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EMSL Order ID:
Customer ID:
Customer PO:
Project ID:

Attn: Scott Eckert
Sandusky Bay Inspections
609 Parkland
Sandusky, OH 44870

Phone: 419-503-3644
Fax: Not Available
Date Collected:
Date Received:

Proj:

Laboratory Report Analytical Results Detail

FHA/VA Basic Water Panel

Sampling Site

Kitchen Sink

Drinking Water Kit Barcode

Analyte	Sample Date/Time Analyzed	Method	Reporting Limit	Units	Federal Limit	Results	Indicator
Microorganisms							
Total Coliform	7/14/2016 00:00	SM 9223B	1 CFU/100mL	_	Absent	Absent	
E. coli	7/14/2016 00:00	SM 9223B	1 CFU/100mL	_	Absent	Absent	
Metals							
Lead	7/14/2016 00:00	EPA 200.5	0.0030	mg/L	0.015	ND	
Inorganic Analytes							
Nitrate	7/13/2016 00:00	EPA 300.0	0.50	mg/L	10	9.7	
Nitrite	7/13/2016 00:00	EPA 300.0	0.50	mg/L	1.0	ND	
Physical Characteristics							
Turbidity*	7/13/2016 00:00	EPA 180.1	0.30	NTU	1.0	ND	

Interpretation Key and Definitions



Result detected at, above, or outside federal limit



Result detected above laboratory reporting limit but below federal limit



Result not detected; or detected at or below the laboratory reporting limit

If "Preliminary Report" is displayed in the signature box; this indicates that there are samples that have not yet been analyzed, that are in a preliminary state, or that analysis is in progress but not completed at the time of report issue.

7/14/2016

Report Revision

Revision Comments

R0

Initial Report

Doug Wiegand, Laboratory Manager
or other approved signatory

Kitchen Sink

Understanding Your FHA/VA Basic Water Panel Results

Contaminated drinking water is one of the oldest known public health concerns. The fact that a water supply has been used for a prolonged amount of time without reported adverse health effects is not a guarantee of its safety. Regular users of a water supply can develop a tolerance for the contaminants present within their water supply while infrequent users may become sick by drinking the same water. This informational water quality testing report compares your sample results to national standards that are defined within the United States Environmental Protection Agency's (EPA) National Primary and Secondary Drinking Water Regulations. Federal public health goals as well as state, county, municipal, and local health department regulations may recommend stricter standards for the same target contaminants. Health effect information presented within this report was gathered from EPA resources. These test results are intended to be used for informational purposes only and are not intended to be used for state or regulatory compliance.

Microorganisms

The Coliform Test

A pathogen is a disease carrying organism. Many different pathogens could be present within a water system. It is not practical to test for all pathogens; therefore, the EPA requires testing for indicator organisms, or coliform bacteria. The standard bacteriological method for assessing the safety of water for domestic use is the coliform test. "Total coliforms" refer to a group of closely related bacteria that are generally harmless. They are natural and common inhabitants of surface waters, soil, and plants. Coliform bacteria are also found within the gut of warm-blooded animals, including humans. Their presence within your drinking water suggests that there has been a breach, a failure, or another change in the integrity of your water system which could allow other pathogens to enter into your drinking water. The absence of total coliform bacteria within a water system is used as the basis for considering water safe to drink.

The *Escherichia coli* (*E. coli*) Test

Fecal coliform bacteria are a subset of total coliform bacteria. *E. coli* belongs to the fecal coliform group. The presence of *E. coli* is a good indicator of fecal contamination and of the potential presence of other waterborne pathogens that are associated with human and animal fecal contamination. The absence of *E. coli* within a water system is used as the basis for considering water safe to drink.

Metals

Lead

Materials that contain Lead have been commonly used in the construction of water supply distribution systems and plumbing systems in homes and commercial buildings. Lead is a heavy metal that has the potential to cause numerous adverse health effects in humans. The most significant and probable health effects associated with infants and children who drink water exceeding the action level are delays in their physical or mental development. Children can display attention span deficits and learning disabilities. Adults who consume contaminated water over many years can develop high blood pressure or kidney problems. Common sources of Lead contamination are household plumbing systems (service lines, pipes, brass and bronze fixtures, and solders and fluxes). The EPA has established an action level of 0.015 mg/L for Lead in drinking water.

