management Service, by the second year of operation, over 20% of Gulf wells have failed. After 30 years, approximately 60% of wells have failed.*

Although there may be differences between the wells in these studies and the orphan wells in Hamilton Township, we can't be certain what these differences might be. We know very little about these wells, but, given that many of them date back to the 1930s and 1940s, it is safe to assume that they are inadequate by modern standards and would fail to meet modern regulations.

In addition to the issues listed above, I would also like to demand a new public hearing on this matter on the grounds that the previous public hearing was improperly noticed and held at an inconvenient and at a location outside of Hamilton Township.

As noted in the EPA comment period extension announcement, which cited *Title 40 of the Code of Federal Regulations§§ 124.10 and 124.12(c)*:

> *Due to an error in the notice for the public hearing that certain parties received via the U.S. Postal Service. In that notice, EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The hearing took place on Tuesday, July 25, 2017. The notice that EPA published in the Clare County Review and on our web site identified the conect day of the week for the hearing.*

I would like to also note that Hamilton Township is a rural community, one in which many residents lack reliable transportation or the ability or time to travel extra distance for a permit hearing. Therefore, I would like to request that the new public hearing be held in Hamilton Township.

Thank you for hearing my comments regarding Holcomb 1-22 well, #MI-035-2R-0034.

I am eager for your response.

Sincerely,

Emerson Joseph Addison III
Community Member and Concerned Citizen

(86)

## Tong, William

**From:** Letha Raymond <lethajr@gmail.com>
**Sent:** Friday, August 18, 2017 1:08 PM
**To:** Tong, William
**Cc:** JasonWentworth@house.mi.gov; Karen Turnbull
**Subject:** Public Comment - Permit Number: MI-035-2R-0034. Holcomb 1-22 well, Hamilton Twp, Clare County, MI
**Attachments:** MCWC HolcombWell Clare EPA Letter 7-24-17.pdf; EPA Public Comment - Holcomb 1-22 Injection Well draft permit.docx

Letha Raymond, 10537 Hemlock Ave., Lake, MI 48632

August 18, 2017

William Tong, U.S. EPA, Water Division, UIC Branch (WU-16J), 77 W. Jackson Blvd., Chicago, IL 60604-3590, Tong.william@epa.gov

RE: Permit Number: MI-035-2R-0034; Holcomb 1-22 well

Dear Mr. Tong:

I am writing to oppose the issuance of a Class II Injection well permit to Muskegon Development Company for Holcomb 1-22 in Hamilton Township, Clare County, Michigan( #MI-035-2R-0034).

There are multiple problems with this permit application; the large number of mistakes in the draft permit, the potential for undiscovered ancient/orphan wells in Hamilton Township, the failure of the Environmental Protection Agency (EPA) to properly notify the community of the public hearing, the alarming statistics on well failures, and the weakness in the process that requires and allows the use of data submitted by the permit applicant, rather than the EPA and MI Department of Environmental Quality (DEQ) obtaining and maintaining their data. Due to these errors, how can the EPA assess the full impact of this project? To properly estimate the impact, the permit would have to be reapplied for, with the errors addressed.

The draft permit lists one (1) plugged and abandoned well within the ¼ mile radius of the Area of Review (AOR). However, the MI DEQ GeoWebFace map shows a plugged and abandoned well just north of the west edge of Decker Lake. This well appears to be within ¼ of the Holcomb 1-22 well. If it is not, it is beyond ¼ mile by just a few feet, and given the extremely small radius of the area of review (AOR) that a permit applicant must address, it would be in keeping with the spirit of the law to include this well in the AOR as well.

There are at least 14 errors and inaccuracies in the permit application submitted by the Muskegon Development Company. This permit should not be granted on legal grounds. The Michigan Citizens for Water Conservation has already submitted a detailed list of these errors to the EPA during the comment period (please see attached). I would like to include this group's findings in my official comments.

According to area geologist for the MI DEQ, Cody Withorn, there are technically three producing wells in the AOR, not two, as stated in the draft permit.

I am very concerned about ancient wells unknown to the EPA and to the DEQ and the unintended leaks that may result when this area is exposed to the high pressure of the injection well. When asked about old wells unknown to the DEQ, Mr. Withorn answered at the August 3rd Hamilton Township meeting *"There could be wells in the area that we don't know exist. Only time will tell... I hope there's not."* Is there a plan to locate these orphan wells before this permit is

issued and the injection well becomes operational? Will the EPA require a survey to assure that all ancient/orphan wells have been found and properly closed? To fail to do so would be taking a highly inappropriate chance.

I have been researching the microfilm Oil and Gas News, Mt. Pleasant, housed at Central Michigan University's Clarke Historical Library, and have found several wells close to the Holcomb 1-22 well. It is difficult for me to tell if the DEQ is already aware of these wells. These wells were drilled in the 1930s and 1940s, a time when well drilling and closing standards were far from what is required today. We know that the DEQ has found ancient and improperly closed wells; wells plugged with garbage, timbers, whatever was available to fill the hole, rather than the cement and steel that is required today. Taking this into consideration along with well failure statistics of modern wells, leaves an alarming question as to whether or not this area is truly appropriate for injection wells and the high pressure used in such wells.

