CEU Plan is submitting a ten-hour course bundle, to include:

CEU ID #	Course Category	Course Number	CEU Hrs.	✓	Oregon - Consolidated - DW/WW Course Title	instructor
					Submitted in 2022	
123	DW only		1		Lead and Copper Rule	Pugh
223	DW/WW		2		Air Valves	Leverette
227	DW/WW		1		Flow Meters 101	Leverette
229	DW/WW		2		Water Loss Control	Leverette
250	WW only		2		Clarifier Operation	Martin
252	WW only		1		World of FOG	Martin
311	DW/WW		1		Paying for Lead Service Lines Replacement	Barnes

Quick Reference Link page:

Website: www.ceuplan.com

Program Tutorial: https://www.ceuplan.com/CourseTutorial.html
https://www.ceuplan.com/gs_tutorial.html

Technical Support form: https://www.ceuplan.com/Help.aspx

Support e-mail address: support@ceuplan.com

Mailing address: CEU Plan
Post Office Box 10355
Brooksville, FL 34603

CEU Plan was developed in the late 1990's, to assist the Vietnam Vet Apprenticeship Training Program and the beginning of the continuing education program for water and wastewater operators in 1999. On September 5th, 2001 at 7:30 PM, the program went LIVE and began our years of tracking, monitoring, and reporting of CEUs for operators across the USA. Since then, CEU Plan pioneered the first text base course for water and wastewater treatment operators, along with the first blended learning online course combining text and streaming (video) formats. The original text within embedded video clips was introduced in 2005, in conjunction with a PBS environmental documentary to enhance operators understanding of the underground aquifers. Later, CEU Plan produced and launched the first streaming (video) format course and built a large library of uniquely developed training courses in a variety of topics. CEU Plan was one of the original training organizations to become accredited through IACET and meets the ANSI/IACET Standards 1-2018 for continuing education training. In order to achieve the accreditation, **CEU Plan** completed a rigorous application process, including a review by an IACET site visitor, and successfully demonstrated adherence to the ANSI/IACET standard, addressing the design, development, administration, and evaluation of its programs. IACET performs an audit every five years of each training provider for compliance and adherence to the ANSI/IACET Standard. CEU Plan accreditation number is: 5451810-3 which expires on January 31,2027.

CEU Plan is recognized for over twenty years of educational and training experience in the public health – water and wastewater treatment field involving collections and distribution, treatment process and control, laboratory practices and safety, along with the basic and fundamental aspects of utility operation, maintenance, and facility management. The Instructor Group consist of highly experienced individuals with a minimum of 15-20 years of experience in their area of expertise and over 1,500 years of combined experience. 2021 carried special celebrations for us, whether it is Happy Birthday or Happy 20th Anniversary; it has been a wonderful experience. Many mountains that we have climbed as we have continued our work to make it better operators everywhere.

Accreditation through

ANSI
ANSI Accredited Certification Program

AUTHORIZED
IACET
PROVIDER

www.ceuplan.com

Oregon Environmental Services Advisory Committee
Application for Sponsor Distance Education
OESAC CEU Committee

P. O. Box 577 • Canby, OR 97013-0577
Phone: (503)698-6486
Email: info@oesac.org • Web: http://www.oesac.org

Course title: _____DW/WW Treatment series – Operations & Process Control

Instructor(s): _____see individual course description within this course bundle

Location(s): _____ www.ceuplan.com

Date(s): _____anything – 365/7/24

Requested CEUs (1 hour class time = .1 CEU; do not include time for breaks, lunch) – see course description

DW: _____ WW: _____ O2-I: _____ O2-SP: _____

Has this course been through OESAC review before? XX No ☐ Yes If yes, what was the previous OESAC number _____

Course Format: Online/Internet XX Webinar ☐ CD Rom ☐ Correspondence Course ☐ Video ☐

One time class ☐ Recurring ☐ Recurring Dates: _____ On-going ❑

Was the content of this course designed by qualified subject matter experts?
Yes XX No ☐ - see course description with instructor bio

Is CEU awarded based on beta-testing results? Yes XX No ☐ If no, supply accrediting formula and submit results - see the IACET Instructional Course Design Worksheets

Is the requested course being bundled with like courses? Name each individual course on a separate paper. *(See instructions)* - see attached worksheet for each course listed in this DW/WW Treatment series – Operations & Process Control

Training Objective: _____see IACET Instructional Course Design Worksheet for Learning Outcomes

Target Audience: _____ DW = drinking water, DS – distribution system, and WW - wastewater

Method of Tracking Attendance: ___ see supplemental disc which illustrates the CEU Program

Are quizzes or other forms of review and feedback included in this course?
Yes XX No ☐ - each training course within CEU Plan includes quiz of true-false, multiple choice, and fill-in-the-blank, along with final essay question.

If yes, what is the minimum passing score for successful completion of this course? _ 70%

Does this course promote a product or apparatus or offer such to those attending? Yes ☐ No XX

If YES, this must be explained on a separate attachment to this application and disclosed

Course contact name: ____ William Edgar, Program Administrator

Address: _____ Post Office Box 10355

City, State, Zip: _____ Brooksville, FL 34603

Phone: _____ (352) 754-1259 Fax: __ N/A

Email: _____ wwedgar@ceuplan.org

Sponsor: _____ CEU Plan

Address: _____ same as above

City, State, Zip: _____

Contact: _____

Phone: _____ Fax: _____

Email: _____

Enclosed:
Instructor Biography ☐
Course Agenda ☐
Course Timeline ☐
Course Brochure ☐

Check #: _____
Amount enclosed: $_____

Do you want to be listed on the website as an available course? (Contact Sponsor)
Yes XX No ☐

If you want to list newly scheduled classes from an already approved course, you must send the new schedule to OESAC.