Kitchen Sink

Inorganic Chemicals

Nitrate/Nitrite

Nitrates and nitrites are nitrogen-oxygen chemical units which combine with various organic and inorganic compounds. Nitrates occur naturally in mineral deposits, soils, seawater and freshwater systems, the atmosphere, and in regional plant life. Nitrates are most commonly used as a fertilizer. Once nitrates are consumed, they are converted to nitrites. The toxicity of nitrate in humans is due to the body's reduction of nitrate to nitrite. Infants younger than six months of age who drink water containing nitrate in excess of the maximum contaminant level can become seriously ill. These illness symptoms include shortness of breath and Blue Baby Syndrome. If infants become ill and they do not receive treatment, their sickness can become fatal. Major sources of nitrate in drinking water include fertilizer run-off, leaching from septic tanks (sewage), and erosion of natural deposits. The EPA has set an enforceable regulation for nitrate at 10 mg/L and for nitrite at 1 mg/L.

Physical Factors

Turbidity

Turbidity is a measure of water clarity and it is an expression of the optical property of a water sample which causes light to be scattered and absorbed rather than passing straight through a sample. Turbidity is caused by the presence of dissolved and/or suspended matter such as microscopic organisms, soil particles (clay, silt, and sand), and other fine particles of both organic and inorganic matter. As the number of particles increase, more light is scattered and absorbed, and turbidity increases. Turbidity is used to indicate water quality and filtration effectiveness. Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites, and some bacteria. Turbidity readings are expressed as nephelometric turbidity units (NTU). For water systems using conventional or direct filtration methods, turbidity cannot exceed 1.0 NTU; turbidity must be less than or equal to 0.3 NTU in at least 95 percent of samples collected within any month. Systems that use filtration other than conventional or direct filtration must follow state limits, which at no time may exceed 5.0 NTU.

FHA/VA Basic Water Panel

Sampling Site

Drinking Water Kit Barcode

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National Primary Drinking Water Regulations

Microorganisms

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
<i>Cryptosporidium</i>	TT ⁷
Fecal coliform and <i>E. coli</i>	MCL ⁶
<i>Giardia lamblia</i>	TT ⁷
Heterotrophic plate count (HPC)	TT ⁷
<i>Legionella</i>	TT ⁷
Total Coliforms	5.0% ⁸
Turbidity	TT ⁷
Viruses (enteric)	TT ⁷

Inorganic Chemicals

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
Antimony	0.006
Arsenic	0.010
Asbestos (fibers > 10 micrometers)	7 million fibers per liter (MFL)
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium (total)	0.1
Copper	TT ⁵ ; Action level = 1.3
Cyanide (as free cyanide)	0.2
Fluoride	4.0
Lead	TT ⁵ ; Action level = 0.015
Mercury (inorganic)	0.002
Nitrate (measured as Nitrogen)	10.0
Nitrite (measured as Nitrogen)	1.0
Selenium	0.05
Thallium	0.002

Disinfectants

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
Chloramines (as Cl ₂)	MRDL=4.0 ¹
Chlorine (as Cl ₂)	MRDL=4.0 ¹
Chlorine dioxide (as ClO ₂)	MRDL=0.8 ¹

Disinfection Byproducts

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
Bromate	0.010
Chlorite	1.0
Haloacetic acids (HAAs)	0.060
Total Trihalomethanes (TTHMs)	0.080

Radionuclides

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
Alpha photon emitters	15 picocuries per liter (pCi/L)
Beta photon emitters	4 millirems per year
Radium ²²⁶ and Radium ²²⁸ (combined)	5 pCi/L
Uranium	30 ug/L

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National Primary Drinking Water Regulations

Organic Chemicals

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
Acrylamide	TT ⁴
Alachlor	0.002
Atrazine	0.003
Benzene	0.005
Benzo(a)pyrene (PAHs)	0.0002
Carbofuran	0.04
Carbon tetrachloride	0.005
Chlordane	0.002
Chlorobenzene	0.1
2,4-D	0.07
Dalapon	0.2
1,2-Dibromo-3-chloropropane (DBCP)	0.0002
o-Dichlorobenzene	0.6
p-Dichlorobenzene	0.075
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
cis-1,2-Dichloroethylene	0.07
trans-1,2-Dichloroethylene	0.1

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
Dichloromethane	0.005
1,2-Dichloropropane	0.005
Di(2-ethylhexyl) adipate	0.4
Di(2-ethylhexyl) phthalate	0.006
Dinoseb	0.007
Dioxin (2,3,7,8-TCDD)	0.00000003
Diquat	0.02
Endothall	0.1
Endrin	0.002
Epichlorohydrin	TT ⁴
Ethylbenzene	0.7
Ethylene dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05

Contaminant	MCL ¹ or TT ¹ (mg/L) ²
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs)	0.0005
Simazine	0.004
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
Toxaphene	0.003
2,4,5-TP (Silvex)	0.05
1,2,4-Trichlorobenzene	0.07
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10

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National Primary Drinking Water Regulations

Notes

1 Definitions:

Maximum Contaminant Level Goal (MCLG)—The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.