I am appalled that the regulations of the permitting process leaves the EPA and DEQ to rely on data submitted by the permit applicant and that the EPA and DEQ do not obtain and maintain their own dat

I am sure you have the following references regarding well failure statistics. I would like to draw your attention to these references and include them in my comments. These statistics pertain to modern wells and serve to drive home the importance of assuring all ancient/orphan wells are found and adequately tested prior to approving any injection well permit:

- A study featured in the January 2013 issue of *Physicians Scientists and Engineers for Healthy Energy, "FLUID MIGRATION MECHANISMS DUE TO FAULTY WELL DESIGN AND/OR CONSTRUCTION: AN OVERVIEW AND RECENT EXPERIENCES IN THE PENNSYLVANIA MARCELLUS PLAY,"*estimated that approximately 6% – 7% of modern oil and gas wells have failures upon installation.

- Another study, *Davies RJ, et al. (2014) Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. Mar Pet Geol, 10.1016/j.marpetgeo.2014.03.001,* which focused on the Marcellus region of Pennsylvania, determined that 6.3% of wells drilled between 2005 and 2013 had "a well-barrier or integrity failure."

- This finding was consistent with the findings of *Ingraffea (Ingraffea AR, Wells MT, Santoro RL, Shonkoff SBC (2014), Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000–2012. Proc Natl Acad Sci USA 111:10955–10960*), who put the rate at 6.2%.

- And the estimate of 8.9% is attained from the revised results of a survey of leaking wells drilled in 2012 throughout the entire Marrcellus region, in the Pennsylvania Marcellus play based on violations issued by the *DEP and well inspector comments ( Violations and comments data fromhttp://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/OG_Compliance* ). This initial failure rate of 8.9% actually marks the third year in a row of worsening initial failure rates.

- Statistics from the *United States Mineral Management Service* indicate that, in the Gulf of Mexico, approximately 5% of all gas wells failed immediately.

There was an issue with the communication of the public hearing regarding this permit. In that notice, the EPA erroneously identified July 25, 2017 as a Thursday instead of a Tuesday. The address of the hearing location was also incorrect. While it seems clear that new surveys and studies should be done and a new permit application required, this process should really begin back at the beginning and a new public hearing held. The July 25 hearing was improperly noticed and held a location inconvenient to many Hamilton Township residents. The hearing should be held in Hamilton Township, a rural community where some community members lack the ability to travel a distance to participate in the hearing.

I am highly concerned about the impact of the infinite withdrawal of fresh groundwater on area drinking water wells. It is the EPA's job to protect our drinking water. Mr. Withorn stated that the DEQ does not yet have the hydraulic study needed to answer this question. The required hydraulic study would be conducted and provided by the Muskegon Development Co.; the permit applicant for the injection well. Given that the EPA is charged with protecting our drinking water, the process of considering a permit that addresses only the quality of drinking water and not the continued availability of drinking water seems to miss the mark. The proposed permit would place no limit on the amount of water that can be withdrawn to be used in the injection well process; fresh water that will never be fresh water again, but will become brine. At this point, neither the EPA nor the DEQ can tell us definitively that area residents will not lose their well water due to this infinite withdrawal of fresh ground water.

The potential impact on the availability of drinking water for area residents, the potential for area drinking water to be contaminated due to improperly closed ancient/orphan wells and the potential failure of the new injection well, and the errors in the draft application, result in multiple reasons for the EPA to deny this permit.

Thank you for hearing my comments regarding *Holcomb 1-22 well, #MI-035-2R-0034.*

I look forward to your response.

Sincerely,

Letha Raymond

Clare County Resident and Concerned Citizen

Encl.

(86) Attachment

Michigan Citizens for Water Conservation

July 23, 2017

To: William Tong
U.S. EPA, Water Division
UIC Branch (WU-16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590 tong.william@epa.gov

From: Michigan Citizens for Water Conservation

RE: Holcomb 1-22 well, Permit # MI-035-2R-0034
Hamilton Township, Clare County, Michigan

Michigan Citizens for Water Conservation (MCWC) is **opposed to the issuance of a Class II injection Well permit for Holcomb 1-22 in Clare County**, Michigan without satisfactory resolve of the following issues and questions.

First, and foremost MCWC believes it is not legal for the EPA to issue any more Class II injection well permits in Michigan without a prior substantial EPA effort to address the existing permitted and unmonitored injection wells in Michigan. Permitting without a realistic expectation of the monitoring required by federal law is a violation of that same law, the Federal Safe Drinking Water Act.

MCWC is opposed to the infinite nature of these permits once granted. In March of 2016, the United States Geological Survey issued a major finding that injection wells can cause earthquakes. The EPA has not incorporated that finding into it's injection well permitting activities. Considering the USGS finding, **infinity** is not a realistic or safe limit on injection well permits. MCWC insists it is imperative the EPA develop a safe and realistic limit for the total amount of wastes injected allowed by EPA for each permit. Until the **infinity limit** problem is addressed, the EPA can not legally issue injection well permits without violating both the letter and spirit of the Safe Drinking Water Act.

MCWC has the following **specific issues** and/or questions concerning the pending Class II injection well permit for **Holcomb 1-22** in Clare County, Michigan.