Author Full Name: Jeff Pugh

Experience: Jeff has been a chemist by profession and has experience in design, construction, operation, and troubleshooting of pilot-to-industrial sized membrane systems including RO membrane softening, ultra-filtration, and microfiltration (mostly in non-traditional applications). He also has experience with other water treatment techniques including ion exchange, sorption and chemical treatment. He specializes in mineral scale formation, inhibition, fouling and performance restoration of membrane systems. He has managed R & D, technical, and analytical laboratories, has been published in various technical journals and lectures frequently.

Category: Treatment Processes

Course Title: Lead and Copper Rule

ANSI/IACET CEU Calculations - Required to complete this Course: one hour -- text based

Course Summary:

This one-hour short course details one of the rules promulgated by the USEPA as part of the Drinking Water Quality Standards. This course has been updated to reflect all the current revisions to the rule. We will discuss only the requirements put forth by the USEPA not the individual states. The states, as a condition of primacy, are required to make regulations "equal to or stricter than" those promulgated by the USEPA and most have copied their rules wholesale, from the Code of Federal Regulations regarding drinking water regulations.

This short course addresses the Lead and Copper Rule (LCR) as put forth in Subpart I — Control of Lead and Copper (40 CFR 141.80 and other documents). We will discuss the requirements, the necessary testing and monitoring and methods of complying with the rule. It is not necessary that you be a chemist or an engineer to master these principles, but an understanding of basic of water treatment methods and some basic chemistry will make the "treatment" section of the course seem easier. The instructor endeavors to explain everything as you progress in the course. This is not a rigorous study and it is not necessary to memorize or derive equations. This course is conceived to impart a good background in the subject matter, an understanding on which to build.

Learning Outcomes:

By the end of this training course, you will have the ability to:

- Describe the regulations surrounding the Lead and Copper Rule and Compliance of the Rule.
- Development of a lead and copper monitoring program including periods, parameters, sampling locations, and sampling frequency.
- Evaluation and implementation of a lead and copper removal program

Course Breakdown:

The following course breakdown illustrates the individual sections:

- Section 1 - Introduction
- Section 2 - Sampling
- Section 3 - Treatment Techniques

CEU ID #	Course Title	Instructor	CEU Hours
123	Lead and Copper Rule	Jeff Pugh	1 hr.

CATEGORY 7 – Content & Instructional Methods
DESIGN DOCUMENT

CEU Plan # 123 – Lead and Copper Rule

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**3rd tier - Beta Test results** 23 **Minutes** for this course section, see data results in the below beta chart	Introduction	Describe the regulations surrounding the Lead and Copper Rule and the Compliance of the Rule. Identify lead and copper in plumbing materials used in drinking water supplies. Describe health hazards associated with lead or copper poisoning.	Text Based Online	Written Exam	Required text Reading in Section One View table, Charts, and Photograph Images Take quiz	Inform students of the required text reading in their course enrollment confirmation – Auto response

Section 2	**3rd tier - Beta Test results** 27 **Minutes** for this course section, see data results in the below beta chart	Sampling	Create a good sampling technique for lead and copper. Development of a lead and copper monitoring program including periods, parameters, sampling locations, and sampling frequency.	Text Based Online	Written Exam	Required text Reading in Section Two View table, Charts, and Photograph Images Take quiz	Inform students of the required text reading in their course enrollment confirmation – Auto response
Section 3	**3rd tier - Beta Test results** 26 **Minutes** for this course section, see data results in the below beta chart	Treatment Techniques	Development of a lead and copper monitoring program including periods, parameters, sampling locations, and sampling frequency. Evaluation and implementation of a lead and copper removal program.	Text Based Online	Written Exam	Required text Reading in Section Three View table, Charts, and Photograph Images Take quiz	Inform students of the required text reading in their course enrollment confirmation – Auto response

Accumulative Time:

sec 1 =	23										
sec 2 =	27										
sec 3 =	26										

accumulative time total : 76 minutes = 1 hours = 0.1 CEU **updated to 3rd Tier Beta Results**

**** standard beta allows one minute for each question and answer. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing was performed during January, 2017. At the end of 2016, student feedback and comments were collected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the October - December 2016 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan

Below are the 3rd Tier Beta Results

Beta Testing - Students

course # 123 - Lead and Copper Rule - one hour course

Beta Testing Update:
1-04-2017

	1	2	3	4	5	6	7	8	9	10	Total - ETM	Avg/Sec
Section 1	19	E	27	20	24	E	18	27	34	15	184	23
Section 2	27	E	E	18	E	39	31	24	E	22	161	27
Section 3	23	16	E	34	38	24	36	19	17	26	233	26
Total - ETM												76

		completion
1 -	McLean, David	December, 2016
2 -	Holder, Richard	December, 2016
3 -	Williams, Lynden	December, 2016
4 -	Rice, Martin John	December, 2016
5 -	Dobson, John	December, 2016
6 -	Looker, Roger	November, 2016
7 -	Crowley, Lonnie	November, 2016
8 -	Deason, Ronda	October, 2016
9 -	Allen, Jason	October, 2016
10 -	Gossard, Todd	October, 2016

