

**Drip Irrigation & Surface Irrigation with Wastewater Treatment &  
Glacial Till Soils Examined  
MSO & MAPSS Course  
October 4, 2019**

Annually, Missouri Smallflows Organization (MSO) and Missouri Association of Professional Soil Scientists (MAPSS) partners to host a class in Missouri to look at soils and tour a wastewater treatment system. This year the course will be near Maryville, Missouri, to look at the complexities of glacial till soils. There are two wastewater treatment systems that will be toured; both are DNR permitted. The course will examine the soils onsite, discussion of why the type of wastewater treatment option was chosen, tours of the two wastewater treatment facilities, and discussion of operation and maintenance of the two facilities.

Location: Conception Abbey, 37174 State Highway VV, Conception, MO 64433

**8:00 AM Light breakfast refreshments**

**8:30 AM – 8:45 AM Background on the Abbey and History (Speaker: TBA)**

**8:45 AM – 9:30 AM Basic Soils Information – Mark Abney, USDA**

The ten fundamental properties of soils will be covered along with nomenclature of soils. A general overview of important soil properties and how to use the Web Soil Survey will be discussed.

9:30 AM – Break

**9:45 AM – 10:30 AM Local Soils Information by Clayton Lee and Chris Stiens**

Chris Stiens, Licensed Soil Evaluator, and Clayton Lee, retired NRCS Soil Scientist, will discuss the local soils to the area. Chris Stiens will open up this section with discussion on what was found during his soil evaluation, site overview and the selection of loading rates. Clayton Lee will expand on the types of soils that are found in the area, warranting discussion on glacial till soils (i.e. Shelby series or Lamoni series, are options). There will be v-trays of the soils available for the participants to see the soil horizons in class prior to heading out to the field in the afternoon.

**10:30 AM – 11:00 AM Jurisdiction & Soils Report for DNR – Chuck Harwood, Missouri DNR**

Summary: This presentation will very briefly describe jurisdiction of Wastewater in Missouri between the Department of Natural Resources and the Department of Health and Senior Services, Onsite Wastewater Treatment Program.

The primary focus of the presentation is to describe the fundamental elements that a soils report should contain and how without a complete soil & site investigation, information that is critical for the design of a subsurface soil dispersal system will be missing from the soils report.

This specific presentation is not intended to describe how different soil and site characteristics directly or indirectly affect the soil treatment areas ability to treat and hydrologically control effluent. Nor is it intended to describe what a limitation is, why it's a limitation or what can be done to overcome a limitation with respect to a subsurface soil dispersal system.

**11:00 AM – 11: 45 AM Converting Lagoons from direct discharge to Surface Land Application or Subsurface Soil Dispersal – Leasue Meyers, Missouri DNR**

This presentation will briefly describe what the Engineering Section looks for in review of surface and subsurface irrigation projects. The primary focus will be on the requirements in state regulations, specifically 10 CSR 20-8.110 and 10 CSR 20-8.200. It will touch on some of the common issues seen in the design of treatment plants, especially those facilities converting from a discharging lagoon to a no-discharge and wastewater irrigation system. This presentation is not intended to describe every situation and the impact of soils and site characteristics have on the design or the ability to treat.

**11:45 AM – 12:15 PM Conception Abbey & Benedictine Convent System – Brock Pfost**

Brock Pfost, PE, will be giving an overview of the following systems that will be toured after lunch.

**Abbey and Monastery, Drip Irrigation System, installed 2016.** CP0001825, OP G823102. Originally a single cell lagoon built in the 1960's serving a PE of 336 with the monastery and seminary college, the system obviously struggled to meet increasingly stringent effluent requirements. In 2015-16, the Abbey decided to address I/I issues on the main trunk sewer and shift to a 0-discharge system. In reviewing all options, initially it was thought to add a secondary cell and perform land app with drip irrigation, system capacity 33,600 gpd, although actual daily flow is app. 25,000 gpd based on actual water meter readings and population equivalents. The system has been operational since 2017.