**Basic ownership and facts**:
Jerry and Mary Holcomb; application for replacement to old well on former drilling unit on June 30, 2008 by Northern Explorations, LLC; Sugarland, Texas. Permitted as oil/gas well on Amhurstberg formation @ 5200 total vertical depth. Reference for facts is Permit on Internet from 2008

Pursuant **R324.301 General Rule** for 40 acres (unit) Special spacing with 80 acres drilling unit

was applied for to achieve an 80-acre unit to include the array of existing oil wells for the Fanslau Unit with a "Fanslau Unit Spatial Interest" as contained on page 33 of 70 pages of the Permit application. A concern was cited and not addressed for how close the new well would be from the unit drilling lines and as various conditions cited in Part 615 of the Rules.

From DEQ EQP 7200-7 form only a year after sluggish production, a transfer permit was granted to Muskegon Development Company of Mt. Pleasant. This Company is renown for injection activities. Filed 4/07/09. Where is the application for brine injection? Or did the injection refer to high pressure water to manipulate field pressure and get past lackluster production.

**Questions /concerns:**

1) EIA is furnished by William Sikkema, an Osceola County Surveyor. The portion of Permit in 2008 does not actually make a certifying statement that it will not impact the environment. It cites soil makeup and various topographic consideration in an elaborate Plot Plan. Surveyors are not qualified to make such EIA and perhaps, Mr. Sikkema readily acknowledged this by the omission. The certifying statement must be reviewed for compliance.

2) Proposed construction of a flow line routed along a new well access is depicted on the Plot Plan but no statement as what will be done with the old flow line is made. Without removal of the old flow line there exists the potential safety hazard of trapped volatile liquids that could make this field unsafe.

3) Plot Plan depicts secondary wetlands due east as part of the Cedar Creek watershed, but fails to indicate the broader pattern outlying Decker Lake. This statement is not accurate.

4) The **Cranberry and Cedar Creeks** greater confluence is also impacted by the proposed gas plant upon the Michigan Gas Storage property in nearby Sec 8 to the Northwest. Would it have been better on the Plot Plan to cite conditions slightly beyond the ¼ Mile Zone? Is this not the real influence and spirit of the 615 Rules?

5) There is no reference for **H2S** potency other than it is believed to be somewhat less than 330 parts per million; though the full contingency of emergency evac and blow out preventer forms are compiled in the Permit. The permit needs to contain real data not the beliefs of the applicant.

6) What is the plan for water well monitoring beyond the specific site of Holcomb?

7) An actual EIA must be provided via a qualified Environmentalist or professional?

8) Primary wetlands are at 1400 feet east/southeast abutting Decker Lake. They are not depicted and need to be.

9) Decker Lake needs to be depicted upon a revised Plot Plan for this new Permit.

10) As part of a revised EVAC plan, wind socks need to be secured at least 20 feet above facilities?

11) Independent Lab evaluations need to make a chemical analysis of this site.

12) The westerly extremity of Decker Lake scales at 1340 feet from the Holcomb well and is not depicted in the application.

13) Area has a confining impact for H2S migration in the surrounding woods. The size of the opening in the woods needs to be depicted in the application.

14) Proposed 3238 psig for injection is highly dangerous and unsafe without safety measures. What are the safety precautions proposed by the applicant?

In consideration of the omissions and errors contained in this application, MCWC believes this permit application should be returned to the applicant for completion prior to further EPA approval considerations. Thank you.

Sincerely,

Peggy Case, President
Jeff Ostahowski, VP
Glenna Maneke, Treasurer
Karen Turnbull, Secretary
Board Members: John McLane, Pam Gilbert, Wendy Nystrom, Shannon Abbott, Diane Weckerle, Linda Travis.

Michigan Citizens for Water Conservation
P.O. Box 1
Mecosta, MI 49332

michiganCwaterC@gmail.com

(87)

**Tong, William**

**From:** Martin Johnson <mpjohnson3@sbcglobal.net>
**Sent:** Friday, August 18, 2017 3:18 PM
**To:** Tong, William
**Subject:** Re: Holcomb 1-22 well, #MI-035-2R-0034

Mr. Tong:

I am writing to state that I am not in favor of the injection well at this site if there is a chance that any old oil or gas wells exist in the area that are unknown and thus may not have been properly capped. My concern is that the gas is will be forced up by the water may enter those old wells along with the ones Muskegon Development wishes to use, and thus contaminate the water supply of residents.

Thank you for your time.

Martin Johnson
7271 Springwood Lake Rd
Harrison, MI 48625

88

## Tong, William

**From:** Stephanie Terpening <stephterpening@gmail.com>
**Sent:** Friday, August 18, 2017 4:26 PM
**To:** Tong, William
**Cc:** Letha Raymond; Dad Terp; Mom Terp; jennifer raymond; admin@caccmi.org; Sheryl
**Subject:** Holcomb 1-22 well, #MI-035-2R-0034

Mr. Tong,
I am writing you today with great concerns about the proposed injection well in Hamilton township, Clare county, MI ( Holcomb 1-22 well, #MI-035-2R-0034). I attended the EPA hearing on Tuesday, July 25th at Clare High School that was intended to inform the public about the application for this permit. I was grateful that the Citizens for Alternatives to Chemical Contamination alerted me of the actual time and day for this meeting, as the EPA website and local paper both published that this meeting was to be held on Thursday that week. However any meetings regarding this proposed project should have been held in Hamilton township. Many of the residents of Hamilton township do not have enough money or resources to drive 35-40 minutes to go to an EPA hearing, but they are very concerned about this permit and they deserve to be adequately informed in a more convenient location that is in closer proximity to the proposed injection well site.