Student Feedback:

- This course was very informative in Lead and Copper. I learned how to treat for Lead and Copper. Also learned what the MCL limits are for Lead and Copper. This will help me to be able to treat the water so that their will be less Lead and Copper in the water system

- Lead was used in all types of plumbing but has been removed due to the illnesses it can cause Reverse Osmosis is a good cheap method to remove hazardous particles. Treatment can be done in a variety of ways, but the removal of lead and or copper before processed into a water system is preferred.
- 1 Acceptable Pb/Cu concentrations per EPA 2) Means of alleviating elevated Pb/Cu concentrations 3) Benefits of each of the treatments All of our NTNC sites undergo Pb/Cu monitoring every three years
- Lead and copper contamination can be mitigated by replacement of old pipe and fixtures, implementation of corrosion control procedures, coagulation and flocculation, ion exchange filtration, reverse osmosis filtration and the introduction of corrosion inhibiting chemicals. Calcite treatment is a cost effective treatment option.
- Orthophosphate at above pH7 works as corrosion inhibitor. High chlorides concentrations reduced orthophosphate effectiveness. Properly trained residents and water treatment personnel may take samples for copper and lead. Actually, we took a copper/lead sample from my residence.
- Samples - The sample information was useful since I have done it but now understand it better. Causes - Learned more of the causes of lead and copper in water and how to remedy if necessary
- As I am responsible for overseeing the drinking water monitoring program at this facility, I am already familiar with much of the information presented in the module. It was helpful as a review and I felt that it was very well written, informative and contained all pertinent information.
- i learned why you have to test for lead and copper. i learned how to properly sample for lead and copper. how to treat for lead and copper if needed. i have to sample for lead and copper this year. i am on a three year sampling cycle and now have a better understanding of why
- The lead and copper limits and how and what to do if either raises to high. I have a better understanding of the levels of lead and copper. Also the importance of controlling and monitoring them both
- lead and ways of removing contaminants, lead and copper acceptable levels, private wells not regulated, reverse osmosis all of this is important to know and the ways of prevention and treatment
- Systems retain original records for no less than 12 years. Plumbing pipes can not contain more than 8% lead. Water hardness is essential if polyphosphates are to be used as a corrosion inhibitor. This information is used in my management and supervision of the company and testing requirements.
- Origin of the lead/copper rule, how sample schedules are created, different types of removal techniques. We are on a 3-yr lead/copper sampling schedule and have never exceeded the 90th percentile. It was good to learn the other sampling requirements in the case of exceedance
- This gives good information about the sampling requirements, the types of plumbing that lead and copper might be in, and the regulations on the percentages allowed. This is a type of sampling required on a regular schedule for our system

Author's Full Name: Joey Leverette

Experience:

Joey Leverette has 18 years' experience in the Water & Wastewater industry, and has served in several management positions with municipal utilities and contract operations. He is a state certificated operator in Water Treatment, Water Distribution, and Water Collections in the State of Georgia. Likewise, Joey is a member of the Georgia Association of Water Professionals (GAWP) and American Water Works Association (AWWA). He has served on various committees with these associations and has authored and presented at state conferences. Mr. Leverette holds a Bachelor of Arts (BA) from the University of Georgia and a Master of Public Administration (MPA) from Georgia College and State University.

Category: Distribution and Collection Systems

Course Title: Air Valves

ANSI/IACET CEU Calculations - Required to complete this Course: two hour – streaming w/text

Course Summary:

The presence of air in a pipeline and its impact on operations is one of the most misunderstood aspects of the water and wastewater industry. When operating a Water or Wastewater system with improper or no air release protection, trapped air is robbing system efficiency and increasing operating expenses. This course will discuss the theory, applications, types, sizing, and the maintenance of air valves used in water distribution and wastewater collection systems, as well treatment plants. Furthermore, the course provides information on specialty air valves, and several cases studies highlighting practical applications. Students will gather a greater understanding of all principles related to air valves when completing the course.

Learning Outcomes:

By the end of this training course, you will have the ability to:

- Identify the correct type of air valve for the application
- Describe the proper maintenance requirements for air valves
- Explain the sizing and application factors for installing air valves in your water / wastewater system

Course Breakdown:

The following course breakdown lists the individual sections:

- Section 1 - Introduction Effects & Theory
- Section 2 - Types of Air Valves
- Section 3 - Air Valve Location & Sizing Selection
- Section 4 - Maintenance & Operation of Air Valves
- Section 5 - Specifications, Specialty & Supplemental Information
- Section 6 - Case Studies

CEU ID #	Course Title	Instructor	CEU Hours
223	Air Valves	Joey Leverette	2 hr.