**Benedictine Convent,** Land Application with fixed head sprinklers, installed 2009. CP0000743. OPG823033. Originally a single cell lagoon constructed in the 1950's, with a biosolids removal project in the early 2000's, the original design flow was 13,000 gpd when the facility was more active. Actual flow of the irrigation facility is 7,000 gpd. When the system was examined, it became apparent that the now over-sized lagoon cell was more than adequate to supply winter and rain event storage, hence the ability to utilize surface irrigation with its related less expensive and intensive maintenance.

**12:15 Lunch (provided)**

**Afternoon: Field Portion**

The afternoon portion of the class will be conducted outside. Please dress appropriately for the weather. There will be transportation to the field sites.

**1:15 PM – 2:45 PM**

**30 minutes at the Abbey System Tour**

**The licensed operator for the system will be available for questions and the tour. Abbey and Monastery, Drip Irrigation System, installed 2016.** CP0001825, OP G823102. Originally a single cell lagoon built in the 1960's serving a PE of 336 with the monastery and seminary college, the system obviously struggled to meet increasingly stringent effluent requirements. In 2015-16, the Abbey decided to address I/I issues on the main trunk sewer and shift to a 0-discharge system. In reviewing all options, initially it was thought to add a secondary cell and perform land app with drip irrigation, system capacity 33,600 gpd, although actual daily flow is app. 25,000 gpd based on actual water meter readings and population equivalents. The system has been operational since 2017.

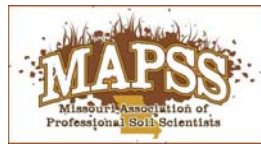
**30 minutes on Two Soil Pits**

Three Soil Evaluators or Scientists will lead the discussion on the two soil pits that will be dug the day before the class. Time will be taken to go through a soil report, look at each horizon on the soil profile and have class discussion.

**2:45 PM – Drive to Benedictine Convent System****3:00 – 4:00 PM Tour of Benedictine Convent System**

**Benedictine Convent**, Land Application with fixed head sprinklers, installed 2009. CP0000743. OPG823033. Originally a single cell lagoon constructed in the 1950's, with a biosolids removal project in the early 2000's, the original design flow was 13,000 gpd when the facility was more active. Actual flow of the irrigation facility is 7,000 gpd. When the system was examined, it became apparent that the now over-sized lagoon cell was more than adequate to supply winter and rain event storage, hence the ability to utilize surface irrigation with its related less expensive and intensive maintenance.

**4:00 PM Return to Abbey and Adjourn****Optional: 4:15 PM: Tours of the Convent and Abbey**



## Registration Form

Yes! Sign me up for membership with MSO!

MSO and MAPSS is hosting a course at Conception Abbey near Maryville, MO. This course will explore glacial till soils and challenge they present in wastewater treatment. In addition, we will tour and learn about the Conception Abbey wastewater treatment system which is a lagoon to drip dispersal system. Finally, a second site is available to look at lagoon to surface irrigation system that is DNR permitted. Join us for a great class of learning and outdoor experiences.

October 4, 2019

Glacial Till Soils, Lagoons, Drip Irrigation and Surface Irrigation

Location: Conception, MO - Conception Abbey

Full day class: 8:30 AM - 4:30 PM

DHSS CEUs: TBA

DNR CEUs: TBA

\_\_\_\_\_ MSO or MAPSS Member price: \$65

\_\_\_\_\_ MSO or MAPSS Non-member price: \$115

To become an MSO Member see next page, Membership is \$100 annually.

To become a MAPSS Member, see subsequent page for qualifications.

**Please send registration form and payment to MSO at  
least 2 weeks prior to your class!**

### Seminar Registration Guidelines (see complete guidelines on website):

- Registrant is required to notify the Executive Director as early as possible of a cancellation
- Refund policy as follows (full refund policy available online):
  - Cancellation received more than 7 days prior to seminar, full refund
  - Cancellation received between 2-7 days prior to seminar, 50% refund
  - Cancellation received less than 2 days prior to seminar, Registrant forfeits class fee

\_\_\_\_\_ Individual Membership at \$100

\_\_\_\_\_ Company Membership at \$350 (up to 4 people, \$70/person after 4)

\_\_\_\_\_ I would like a certificate of membership to display at my office.