Maximum Contaminant Level (MCL)—The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

Maximum Residual Disinfectant Level Goal (MRDLG)—The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Maximum Residual Disinfectant Level (MRDL)—The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Treatment Technique (TT)—A required process intended to reduce the level of a contaminant in drinking water.

2 Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (ppm).

3 Health effects are from long-term exposure unless specified as short-term exposure.

4 Each water system must certify annually, in writing, to the state (using third-party or manufacturers certification) that when it uses acrylamide and/or epichlorohydrin to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows: Acrylamide = 0.05 percent dosed at 1 mg/L (or equivalent); Epichlorohydrin = 0.01 percent dosed at 20 mg/L (or equivalent).

5 Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10 percent of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.

6 A routine sample that is fecal coliform-positive or *E. coli*-positive triggers repeat samples - if any repeat sample is total coliform-positive, the system has an acute MCL violation. A routine sample that is total coliform-positive and fecal coliform-negative or *E. coli*-negative triggers repeat samples - if any repeat sample is fecal coliform-positive or *E. coli*-positive, the system has an acute MCL violation. See also Total Coliforms.

7 EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- *Cryptosporidium*: 99 percent removal for systems that filter. Unfiltered systems are required to include *Cryptosporidium* in their existing watershed control provisions.
- *Giardia lamblia*: 99.9 percent removal/inactivation

- Viruses: 99.99 percent removal/inactivation

- *Legionella*: No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated according to the treatment techniques in the surface water treatment rule, *Legionella* will also be controlled.

- Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 nephelometric turbidity unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTU in at least 95 percent of the samples in any month. Systems that use filtration other than conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTU.

- HPC: No more than 500 bacterial colonies per milliliter

- Long Term 1 Enhanced Surface Water Treatment; Surface water systems or ground water systems under the direct influence of surface water serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, *Cryptosporidium* removal requirements, updated watershed control requirements for unfiltered systems).

- Long Term 2 Enhanced Surface Water Treatment; This rule applies to all surface water systems or ground water systems under the direct influence of surface water. The rule targets additional *Cryptosporidium* treatment requirements for higher risk systems and includes provisions to reduce risks from uncovered finished water storages facilities and to ensure that the systems maintain microbial protection as they take steps to reduce the formation of disinfection byproducts. (Monitoring start dates are staggered by system size. The largest systems (serving at least 100,000 people) will begin monitoring in October 2006 and the smallest systems (serving fewer than 10,000 people) will not begin monitoring until October 2008. After completing monitoring and determining their treatment bin, systems generally have three years to comply with any additional treatment requirements.)

- Filter Backwash Recycling: The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

8 No more than 5.0 percent samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli*. If two consecutive TC-positive samples, and one is also positive for *E. coli* or fecal coliforms, system has an acute MCL violation.

9 Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L)
- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L)

FHA/VA Basic Water Panel

Sampling Site

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National Primary Drinking Water Regulations

National Secondary Drinking Water Regulations are non-enforceable guidelines regarding contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. The EPA recommends secondary standards to water systems but does not require systems to comply. However, some states may choose to adopt them as enforceable standards.

Contaminant	Secondary Maximum Contaminant Level
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

For a current list of the EPA's National Primary and Secondary Drinking Water Regulations, please visit <http://water.epa.gov/drink/contaminants/upload/mcl-2.pdf>. Federal public health goals as well as state, county, municipal, and local health department regulations may recommend stricter standards for the same target analyte.