CEU Plan – Content & Instructional Course Design Worksheet

Activation - 01.13.2018

CEU Plan # 223 - Air Valves

Instructor: Joey Leverette

amount of course hours**: two**

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 10.35 Minutes **quiz:** 10 minutes **accumulative: 21** minutes	Introduction, Effects, & Theory	● describe the characteristics found in trapped air in pipelines ● explain the controlling factors of air ● define the types of air valves ● discuss the historical background of air valves ● list some of the problems and damage caused by the absence of air release in the pipe	Streaming Based Online	Written Exam	Required text reading of content material and view of streaming clip, via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 11.25 Minutes **quiz:** 10 minutes **accumulative: 21** minutes	Types of Air Valves	● compare the various types of air valves ● describe air release valves and how they operate ● illustrate the release of air through a pipeline ● define the operation of an air/vacuum valve ● examine the operations of an air release valve	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3	**content:** 12.41 Minutes **quiz:** 10 minutes **accumulative: 23** Minutes	Air Valve Locations & Sizing Selection	● indicate the locations for air valves along a pipe line ● evaluate the type of air valve for your application ● discuss the proper sizing aspects of air valves ● illustrate the orifice size for determining air exhaustion	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 4	**content:** 14.53 Minutes **quiz:** 10 minutes **accumulative:** **25** Minutes	Maintenance & Operation of Air Valves	● list some of the maintenance aspects for air valves ● develop a checklist for inspecting your air valves ● describe some of the location problems in identifying your air valves ● explain the annual inspection of air valve ● indicate some of the maintenance issues - fouling & clogging problems	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 5	**content:** 11.31 Minutes **quiz:** 10 minutes **accumulative:** **21** Minutes	Specifications, Specialty, & Supplemental Information	● compare the various materials utilized in the foundry bodies of an air valve ● describe the body types of air valves ● discuss the standard specifications for your air valves and the proper size orifice for your application ● evaluate the various types of air valves designed for water hammer ● explain the force of water hammer	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 6 Final Course Requirements	**content:** 11.19 Minutes **quiz:** 10 minutes **accumulative:** 21 minutes	Case Studies	● describe the use of hydraulic modeling and potential cost savings ● explain the cost savings through a preventive maintenance program to improve operations ● discuss the importance of your valve maintenance program to improve operations	Streaming Based Online	Written Exam Essay Question - listing objectives that they learned from the course and how they apply to their job and workplace **Final Course Essay and Evaluation form**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images Essay – listing 3 things learned and how they apply to their workplace	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	21		sec 4 =	25
sec 2 =	21		sec 5 =	21
sec 3 =	23		sec 6 =	21

accumulative time total : 132 minutes = 2 hours = 0.2 CEU

**** standard beta allows one minute for each question and answer. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2018. At the beginning of 2018, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the September - December 2018 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
-
-
-

Flow Meters 101: For Water & Wastewater Applications - Course Outline/Learning Outcome/Description

Unit Lesson Name	Time Allotted	Content Description	Learning Outcome	Method Used	Assessment Method	Instructional Material
Section 1	20 min	Session 1: What, Why, & How	Define Flow Metering Explain how flow is measured and why it is important to measure flow Describe the different types of flow metering in water & wastewater Describe the basic parts of meters including registers	Online	Written Exam	Required view of power point presentation, listen to audio of presentation – Take Quiz upon completion of course section
Section 2	20 min	Session 2: Types of Flow Meters & Applications	Describe the different types of water & wastewater meters Explain different applicants for types of meters Describe the use of flumes related to metering	Online	Written Exam	Required view of power point presentation, listen to audio of presentation- Take Quiz upon completion of course section
Section 3	20 min	Session 3: Flow Meters – Business Optimization	Define benefits of automatic and advanced meter reading systems Describe meters related to asset management and business optimization Discuss right sizing of meters Discuss Meter Testing & Calibration	Online	Written Exam	Required view of power point presentation, listen to audio of presentation – Take Quiz upon completion of course material section

Flow Meters 101: For Water & Wastewater Applications - Course Outline/Learning Outcome/Description

Course Description

Understanding flow meters (and metering) is relative and essential to working in the water and wastewater industry. A basic knowledge of how meters work and the different types of meters is knowledge that all utility staff should possess.

This course, Flow Meters 101: For the Water & Wastewater Applications, provides a basic understanding of how various types of meter work and where they should be used based on flow conditions. Choosing the right type of meter for flow conditions is critical for process controls, revenue enhancements, and regulatory compliance. This course will describe over a dozen different type of meters used in the water and wastewater industry and explain how meters relates to operational and business optimization. Topics such as meter calibration, maintenance, and automatic meter reading are discussed in detail. After completing the course, the student will have a greater understanding of flow metering applications.

By the end of this training course, you will have the ability to:

- Describe the different types of flow metering in water & wastewater
- Explain how flow is measured and why it is important to measure flow
- Discuss Meter Testing & Calibration
- Explain different applicants for types of meters
- Define benefits of automatic and advanced meter reading systems
- Describe meters related to asset management and business optimization

The following course breakdown illustrates the individual sections:

- Section 1 - What, Why, & How
- Section 2: Types of Flow Meters & Applications
- Section 3: Flow Meters – Business Optimization

CEU Plan – Content & Instructional Course Design Worksheet

activated: 12/22/2015

CEU Plan # 227 - Flow Meters 101

Instructor: Joey Leverette

amount of course hours: **one**

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 12.59 Minutes **quiz:** 10 minutes **accumulative: 23** minutes	What, Why, & How	● Define Flow Metering ● Explain how flow is measured and why it is important to measure flow ● Describe the different types of flow metering in water & wastewater ● Describe the basic parts of meters including registers	Streaming Based Online	Written Exam	Required text reading of content material and view of streaming clip, via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 17.07 Minutes **quiz:** 10 minutes **accumulative: 27** minutes	Types of Flow Meters & Applications	● Describe the different types of water & wastewater meters ● Explain different applicants for types of meters ● Describe the use of flumes related to metering	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3	**content:** 16.33 Minutes **quiz:** 10 minutes **accumulative: 26** Minutes	Flow Meters – Business Optimization	● Define benefits of automatic and advanced meter reading systems ● Describe meters related to asset management and business optimization ● Discuss right sizing of meters ● Discuss Meter Testing & Calibration	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Accumulative Time:

sec 1 =	23									
sec 2 =	27									
sec 3 =	26									

accumulative time total : 76 minutes = 1 hours = 0.1 CEU

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
-
-
-

Author Full Name: Joey Leverette

Experience:

