2016

Glen Helen and Little Miami River Water Quality Fall 2015

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Glen Helen and Little Miami River Water Quality Fall 2015

Steven Ujvary, Sarah Izor, Lin Phu, Lauren Bruce, Justin Myers, Jessica Clemmons, Amy McNeely, Ashlynn Boedecker, Ritu Ghose, Jessica McKinley, Audrey McGowin, PhD (audrey.mcgowin@wright.edu)

CHM 4020/6020 Environmental Chemistry SRVI

Service Learning Intensive (SVI) – a teaching and learning pedagogy that engages faculty, students, and community members in a partnership to achieve academic learning objectives, meet community needs, promote civic responsibility, and reflect on the learning experience.

More specifically, the objectives for this course are for students to:

• Apply environmental chemistry concepts learned in the classroom to the interpretation of environmental analysis results
• Use Good Laboratory Practice (GLP) through the use of Standard Operating Procedures (SOPs) and EPA methods for the analysis of metals, anions, dissolved oxygen, pH, temperature, conductivity, ammonia, and turbidity
• Follow up on previous years’ results showing elevated E. coli and nitrates at some sites
• Present results to key stakeholders in the Village of Yellow Springs and Greene County
• Perform residential well sampling
• Complete periodic written reflections to tie classroom, laboratory, field, and community service experiences together

The water in Glen Helen is of high quality for the parameters tested, except for E. coli. E. coli is normally found in feces from animals and humans. Most strains are not harmful but some can cause illness if consumed.

Although not required by OEP A, the Village of Yellow Springs should consider adding year-round treatment of Wastewater Treatment Plant (WWTP) effluent for bacteria because of the high potential of human and animal contact with Yellow Springs Creek. The WWTP effluent could be treated with UV light in winter to kill bacteria. E. coli enters Glen Helen in extremely high amounts in runoff from precipitation. People and pets could become sick by drinking water from the creeks, especially after rain.

Nitrate

Nitrate levels in Birch Creek where it enters Glen Helen have increased since September 2011 whereas, nitrate levels in Yellow Springs Creek (by Highway 68) where it enters Glen Helen have decreased slightly since September 2011.

Nitrate-Nitrogen was found in levels that exceed the EPA Drinking Water Limit of 10 mg/L in private wells south of the Little Miami River and East of Highway 68 (North Xenia Township). Citizens who live in that area may have wells that are contaminated and should have their wells tested. Infants below the age of six months who drink water containing nitrate in excess of 10 mg/l could become seriously ill. Please contact Dr. McGowin for more information, audrey.mcgowin@wright.edu.

No nitrate was detected in the Yellow Spring or in the Yellow Springs Municipal Well.

Wastewater Sinkhole

Since 2011, each environmental chemistry class has documented the fact that the effluent from the Morris Bean, Inc. wastewater pond does not flow from the Morris Bean property into Glen Helen according to the Ohio EPA. Although not required by OEP A, the Village of Yellow Springs should consider setting timelines with OEP A and Morris Bean to permanently correct the situation by requiring a different method of wastewater management.

SPECIAL THANKS TO:

Mr. Nick Boas, Executive Director, Glen Helen Ecology Institute
Glen Helen Staff: Mr. Shalikar Stroger, Mr. George Hers, Mr. Ben Skillman, Ms. Ann Simonson
Mr. Brad Ault, Water Plant Superintendent
Ms. Jessica Clemmons and YSI/Xylem Dino’s Cappuccinos for helping keep the samples cold and the students warm!
Mr. Garrett VanNoss, laboratory assistance
Wright State University Department of Chemistry Sture Fredrik Anliot Fund

SIT OF MORRIS BEAN EFFLUENT, OR LACK THEREOF, INTO GLEN HELLN

Oct. 26

November 16

All other parameters measured were within normal levels; pH, dissolved oxygen, metals, turbidity, conductivity, etc.

E. coli Colonies (per 200 ml)

Escherichia Coli (E. coli)

E. coli is normally found in feces from animals and humans. Most strains are not harmful but some can cause illness if consumed.

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