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Consumer Links:



EPA Primary and Secondary Drinking Water Regulations

<http://water.epa.gov/drink/contaminants/upload/mcl-2.pdf>

Ground Water and Drinking Water

<http://water.epa.gov/drink/index.cfm>

Drinking Water Contaminants

<http://water.epa.gov/drink/contaminants/index.cfm>

Basic Information about Pathogens and Indicators in Drinking Water

<http://water.epa.gov/drink/contaminants/basicinformation/pathogens.cfm>

Private Drinking Water Wells

<http://water.epa.gov/drink/info/well/index.cfm>

Standards & Risk Management

<http://water.epa.gov/drink/standardsriskmanagement.cfm>

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Description of Analysis

Analytical Laboratory:

EMSL Analytical, Inc., (EMSL) is a national network of laboratories located in key cities throughout the USA and Canada. Established in 1981, the company has expanded its analytical services and capabilities and now operates more than thirty lab locations, all striving for excellence in providing quality laboratory services in a timely and cost competitive manner.

Our diverse staff of over 500 employees includes a wide range of expertise, educational background, and experience. These dedicated and capable employees follow the lead and standard of care demonstrated by the owner and founder of the company, Dr. Peter Frasca, who, as a hands on owner, maintains daily involvement in our laboratory operations, and dictates that our work is consistent with his EMSL Diamond Standard. This "Diamond Standard" includes the following:

- ◆ **Quality Data** - Strict adherence to our quality programs and regulatory requirements which comply with the ISO 17025 guidelines so that our data is tracked, managed, reported, and verified to be accurate and reliable.
- ◆ **Customer Dedication** - We strive to create lasting, mutually beneficial relationships with all clients. We solicit feedback from our clients and we are committed to responding quickly to any questions or concerns that may arise before, during, or after an assignment.
- ◆ **Analytical Expertise** - We employ highly qualified and experienced chemists, geologists, physicists, mycologists, microbiologists, biologists, materials scientists, and industrial hygienists to enhance our analytical abilities and expertise.
- ◆ **Integrity and Ethics** - We insist that our employees uphold the highest ethics and standards. We maintain a "no compromise" policy as it pertains to any ethical issue.
- ◆ **Responsiveness** - We recognize that the timeliness of a report is as important as the quality of the data. We will not however, allow deadlines or the rush needs of a project to adversely impact our quality objectives.
- ◆ **Technology** - We recognize the importance of new technology to better enable us to provide improved service. LabConnect™ access to your data, customized reports, Laboratory Information Management Systems, and analytical instrumentation are continuously upgraded to enable continuous improvement of our service and capabilities.
- ◆ **Value** - We believe that a business relationship with EMSL provides you with an excellent value. We provide you with a complete value package that includes all components of the EMSL Diamond Standard.

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EMSL Analytical, Inc. has been fortunate to be able to maintain a solid history of stable growth and viability for the past thirty years with a current network consisting of greater than thirty laboratories and service centers.

For a complete list of analytical services offered, please contact EMSL Analytical, Inc. at (800) 220-3675.



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Sampling Site

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Important Terms, Conditions, and Limitations**A. Analytical Methods**

EMSL is an independent laboratory that performed the analysis of these samples. EMSL did not conduct the sampling or the site investigation for this report. These samples were analyzed using one or more of the methods published by the United States Environmental Protection Agency (USEPA), the American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF).

B. Sample Hold Time and Preservation

Most drinking water tests have short hold times and/or preservation requirements. All drinking water samples should be submitted to the laboratory within 24 hours of collection and must be received on ice. If the samples are not received within 24 hours of collection, resulting in missed hold times, the report may be commented. Sample preservatives, if required, may be added to each bottle by the laboratory prior to shipment. If present, it is necessary for the preservative to remain in the bottle during sample collection.

C. Sample Retention

Water samples submitted to EMSL will be retained for a period of one week after the analytical results have been reported. Samples containing hazardous/toxic substances require special handling. EMSL reserves the right to charge a sample disposal fee or a shipping fee in order to return samples to the client.

D. Change Orders and Cancellation

All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost, the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for holding times that are exceeded due to such changes.

E. Warranty

EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures and with reasonable care in accordance with applicable federal, state, and local laws. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. EMSL disclaims any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability.

F. Limits of Liability

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to ensure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable value of the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client or any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

G. Indemnification

Client shall indemnify EMSL and its officers, directors, and employees and hold each of them harmless for any liability, expense or cost, including reasonable attorney's fees, incurred by reason of any third party claim in connection with EMSL's services, the test result data or its use by client.

This report has been prepared by EMSL Analytical, Inc. at the request of and for the exclusive use of the client named in this report. Completely read the important terms, conditions, and limitations that apply to this report. The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory.

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