Joey Leverette has 18 years' experience in the Water & Wastewater industry, and has severed in several management positions with municipal utilities and contract operations. He is a state certificated operator in Water Treatment, Water Distribution, and Water Collections in the State of Georgia. Likewise, Joey is a member of the Georgia Association of Water Professionals (GAWP) and American Water Works Association (AWWA). He has served on various committees with these associations, and authored and presented several presentations at state conferences. Mr. Leverette received a Bachelor of Arts (BA) from the University of Georgia and a Master of Public Administration (MPA) from Georgia College and State University.

Category: Distribution and Collection Systems

Course Title: Water Loss Control

ANSI/IACET CEU Calculations - Required to complete this Course: two hours text and video-based course

Course Summary:

This course will introduce you to the vast topic of Water Loss Control include why controlling water loss is such an important focus for all water utilities. The course will provide detailed references to the different type of losses, real and apparent, that utilities should be closely monitoring as part of their daily operations. The information contained in the course will give the student a better understanding of how to formulate a plan to reduce water loss and provide information on leak detection programs and equipment. Likewise, the course provides information about Water Audits and how the data generated from audits can be helpful in capital and financial planning, how the audits are related to water loss control.

By the end of this training course, you will have the ability to:

- Describe facts and statists related to the need for a water loss control program
- Explain the term and importance of unaccountable for water
- Explain that Water Loss Control is a benefit to water providers
- Explain why water utilities should conduct Leak Detection
- Describe and discuss different types of acoustical and non-acoustical leak detection equipment
- Describe and discuss the types of apparent losses
- Describe the methodology of water audits
- Define a Water Balance Table
- Define the data need to conduct a water audit
- Define and explain key Performance Indicators of a completed water audit
- Discuss interpreting and understanding the results of a water audit

CEU ID #	Course Title	Instructor	CEU Hours
229	Water Loss Control	Joey Leverette	2 hrs.

CEU Plan – Content & Instructional Course Design Worksheet

Activated: 2013

CEU Plan # 229 - Water Loss Control

Instructor: Joey Leverette

amount of course hours: two

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 17 Minutes **quiz:** 11 minutes **accumulative: 28** minutes	Introduction to Water Loss Control	• discuss the importance of water supply • define the importance of monitoring for water loss • explain the importance of monitoring for cross-connection	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 13 Minutes **quiz:** 10 minutes **accumulative:** **23** minutes	Real Losses	● evaluate locations for water loss ● define pressure management ● identify a PRV and the purpose of the valves	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3	**content:** 14.5 Minutes **quiz:** 10 minutes **accumulative:** **24** Minutes	Leak Detection	● list types of leaks ● describe a geophone for leak detection ● identify probes used in detecting leaks	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 4	**content:** 16 Minutes **quiz:** 10 minutes **accumulative:** **26** Minutes	Apparent Losses	● evaluate leaks in distribution systems ● describe an automated meter reader ● examine water usage and loss	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 5	**content:** 13 Minutes **quiz:** 10 minutes **accumulative:** **23** Minutes	Water Audit – Part 1	● calculate an AWWA water loss audit ● describe water audit software ● list the importance of performing a water audit	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 6	**content:** 10 Minutes **quiz:** 10 minutes **accumulative:** 20 minutes	Water Audit – Part 2	● identify an infrastructure leakage index ● developing a water audit team ● creating a water audit program	Streaming Based Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Accumulative Time:

sec 1 =	28		sec 4 =	26							
sec 2 =	23		sec 5 =	23							
sec 3 =	24		sec 6 =	20							

accumulative time total : 144 minutes = 2 hours = 0.2 CEU

2nd Tier Beta Results

** **standard beta allows one minute for each question and answer. The essay requirement listing three things that they have learned from the course a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing was performed during February, 2017. At the end of 2016, student feedback and comments were collected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the September 2016 - January 2017 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan

Below are the 3rd Tier Beta Results

Beta Testing - Students

course # 229 - Water Loss Control - two hour course

Beta Testing Update: 2-23-2017

	1	2	3	4	5	6	7	8	9	10	Total - ETM	Avg/Sec
Section 1	28	36	39	30	46	90	20	51	25	46	178	30
Section 2	22	26	24	24	50	24	18	37	15	18	129	21
Section 3	34	29	27	25	34	26	15	60	18	25	148	24
Section 4	30	26	27	26	26	48	16	24	36	38	161	27
Section 5	24	27	23	24	23	42	17	25	15	65	130	21
Section 6	24	21	20	28	27	52	17	20	16	35	126	21
Total - ETM	162	165	160	157			103		125		872	144
					206	282		217		227		

		completion
1 -	Decoster, David	27-Dec
2 -	Carpenter, David	22-Dec
3 -	Merthe, Ronald	2-Dec
4 -	Hale, Dennis	28-Nov
5 -	Jordan, Naqthan	21-Nov
6 -	Evans, Machele	21-Nov
7 -	Ryan, Ricky	15-Nov
8 -	Reinke, Ronald	15-Nov
9 -	Heiby, Steve	4-Nov
10 -	Ewing, Roy	23-Oct

Student Feedback:

- I learned about the real water losses, leak detection and the water audit. Real water losses cost money, leak detection is important to keep costs under control so it's important to have fix leaks before they get worse. the water audit is a tool to help the utility understand where all the different water is going.