I appreciate that the EPA was willing to extend the public comment window, but I feel that an additional public hearing is crucial for the residents who live near this proposed injection well.

I also ask you to consider doing a much more thorough survey of the 1/4 mile radius around this well site. I spent a good amount of time this past week searching historic oil and gas drilling records for Hamilton township. There are several orphan wells in the area that have likely not been sealed properly, which makes me very concerned about the safety of the drinking water in the immediate area surrounding this proposed injection well site. With the help of Michigan Citizens for water conservation and Citizens for Alternatives to Chemical Contamination, we discovered several orphan wells in section 24 and section 15 of the township that were not disclosed my Muskegon Development company. While none of them were in the immediate quarter mile radius around the site, there were several that were alarmingly close. I feel that more research needs to be done by the EPA before a permit is issued for this injection well. Muskegon Development Company had 14 inaccuracies in their permit application, so I do not feel that it is safe for you to trust that they will be forth coming in their reporting process, which is why this permit should be denied.

More time is needed to collect further data on the history of drilling in the area, and to inform the public of the details of this project before you move forward with it.

Thank you for your time,
Stephanie Terpening
Clare County Resident

Sent from my iPhone

## Tong, William

(89)

**From:** LuAnne Kozma <luannekozma@gmail.com>
**Sent:** Friday, August 18, 2017 9:49 PM
**To:** Tong, William
**Cc:** Ellis Boal
**Subject:** RE: Holcomb 1-22 weel, #MI035-2R-0034
**Attachments:** Terry Lodge Comments to USEPA Regarding Fracking May 22, 2015.pdf

August 18, 2017

William Tong
U.S. EPA, Water Division
UIC Branch (WU – 16J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590
tong.william@epa.gov

RE: Holcomb 1-22 well, #MI-035-2R-0034

Dear Mr. Tong:

I write to oppose the issuance of a Class II Injection Permit to Muskegon Development Company (Holcomb 1-22 well, #MI-035-2R-0034). EPA should and must deny the permit.

My comments and questions are regarding the failure of EPA to hold a properly noticed public hearing, as well as process, geologic siting, well engineering, and operation and monitoring standards.

**The EPA must hold a properly-noticed hearing for the public.**

With both the date and place stated **incorrectly** in the newspaper, the public did not receive proper legal notice and therefore a new, properly-noticed hearing must be held. Many people who would have participated had no opportunity to do so. EPA has already determined that a hearing is necessary. But a properly-noticed hearing was not held. An extended comment period is not a hearing. It certainly is not the same as a community-based meeting in which people can interact with EPA and others in the community, learn about the proposal, ask questions and have questions answered, and then relay their concerns. The EPA needs to deny the current permit and hold another public hearing so that the public can have further information about:

Major concerns about the health and environmental impacts of the proposed well include:

-the danger of H2S gas that could permanently poison and harm the health of people in the area

-orphan wells in the area

-core samples that must be taken as described at the hearing so that it can be determined if recent earthquakes in Michigan have altered the geology affecting the Holcomb well

--the radioactivity of any proposed waste materials projected to go into the Holcomb well

--well casing failures in Michigan. The question was asked of the EPA at a recent hearing in Barry County (Michigan): What is the injection well failure rate of Michigan's injection wells, and the EPA staff's answer was that they did not know it. The public deserves to have that information prior to a public hearing.

**Hydrogen Sulfide Gas:**

The likelihood of H2S gas being present is a clear and present danger to the community. EPA must conduct health impact studies to the community should the well or wells affected by the Holcomb well emit this dangerous, lethal gas into the atmosphere. Michigan is a high hydrogen sulfide area. It endangers the communities and workers alike. People are permanently poisoned by exposure to H2S.

I place into the record the following studies on H2S, with links provided.

1. Skritc, Lana. "Hydrogen Sulfide, Oil and Gas and People's Health," Energy and Resource Group, University of California Berkeley, 2006.

LINK: http://banmichiganfracking.org/wp-content/uploads/2014/07/HEALTH-Hydrogen_sulfide_from_oilgas_report1.pdf

2. Schindler, Dana, *Survey of Accidental and Intentional Hydrogen Sulfide (H2S) Releases Causing Evacuations and/or Injury in Manistee and Mason Counties from 1980 to 2002*, March 2002.
LINK: http://banmichiganfracking.org/wp-content/uploads/2014/07/MichiganReport-HydrogenSulfideReleases.pdf

Also: Kilburn, Kaye, *Brain Robber: The Poisoning of America by Rotten Egg Gas* (Westport, CT: Greenwood Publishing, 2011.