**Name:** \_\_\_\_\_

**Company:** \_\_\_\_\_

Additional Members (Company Memberships only)

1. \_\_\_\_\_ 2. \_\_\_\_\_

3. \_\_\_\_\_

**Mailing Address:** \_\_\_\_\_

**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **ZIP:** \_\_\_\_\_

**County:** \_\_\_\_\_

**Email address:** \_\_\_\_\_

**Check here if you want to be signed up for email updates on classes:** \_\_\_\_\_

I would prefer the quarterly newsletter by: \_\_\_ email or \_\_\_ mail

Phone number: \_\_\_\_\_ Cell number: \_\_\_\_\_

DHSS License Numbers:

Basic Installer: \_\_\_\_\_ Advanced Installer: \_\_\_\_\_

Inspector: \_\_\_\_\_ Onsite Soil Evaluator: \_\_\_\_\_ Perc. Tester: \_\_\_\_\_

**Pay online! [mosmallflows.org](http://mosmallflows.org)**

**Send form and payment to:**

Missouri Smallflows Organization

2733 E Battlefield #132

Springfield, MO 65804

Phone: (417) 631-4027

Fax: 1-800-340-7001

Email:

[contact@mosmallflows.org](mailto:contact@mosmallflows.org)

\_\_\_ Check here if card billing address same as above

Card #: \_\_\_\_\_

Exp: \_\_\_/\_\_\_ CVV: \_\_\_\_\_

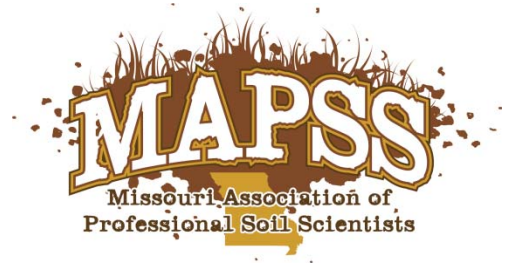
Name on Card: \_\_\_\_\_

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**Card Billing ZIP code:** \_\_\_\_\_

# The Missouri Association of Professional Soil Scientists



## Application for Membership

Please indicate which level of membership you will be applying for

\_\_\_\_\_ **Full Member.** Possess a baccalaureate degree with 30 semester hours, or equivalent, in the biological, physical, and earth sciences, with sufficient credit in the agronomic sciences to meet current Federal Civil Service Commission standards for a GS-5 Soil Scientist, plus 2 years of experience in the practice of soil science, or possess a baccalaureate degree and have at least 4 years of experience in the practice of soil science. \$10 per year \$100 lifetime membership

\_\_\_\_\_ **Associate Member.** Meet the requirements of Full Membership except experience. \$5 per year

\_\_\_\_\_ **Affiliate Member.** Does not qualify for any of the above classes. \$5 per year

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Email: \_\_\_\_\_

Degree: \_\_\_\_\_

University: \_\_\_\_\_

Job Title: \_\_\_\_\_

Employer: \_\_\_\_\_

Additional information: \_\_\_\_\_

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Please send copies of your transcript, work history, and application and payment of dues to:

Gene Campbell, Treasurer  
MAPSS  
1306 N. 2<sup>nd</sup> Street  
Clinton, MO 64735

## Overnight Accommodations for MSO/MAPSS Course

### Conception Abbey

37174 State Highway VV, Conception, MO 64433

Phone: 660-944-2809

\$55/night for a single room

Meals: Breakfast is \$7, Lunch is \$8, and Dinner is \$8

### Boulders Inn & Suites by Cobblestone Hotels

2 Fall Drive, Maryville, MO 64468

Website: <https://www.staycobblestone.com/mo/maryville>

Phone: 660-224-2222

### Americas Best Value Inn & Suites – Maryville

1700 E. 1<sup>st</sup> Street, Maryville, MO 64468

Phone: 660-562-3111

Website: <https://www.redlion.com/americas-best-value-inn/mo/maryville/americas-best-value-inn-suites-maryville>

### Red Roof Inn Maryville

2817 S. Main Street, Maryville, MO 64468

Phone: 660-562-2002

Website: <https://www.redroof.com/property/mo/maryville/RRI445>

### Country Health Inn – Maryville

222 E. Summit Drive, Maryville, MO 64468

Phone: 660-582-8088

Website: <https://www.stayinns.com/country-hearth-inn/missouri/maryville/country-hearth-inn-maryville>