- The importance of a water audit. Plan on implementing a water audit program to increase revenue and reduce water losses. The basics of performing a water audit. What data is needed to perform an audit and where to locate. The importance of water loss control in controlling costs. In tough budget times this will help us control cost while maintaining lower rates

- Participation ,education, and cooperation is a must for water conservation and water loss prevention. Water audits can result in an increase in revenues for the utility. Just a small water leak can over time result in thousands of gallons of water loss and money loss. Preventing water loss and getting the company employees to buy into reporting leaks or faulty fixtures will help preserve the water in my small well plant system.

- What's involved in a water audit. Different ways to find water leaks. How meter problems can effect water loss estimates A better overall view of loss control

- 1. Learning about the types of meter inaccuracies. 2. Unauthorized consumption. 3. AWWA Methodology. Improving audits and helping with the awareness of water loses.

- the higher the pressure the greater the chance of leaks in the system pressure monitors at different places in the system to control pressure keep data on leaks to keep tract of the water lost

- 1. Loss prevention 2. Data analysis 3. Customer information on water loss

Author Full Name: Russ Martin

Experience:

Russ Martin worked at USEPA for more 40 years, retiring at the end of 2011. Mr. Martin spent his first years in a field office figuring out that a lot of POTWs were not working right, then spent the next several years in various areas of the Construction Grants Program, awarding grants to help municipalities expand wastewater treatment capabilities. Since 1985, he has worked in wastewater treatment compliance assistance, helping more than 50 plants improve performance and has assisted a National compliance effort, funded under 104g1 of the Clean Water Act, that has improved the performance of thousands of POTWs. POTWs assisted by him have won National and/or Regional EPA operation and maintenance excellence awards in all six states in EPA Region 5. In addition, his most recent activities include: sustainable water infrastructure (especially asset management), security at POTWs and combined sewers.

Category: Operation and Control of a Treatment Plant

Course Title: Clarifier Operations

ANSI/IACET CEU Calculations - Required to complete this Course: two hour

Course Summary:

This one hour course is a streaming course broken into three course sections. The course will discuss the operation and performance of primary and secondary clarifiers including the evaluation of capacities, testing, and sensory evaluations which can be used to evaluate clarifier performance utilizing onsite experiences in troubleshooting.

This course will cover:

- General overview of clarifiers
- What impacts clarifier performance and what is under the water
- Primary clarifier capacity, testing and analysis
- Secondary clarifier capacity, testing and analysis
- Additional considerations for proper clarifier performance

CATEGORY 7 – Content & Instructional Methods
DESIGN DOCUMENT

CEU Plan # 250 – Clarifier Operation

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 6 Minutes **quiz:** 10 minutes **accumulative: 16** minutes	Introduction and general overview	Indicate the various types of clarifier mechanisms Describe the return of sludge procedures Demonstrate safety concerns of operating a clarifier unit	Streaming Base Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required text reading in their course enrollment confirmation – Auto response

Section 2	**content:** 9 minutes **quiz:** 10 minutes **accumulative:** **19** minutes	Differences between primary and secondary clarifiers	Indicate the various types of clarifier mechanisms Describe the return of sludge procedures Evaluate the process control components of a clarifier mechanism Illustrate performance sampling of a secondary clarifiers	Streaming Base Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required text reading in their course enrollment confirmation – Auto response
Section 3	**content:** 11 minutes **quiz:** 10 minutes **accumulative:** **21** minutes	Primary clarifiers	Describe the return of sludge procedures Define the importance of a primary clarifier	Streaming Base Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required text reading in their course enrollment confirmation – Auto response

Section 4	**content:** 11 minutes **quiz:** 10 minutes **accumulative:** **21** minutes	Secondary clarifiers	Indicate the various types of clarifier mechanisms Describe the return of sludge procedures Evaluate the process control components of a clarifier mechanism	Streaming Base Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required text reading in their course enrollment confirmation – Auto response
Section 5	**content:** 12 Minutes **quiz:** 10 minutes **accumulative:** **22** minutes	Performance tests	Evaluate the process control components of a clarifier mechanism Illustrate performance sampling of a secondary clarifiers Demonstrate safety concerns of operating a clarifier unit	Streaming Base Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required text reading in their course enrollment confirmation – Auto response

Section 6	**content:** 9.5 Minutes **quiz:** 10 minutes **accumulative:** **20** minutes	Operator safety and Winter operation	Evaluate the process control components of a clarifier mechanism Illustrate performance sampling of a secondary clarifiers Demonstrate safety concerns of operating a clarifier unit	Streaming Base Online	Written Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	