**Orphan Wells in the Area:**

I incorporate the concerns about orphan wells in the immediate area expressed by Emerson Joseph Addison, who wrote:

> Because of numerous problems relating to these orphan wells (such as inadequate plugs, substandard construction, and poor or non-existant monitoring), I believe it is extremely dangerous to grant this permit. Especially considering that techniques and standards for construction, operation, disposal conversion, and plugging have changed considerably. Often in the 30s and 40s, instead of plugging wells with cement and steel, they used garbage from the site and wooden poles, at least, that's what the area geologist for the Michigan Department of Environmental Quality, Mr. Whithorn, tells us.
>
> *"Basically, when they plugged these wells, [disposing of garbage] was part of the plan. We take everything we had here, and we put it in the hole,"* Mr. Whithorn stated at a recent Hamilton Township meeting. He went on to describe his experiences with orphan wells, finding objects such as wrenches, garbage, and wooden poles. In other words, finding inadequate pluggings. *"We've pulled up rope, we've pulled up wood, trash, you name it, we've pulled it up. Wrenches."*
>
> There are likely hundreds of these inadequately-plugged and abandoned wells that litter Hamilton Township, and it very possible that there are unknown orphan wells within the 1/4 mile radius.
>
> John T. Fierst, the reference librarian in charge of the Michigan Oil and Gas News archives at the Central Michigan University Clarke Historical Library, which houses most of the records for oil and gas drillings in Hamilton Township, has stated that he is aware that independent researchers have discovered a number of orphan wells NOT included in most of the archives, and I am aware of the existence of orphan wells that are NOT included on the DEQ maps for Hamilton Township. Thus, it is very possible that Muskegon Development Company has failed to account for all the wells in the 1/4 mile radius.

I agree with Mr. Addison that a full survey of the area be conducted to locate orphan wells and make sure that they are adequately plugged and if they are in fact leaking from well casing failure or other failure.

**Core Samples**

Earthquakes in Michigan were felt in the past few years. Core samples of the Holcomb well need to be taken to determine if there was any effect on the well casing integrity due to this seismic activity. Given that the USGS has found that injection wells do in fact cause earthquakes, EPA needs to take the entirety of Michigan's existing oil and gas wells and injection wells into account ,and do a complete survey of orphan wells and their conditions, before issuing any new injection well permits.

See LINK: https://www.usgs.gov/news/new-usgs-maps-identify-potential-ground-shaking-hazards-2017

**Radioactivity**

EPA fails to analyze Class II injection wells' waste stream, including this one, for the radioactivity which permeates oil and gas drilling wastes. Regardless of whether an injection well's engineering allows it to leak, there is no safeguard against radioactive contamination.

There is no showing of any scrutiny of the question of whether any drill wastes will be contaminated routinely with "radioactive waste," which is defined at 40 C.F.R. § 144.3 as "any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR part 20, appendix B, table II, column 2." The referenced table and column specify threshold contamination levels for Ra-226, Ra-228, several Uranium isotopes associated with drilling wastes, and Th-232. It is incumbent upon the EPA to require sourced, predictive information of the likely radiological characteristics of the waste stream before a permit can even be considered for the proposed site. An entirely new permit must then be required of the operator, and the new process should afford the public the opportunity to scrutinize the underlying radioactive waste data along with another public hearing.

See the entire letter by Terry Lodge to the EPA, attached to this email.

A compilation by attorney Rachel Treichler of studies and articles on radioactive frack waste, including liquid wastes that are sent to injection wells can be found here: **http://treichlerlawoffice.com/radiation/**

Individual Studies and articles:

**Oil and Gas Wastes are Radioactive – and Lack Regulatory Oversight**

LINK: https://www.fractracker.org/2017/03/oil-gas-wastes-radioactive-regulation/

**No Time to Waste: Effective Management of Oil & Gas Field Radioactive Waste** LINK: http://www.notimetowastereport.org

**Fracking Produces More Radioactive Waste than Nuclear Power Plants**

LINK: http://www.alternet.org/environment/fracking-can-expose-you-radioactive-waste-even-youre-far-away-drilling-site?akid=11773.1242108.f57YDQ&rd=1&src=newsletter988709&t=3&paging=off&current_page=1#bookmark

**Hot Mess: States Struggle to Deal with Radioactive Fracking Waste**

LINK: https://www.commondreams.org/news/2016/06/20/hot-mess-states-struggle-deal-radioactive-fracking-waste

University of Missouri: ***Endocrine Disrupting Activity in Surface Water Associated with a West Virginia Oil and Gas Industry Wastewater Injection Disposal Site, Science of the Total Environment.***

LINK: http://www.ecowatch.com/high-levels-of-endocrine-disrupting-chemicals-found-near-fracking-wast-1891078193.html

**Terry Jonathan Lodge, public comment letter to EPA** re Trendwell Energy Corp's Secord #D4-18 SWD well draft permit #MI-115-2D-0001, May 22, 2015. (ATTACHED)

**Wasting Away: Four states' failure to manage gas and oil field waste from the Marcellus and Utica Shale.** Earthworks.

LINK: https://www.earthworksaction.org/files/publications/WastingAway-FINAL-lowres.pdf

**My Questions:**

*Regarding geologic siting, what is the capacity of the targeted geologic formation for the Holcomb well to take radioactive waste from other formations and other drilling operations? Will the permit allow the operator to take such wastes in the future?

*Does EPA monitor the radioactivity of the injectates going into an injection well or the radioactivity of the injection well site?

**Injection Well Failure in Michigan and elsewhere**

Injection well integrity does fail and the toxic materials inside the wells do reach and contaminate the water supply. I put the following studies by Dr. Ingraffea and others into the record on this topic:

*Regarding well engineering in Michigan: EPA monitors injection wells throughout the state. What is the well casing failure rate of Michigan's injection wells? What is the likelihood based on EPA's monitoring of Michigan injection wells that the proposed Holcomb injection well will fail in 10 years? In 20 years? In 100 years? Forever? EPA should require the operator to post a bond high enough that if contamination happens, ever, that will pay to clean up contaminations.

