

# Course Sponsorship

Provided by the

Water Pollution Control State Revolving Fund  
(WPCSRF) and the

Compliance, Training and Technical Assistance  
(CTTA) programs at the

Montana Department of Environmental Quality

in cooperation with the

Montana Environmental Training Center (METC)

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GREAT FALLS, MT  
PERMIT No. 167



Environment Association

*Presents*

**Wastewater Lagoon**

**Optimization and**

**Troubleshooting**

**July 8 - 9, 2019**

**Great Falls**



## Course Instructor

Steve Harris, President of H&S Environmental, LLC, of Mesa, AZ will present Optimizing Lagoon Operations and Troubleshooting Lagoon Problems again this year. Steve works with many lagoon treatment plants across the country and has a wealth of knowledge about lagoons to share.

Montana Environmental Training Center  
MSU-Northern  
P.O. Box 7751  
Havre, MT 59501





# Wastewater Lagoon Optimization and Troubleshooting

**Great Falls**  
*July 8 - 9, 2019*

**WHERE:** New MRWS Meeting Room  
525 Central Avenue, M6

**COURSE FEE:** None    **CECs:** 1.6 Wastewater

**WHAT:** WPCSRF has asked Steve to provide the best approaches to helping lagoons remove ammonia and meeting TSS and BOD limits, among other lagoon performance concerns. removal. Plan to attend, if possible. In particular, if you operate a discharging lagoon, have ammonia limits, current or proposed, or other nutrient limits for TN or TP, this workshop will be of importance to you.

## AGENDA

### Monday, July 8, 2019

- 7:30 AM    **Registration**
- 8:00        Chief Failings of Lagoon Systems: six main reasons why lagoons fail. The importance of biomass, hydraulics, sludge, testing, and maintenance
- 10:00       **BREAK**
- 10:15       Diagnosing Wastewater Lagoon Problems - How to determine the source of lagoon problems. The 11 things an operator must know to troubleshoot or optimize a lagoon.
- 12:00       **LUNCH (On Your Own)**
- 1:15 - 5:00   Sun Prairie Village Lagoon Field Testing - How, when & where to sample & test for optimization. D.O. Ammonia, Nitrate, Temp., Alkalinity using a DR 1900 & test strips. How to properly sludge judge a lagoon.

### Tuesday, July 9, 2019

- 8:00        Diagnostic Field Study Protocol, Analyzing Sun Prairie Field Data
- 10:00       **BREAK**
- 10:15       Diagnosing & Troubleshooting BOD<sub>5</sub> Problems - How to tell if your lagoon can handle additional loads. Understanding CBOD<sub>5</sub> vs. BOD<sub>5</sub>. Diagnostic BOD<sub>5</sub> Case studies.
- 11:00       Wastewater Microbiology - What microorganisms do you have & what can it mean.
- 12:00 - 1:00   **LUNCH (On Your Own)**
- 1:00        Troubleshooting TSS Problems - What is BOD & TSS? Algae - related TSS problems & algae's effect on BOD, where & how to sample. 6 steps to isolate the cause of a BOD<sub>5</sub> problem, typical loading rates, benefits of algae, & methods for controlling algae growth
- 2:00 - 3:15    Sludge accumulation problems & removal. 10 indications it is time to remove sludge
- 3:15        **BREAK**
- 4:00 - 5:00    Summary Review & Wrap-up & Adjourn

## REGISTRATION FORM Optimization of Lagoon & Troubleshooting Lagoon Problems Great Falls - July 8 - 9, 2019

**REGISTRATION:** Please register by July 8 - 9, 2019. You may call METC 265-3763 for further information.

**Mail Registration to:**  
**METC**  
**MSU-Northern**  
**P. O. Box 7751**  
**Havre, MT 59501**

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

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