Accumulative Time:

sec 1 =	16
sec 2 =	19
sec 3 =	21
sec 4 =	21
sec 5 =	22
sec 6 =	20

accumulative time total : 119 minutes = 2 hours = 0.2 CEU

Beta Testing - Students

course # 250 - Clarifier Operation - two hour course

Beta Testing Update: 12-10-2016

	1	2	3	4	5	6	7	8	9	10	Total - ETM	Avg/Sec
Section 1	19	17	16	16	34	19	24	16	18	17	164	21
Section 2	19	18	30	18	19	22	19	16	19	19	153	19
Section 3	21	21	22	21	21	25	21	25	40	21	151	21
Section 4	24	21	52	21	21	37	22	49	21	25	192	24
Section 5	22	22	25	24	22	21	18	26	22	22	173	21
Section 6	19	19	44	18	21	19	16	143	23	19	154	19
Total - ETM	124	118		118	138	143	120		143	123		125
			189					275				

		completion
1 -	Thornton, Travis	10-Dec
2 -	Seibel, Robert	9-Dec
3 -	Blizzard, Dean	16-Nov
4 -	Kasey, Ronald	6-Nov
5 -	Cogar, David	18-Oct
6 -	Snford, David	22-Sep
7 -	Kenneth, Amado	20-Jul
8 -	Prowinski, Jason	24-May
9 -	Groff, Stephen	26-Apr
10 -	Garner, William	22-Mar

- Student # 3 and # 8 have been deleted, as the top 2 of the test
- The Total/ETM column L = time spent by 8 students for individual section
- The Avg/Sec column M = average time spent by 8 students in the beta test
- The Total/ETM column A = average time spent by 8 students for the course
- This beta test illustrates the students are spending near the original beta time for the course, and the course development estimates
- Student comments = above average rating and high marks for content

Student Feedback:

- 1) The different designs of Clarifiers. 2) The different tests used to evaluate the performance of a Clarifier. 3) The importance of walking around all of the Clarifiers to check for the evenness of flow. This taught me to be more diligent about checking Clarifier performance by checking the hydraulics and loading on each Clarifier.
  I like that CEU Plan has many different course to choose from. I prefer the written course over the video courses as then if you print the course you have reference material.
- Actually, have been in operations quite a while, have a good idea of clarifier operations.
  Primary clarifier had been removed when came into operations so learned of similarities between primary and secondary, and the differences of operation.
  A very clear and precise course.
- the different designs of clarifiers the tools used in sampling such as core sampler and the actual parts of the clarifier i think its great and fits my schedule to obtain my ceus
- Differences between primary and secondary clarifiers, round and rectangle.
  How to troubleshoot and proper loading. Love it
- Different types clarifiers, the flow rates and the safety of working around the clarifiers. A sludge judge is used often on the primary clarifiers to measure sludge levels.
  Easy way to maintain CEU's needed to maintain operators licenses.
- I have never seen a rectangular clarifier. I have been keeping a blanket >2' in my secondary clarifier. I learned about groundwater relief valves. I like the selection of courses and flexibility to learn online.

Author Full Name: Russ Martin

Experience:

Russ Martin worked at USEPA for more 40 years, retiring at the end of 2011. Mr. Martin spent his first years in a field office figuring out that a lot of POTWs were not working right, then spent the next several years in various areas of the Construction Grants Program, awarding grants to help municipalities expand wastewater treatment capabilities. Since 1985, he has worked in wastewater treatment compliance assistance, helping more than 50 plants improve performance and has assisted a National compliance effort, funded under 104g1 of the Clean Water Act, that has improved the performance of thousands of POTWs. POTWs assisted by him have won National and/or Regional EPA operation and maintenance excellence awards in all six states in EPA Region 5. In addition, his most recent activities include: sustainable water infrastructure (especially asset management), security at POTWs and combined sewers.

Category: Operation and Control of a Treatment Plant

Course Title: World of FOG

ANSI/IACET CEU Calculations - Required to complete this Course: one hour

Course Summary:

The ***World of FOG*** is an interesting one-hour course by Russ Martin. Russ goes through some of the fundamentals of fats, oil, and grease in this streaming (video) based course. In the introduction, Russ provides some references in facts and details along with some troubleshooting concepts in FOG from his previous experience, as the wastewater guru in the USEPA – Region 5 – Chicago Bureau Office. This is a great course for anyone developing an industrial pre-treatment program or handling grease and oil in their collection system, as well as for wastewater treatment plant operators dealing with commercial – restaurant waste.

This course includes an actual case study from a Midwest Wastewater Treatment Plant, where they receive the entire commercial – restaurant waste (FOG) from the fifth and sixth largest restaurants in the country. These two restaurants prepare a combined three million chicken dinners per year, where all of the chicken bones, grease and oil, and kitchen clean-up is sent directly to the treatment plant on the other side of the river. The plant manager shares some of his troubleshooting concepts in handling the influent and explains their weekly preventive maintenance routine in the collection system. This is an excellent case study of “What’s Unique about My Plant”, filmed on location at the treatment plant.

And lastly, Russ provides some important steps in developing an ordinance to protect your plant. He includes some very interesting means to control the build-up of FOG in your lift stations and collection systems, a very cost effective approach.