*In a 2012 investigative report by ProPublica, EPA groundwater specialist Gregory Oberley is quoted as saying "It's assumed that the monitoring rules and requirement are in place and are protective—that's assumed.... You're not going to know what's going on until someone's well is contaminated and they are complaining about it." What is your response to Mr. Obereley's observation about the necessity of a contamination coming to light as your first indication that something is wrong?

*What studies have you done to see if old and/or abandoned wells and existing other wells in the same formation will not intersect with the proposed well. Because if they do intersect, whatever you are saying about the so-called "natural protections" of the geology of target formation for the Holcomb well no longer exist.

I urge EPA to reject the permit well because of the known rates of well-casing failures. Because all well casings of injection wells (and frack wells) eventually fail--some right away, some in a few years, and all eventually--this guarantees that the toxic waste in the injection well will eventually endanger drinking water and aquifers.

I put the following scientific study by Anthony Ingraffea, Ph.D., P.E., into the record:

"Fluid Migration Mechanisms Due to Faulty Well Design and/or Construction: An Overview and Recent Experiences in the Pennsylvania Marcellus Play," January 2013. Physicians, Scientists & Engineers for Healthy Energy.

**LINK: http://www.psehealthyenergy.org/data/PSE_Cement_Failure_Causes_and_Rate_Analaysis_Jan_2013_Ingraffea1.pdf**

I also submit the same study as it appeared in Proceedings of the National Academy of Sciences in the following link. The abstract of the report is attached, and I put the entire study into the record by way of the link below:

Ingraffea, A., Wells, M., Santoro, R., & Shonkoff, S. Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000–2012. *Proceedings of the National Academy of Sciences*. doi: 10.1073/pnas,
LINK: http://www.pnas.org/content/early/2014/06/25/1323422111.

"Injection Wells: The Poison Beneath Us" by Abrahm Lustgarten, by way of this link, and it is attached to this email. Abrahm Lustgarten, "Injection Wells: The Poison Beneath Us." ProPublica, June 21, 2012.

LINK: http://www.propublica.org/article/injection-wells-the-poison-beneath-us

EPA Report on Fracking, December 13, 2016, specifically says injection wells are a source of contamination.
Press release: https://www.epa.gov/newsreleases/epa-releases-final-report-impacts-hydraulic-fracturing-activities-drinking-water
Report link: https://www.epa.gov/hfstudy

**Reversing Course, E.P.A. Says Fracking Can Contaminate Drinking Water, New York Times, Dec 13, 2016.**

LINK: https://www.nytimes.com/2016/12/13/us/reversing-course-epa-says-fracking-can-contaminate-drinking-water.html?_r=0

Finally, I give the following comments regarding the known failures of injection wells and the resulting leaks into groundwater.

Engineering
Structurally, a disposal well is the same as an oil or gas well: tubes of concrete and steel extend from a few hundred feet to two miles into the earth. At the bottom, the well opens into a natural rock formation, with no container. Waste seeps out, "filling tiny spaces left between the grains in the rock like the gaps between stacked marbles," according to ProPublica.[3]

**Structural failures**
A ProPublica review of well records, case histories, and government summaries of more than 220,000 well inspections from October 2007 to October 2010 found that structural failures inside injection wells are routine. From late 2007 to late 2010, one well integrity violation was issued for every six deep injection wells examined — more than 17,000 violations nationally. More than 7,000 wells showed signs that their walls were leaking. Records also showed wells are frequently operated in violation of safety regulations and under conditions that greatly increase the risk of fluid leakage and the threat of water contamination. ProPublica's analysis showed that, when an injection well fails, it is most often because of holes or cracks in the well structure itself.[3]

Injection and waste migration
Once wastewater is underground, there are few ways to track how far it goes, how quickly, or where it winds up, raising concerns that it may migrate upward back to the surface. The hard data that does exist comes from well inspections conducted by federal and state regulators, who can issue citations to operators for injecting illegally, for not maintaining wells, or for operating wells at unsafe pressures, yet the EPA has acknowledged that it has done very little with the data it collects.[3]

A 1987 General Accountability Office review tallied ten cases in which waste had migrated from Class I hazardous waste wells into underground aquifers. Two of those aquifers were considered potential drinking water sources. In 1989, the GAO reported 23 more cases in seven states where oil and gas injection wells had failed and polluted aquifers. After the findings, the federal government drafted more rules aimed at strengthening the injection program. The government outlawed certain types of wells above or near drinking water aquifers, mandating that most industrial waste be injected deeper. In response, the energy industry lobbied and won a critical change in the federal government's legal definition of waste: Since 1988, all material resulting from the oil and gas drilling process is considered non-hazardous, regardless of its content or toxicity, making it subject to less strict standards than hazardous waste (Class I wells).

Sincerely,

LuAnne Kozma
President, Ban Michigan Fracking (a non-profit organization)
9330 Woods Road
Charlevoix, MI 49720
luannekozma@gmail.com
231-944-8750

cc: Ellis Boal, Ban Michigan Fracking

(89 Attachment

Law Office
**TERRY JONATHAN LODGE**

316 N. Michigan Street, Suite 520
Toledo, Ohio 43604-5627

Phone (419) 255-7552
Fax (419) 255-8582
lodgclaw@yahoo.com

May 22, 2015

Mr. Timothy Elkins
U.S. Environmental Protection Agency
Water Division
UIC Branch ( WU- 16J)
77 W. Jackson Blvd.,
Chicago, IL 60604
*Via email only to elkins.timothy@epa.gov*

RE: Public Comments of Terry J. Lodge on Trendwell Energy Corp's Secor #D4-18 SWD well draft permit #MI-115-2D-0002

Dear Mr. Elkins:

I am writing to supplement the oral comments I made at the Petersburg, Michigan public hearing which you convened on May 20, 2015. Please add this letter to the compiled record of the Trendwell injection well for USEPA's attention and response.

Preliminarily, I note that Trendwell's application for a permit, which presumably contains some characterization of the expected wastes which would be injected, is not available online and appears to have to be specially requested by the public. I therefore request, pursuant to the Freedom of Information Act, if so formal a request must be made, that a digital copy of the Trendwell application please be provided to me. If that is not possible, then I object to this permit proceeding being allowed to go forward until the public is provided electronic access to the entire Trendwell application file.

***Background***

Solid and liquid wastes from hydraulic fracturing ("fracking") for oil and gas are a rapidly-growing problem. A typical fractured well yields from 1,500 to 2,500 tons of solid and liquid wastes, most of which cannot be disposed of down-hole and nearly all of which is radioactive. "Technologically enhanced naturally-occurring radioactive material," or TENORM, is radioactive solid and liquid material which has been displaced, by human activity, from its original location underground. In the course of drilling for fracking, all rubble removed from the well, when mixed together, becomes radioactively contaminated and creates an "enhanced" disposal problem. It took literally hundreds of millions of years for dangerously radioactive surface layers of the early planet Earth to become isolated, and cut off, so that carbon-based life could form without being inhibited by exposure to radioactivity. Oil and gas fracturing requires

huge quantities of radioactive material to be extracted from drilled holes, past the 350,000,000 year barrier into the biosphere. Once this radioactive material arrives at the surface, its physical characteristics and attendant dangers are often trivialized or denied outright.

The radioactively hottest parts of the shale layers where fracking takes place coincide precisely with the most productive oil and gas zones, owing to the chemistry by which hydrocarbons are formed. The process of rubble-izing shale via fracking yields solids and liquids containing significant levels of radioactivity. Drilling wastes from fracking comprise a much larger volume of material, carrying with it many times the radioactivity associated with conventional, vertical drilling. What Trendwell Energy Corporation euphemistically calls "saltwater brine" is in actuality a toxic mixture of chemical wastes which is further complicated by the presence of uranium, radium (Ra-226 and Ra-228), radon gas, thorium (Th-232) and other radionuclides.

Class II injection wells are required to place wastewater below the rock strata containing usable groundwater. Conventional industry wisdom says this prevents migration of contaminants into shallower freshwater zones.[1] But this may be a flawed assumption. The way fracking works to force gas out of the rock also explains why injection wells cause instability in the geology: the extreme pressure of injection can take nearly a year to dissipate, according to hydrologist Tom Myers, who published a modeling study of fracking fluids' underground behavior in 2012.[2] Myers says the lingering higher-than-normal pressure could bring formation waters, along with fracking chemicals, closer to the surface far faster than would occur over natural geological time scales of thousands of years. This is particularly true if there are faults and/or abandoned wells within the fracking zone.

### *Likely Radioactive Characteristics Of Injected Waste*

Both radon gas and radium emit alpha particles, which are most dangerous when inhaled or ingested. When inhaled, radon can cause lung cancer, and there is some evidence it may cause other cancers such as leukemia.[3] Consuming radium in drinking water can cause lymphoma, bone

---

[1]GAO. Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks. GAO-12-732. Washington, DC:U.S. Government Accountability Office (5 September 2012). Available: http://www.gao.gov/products/GAO-12-732; Flewelling SA, Sharma M. Constraints on upward migration of hydraulic fracturing fluid and brine. Ground Water 5219–19.192013; 10.1111/gwat.12095

[2]Myers T. Potential contaminant pathways from hydraulically fractured shale to aquifers. Ground Water 506872–882.8822012; 10.1111/j.1745-6584.2012.00933.x

[3]NRC. Health effects of radon progeny on non-lung-cancer outcomes. In: Health Effects of Exposure to Radon, BEIR VI. Washington, DC:Committee on Health Risks of Exposure to Radon (BEIR VI), National Res earch Council, National Academies Press (1999)., http://www.nap.edu/open-book .php?record_id=5499&page=118

cancer, and leukemias.[4] Radium also emits gamma rays, which raise cancer risk throughout the body from external exposures. Ra-226 and Ra-228 have half-lives of 1,600 years and 5.75 years, respectively. Radium is known to bioaccumulate in invertebrates, mollusks, and freshwater fish,[5] where it can substitute for calcium in bones. The human body misrecognizes Ra-226 as calcium and deposits it in bone tissue.

But alpha-emitting isotopes are nonetheless dangerous. An alpha-emitting isotope that gets inhaled or otherwise incorporated into the body, as through open wounds or on food, lodges in the body and gives continual doses like an x-ray machine that cannot be turned off. Although alpha particles can't penetrate a sheet of paper, once they get into the body, the continual internal exposures are potentially a lot more dangerous than a one-time x-ray or gamma ray exposure from outside the body. Consider, that plutonium (a man-made element that also is "merely" an alpha-emitter) is considered to be among the most dangerous substances on Earth, not only for hydrogen bomb usefulness, but also, because an atom of plutonium lodged in human tissue commences immediately to irradiate surrounding cells energetically, and to induce cancer. Radium-226 poses threats to health which may exceed those of plutonium because, unlike plutonium, it easily dissolves in water.

### *Fracking Waste Emits Radon, a Dangerous Radioactive Gas*

The handling, transport and injection of fracking wastes will allow radon gas leakage. Radon, the gaseous form of radium, is emitted from building foundations and other structural sources and is the second-highest cause of lung cancer in the United States, behind smoking. Smoking likely causes cancer in part because tobacco tends to concentrate radium, and when tobacco is burned, it gives off radioactivity in the smoke. Inhalation of radon gas is blamed for the high rate of lung cancer in underground uranium miners. Federal legislation is on the books to compensate the victims, and survivors, of radon-induced lung cancers, and lung cancer deaths, such as have occurred among Navajo and Pueblo uranium miners in the Four Corners region.

Radon and radium particulate emissions during the waste transport and disposal stages of fracking waste disposition are inevitable and should not be discounted or ignored in the permitting decision. This is particularly true in light of the probability that scores of tanker trucks will daily drive into and out of the Well #4D-18 complex.

### *The TENORM Content Of Fracking Wastes Is Likely To Be Much Higher Than Expected*

---

[4]EPA. Radionuclides: Radium [website]. Washington, DC:Office of Radiation and Indoor Air, U.S. Environmental Protection Agency (updated 6 March 2012), http://www.epa.gov/radiation/radionuclides/radium.html#affecthealth

[5]Warner NR, *et al.* Impacts of shale gas wastewater disposal on water quality in western Pennsylvania. Environ Sci Technol 472011849–11857.118572013; 10.1021/es402165b

A January 2015 Pennsylvania Department of Environmental Protection study of the fracking waste stream in Pennsylvania[6] reveals that samples of fracking waste liquids contained levels of radioactivity in excess of 26,600 pCi/L. The federal drinking water maximum allowable radioactivity is 5 pCi/L. The genuine possibility that fracking wastes may contain concentrations 5,000 times the maximum federal standard, or even higher, suggests that Trendwell should be required to seek a different permit, other than Class II. The USEPA has required insufficient information from the applicant to properly characterize and understand the waste stream which Trendwell will be disposing.

### *Misidentification Of The Project As A Class II Injection Well*

According to 40 C.F.R. § 144.6(b), Class II wells are those which inject fluids "[w]hich are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production. . . ." However, the USEPA appears to have largely or entirely omitted analysis of the proposed Trendwell waste stream for the radioactivity which permeates oil and gas drilling wastes from horizontal hydraulic fracking through shale seams. There is no showing of any scrutiny of the question of whether the drilling wastes will be contaminated routinely with "radioactive waste," which is defined at 40 C.F.R. § 144.3 as "any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR part 20, appendix B, table II, column 2." The referenced table and column specify threshold contamination levels for Ra-226, Ra-228, several Uranium isotopes associated with drilling wastes, and Th-232. It is incumbent upon the USEPA to require sourced, predictive information of the likely radiological characteristics of the waste stream before a permit can even be considered for the proposed site. An entirely new permit must then be required of Trendwell, and the new process much afford an opportunity for public scrutiny of the underlying radioactive waste data along with another public hearing.

### *Cheap Disposal Via Injection, Without Acknowledgment Of The Dangers Is A Major Subsidy To The Fracking Industry*

Allowing disposal of radioactive fracking wastes via deep well injection provides a huge and undeserved subsidy to the oil and gas industry. In Ohio, it costs approximately $60.00 per ton to dispose of a TENORM-contaminated load of fracking rubble which, if the wastes were regulated under the Atomic Energy Act, would be restricted to disposal in one of the United States' four or five sites for that purpose, such as the unit at Belleville, Michigan, or Clive, Utah. It up to 100 times that, or $6,000.00 per ton, to dispose of regulated "low-level" radioactive wastes. The permit to inject at a tiny fraction of the (likely underestimated) "real" costs of disposal is a huge subsidy to the fracking industry. That industry can only survive if there are effectively no regulation and no protections for public health and safety. The USEPA is being asked to bless a radioactive and chemical pollution scheme for Trendwell which raises the

---

[6]Found at http://www.portal.state.pa.us/portal/server.pt/community/oil___gas_related_topics/20349/radiation_protection/986697

prospect of thousands of years of radiologic hazard.

For all the above reasons, I object to the issuance of a permit for the proposed Trendwell Well #4D-18 project in Summerfield Township, Michigan.

Thank you very much.

Respectfully,

*/s/ Terry J. Lodge*

cc: John Chandler,
Summerfield Township Supervisor

Ellis Boal, Esq.

90

## Tong, William

**From:** Paul J. Mooradian <paulmooradian1@hotmail.com>
**Sent:** Saturday, August 19, 2017 7:49 AM
**To:** Tong, William
**Subject:** Holcomb Well

Do we really need fracking in Clare County, Michigan?

Sent from my iPhone