By the end of this training course, you will have the ability to:

- Explain some of the problems related to excessive FOG
- Identify the increase O &M in primary clarifiers to deal with FOG at your treatment plant
- Illustrate some of the modifications to deal with excessive FOG
- Troubleshooting your FOG system
- Explain the number one rule in dealing with FOG at your treatment plant

The following course breakdown illustrates the individual course sections:

Section 1 – General Overview of FOG

Section 2 – Case Study – Upper Midwest WWTP – part one – Impacts to your Wastewater Treatment Plant and approaches to Deal with this Impact

Section 3 - Case Study – Upper Midwest WWTP – part two – Ways to deal with higher levels of FOG at the Wastewater Treatment Plant

CEU Plan – Content & Instructional Course Design Worksheet

CEU Plan # 252 - World of FOG (fats, oil, and grease) Instructor: Russ Martin

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 14.11 Minutes **quiz:** 10 minutes **accumulative: 24** minutes	General Overview Of FOG	• **define fats, oils, and grease** • **examine the treatment process** • **describe the sewer overflows**	Streaming Online monitor of student's progress measured in elapsed time (in minutes) Reinforcement Techniques: utilize images and illustrations for double Reinforcement of Need-to-Know criteria	Computer based Exam Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 17.24 Minutes **quiz:** 10 minutes **accumulative: 27** minutes	Case Study Upper Midwest WWTP Part one	**● list some of the ways to control FOG** **● examine the location to chlorinate to reduce filaments** **● describe operations with high FOG levels**	Streaming Online monitor of student's progress measured in elapsed time (in minutes) Reinforcement Techniques: utilize images and illustrations for double Reinforcement of Need-to-Know criteria	Computer based Exam Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated
Lesson Name	**Time**	**Content Description**	**Learning Outcomes**	**Learning Styles**	**Assessment**	Instructional Materials	**Comments**
Section 3 **FINAL SECTION**	**content:** 21.14 Minutes **quiz:** 10 minutes **accumulative: 31** minutes	Case Study Upper Midwest WWTP Part two	**● describe type of filament found in high levels of FOG** **● compare aeration - fine bubble use in filament reduction** **● evaluate grit collection in improvements to reduce FOG**	Streaming Online monitor of student's progress measured in elapsed time (in minutes) Reinforcement Techniques: utilize images and illustrations for double Reinforcement of Need-to-Know criteria	**Final Exam** Complete Evaluation form Essay – listing 3 things learned and how they apply to their workplace	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the section, instructions to proceed to the quiz will be indicated. Followed by the Evaluation form and essay requirement

Accumulative Time:

sec 1 =	24	sec 2 =	27	sec 3 =	31

accumulative time total : 82 minutes = 1 hours = 0.1 CEU

Student Feedback:

Author's Full Name: Glenn Barnes

Experience:

Glenn Barnes is director of Water Finance Assistance, a training and technical assistance venture dedicated to building the financial and managerial capacity of drinking water systems. Glenn leads educational programs and works directly with drinking water systems on a range of financial and managerial topics including rate setting, data driven decision making, long-term planning, conservation finance, affordability, and effective customer communication. Glenn has over 20 years of experience in environmental services including 12 years with the Environmental Finance Centers, and he currently serves on AWWA's rates and charges committee. Glenn holds a BA and an MPA from The University of North Carolina at Chapel Hill.

Category: Distribution and Collection Systems - Government Rules & Regulations

Course Title: Paying for Lead Service Line Replacement

ANSI/IACET CEU Calculations - Required to complete this Course: one hour – streaming

Course Summary:

Paying for Lead Service Line Replacement is a one hour course providing some current thinking and suggestions for replacing lead service lines. The big issue of who pays? What options are available? Are private homeowners responsible? Many questions to deal with: locating and replacing old lead water service lines within your distribution system. Glenn has spent years evaluating and consulting with communities across the USA in their long range planning. He shares some of his experience and dealings with the local issue of financial considerations in lead replacement.

In this course, some of the managerial issues surrounding lead service line replacement and the options to finance the replacement of the lead service line portion owned by the utility and the lead service line portion owned by the property are explained. Section 1 will provide an overview of lead service line replacement, including some of the steps needed to begin a lead service line replacement program and a discussion of the ownership of lead service lines. Section 2 will examine ways that utilities can pay for the portion of the lead service line that they own. And Section 3 will discuss how utilities can finance the replacement of the portion of the lead service line owned by the property.

Learning Outcomes:

By the end of this training course, you will have the ability to:

- examine the health risk posed by lead service lines and why utilities are choosing to replace them
- identify the steps necessary to create and manage a lead service line replacement program
- explain the ownership of lead service lines and how that can impact the financing of the lead service line replacement program
- discuss the potential legal barriers to using utility funds to improve private property

Course Breakdown:

The following course breakdown lists the individual sections:

- Section 1 - Identifying lead service lines and understanding ownership
- Section 2 - Paying for the replacement of lines owned by the utility
- Section 3 - Paying for the replacement of lines owned by the property

CEU ID #	Course Title	Instructor	CEU Hours
311	Paying for Lead Service Line Replacement	Glenn Barnes	1 hr.

CEU Plan – Content & Instructional Course Design Worksheet

activated: 2.18.2020

CEU Plan # 311 - Paying for Lead Service Line Replacement

Instructor: Glenn Barnes

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 15.03 Minutes **quiz:** 10 minutes **accumulative: 25** minutes	Identifying lead service lines and understanding ownership	• explain the ownership of lead service lines (LSL) • identify the steps needed to start a LSL replacement program • examine why utilities are choosing to replace lead service lines	Streaming Online monitor of student's progress measured in elapsed time (in minutes) Reinforcement Techniques: utilize images and illustrations for double Reinforcement of Need-to-Know criteria	Computer based Exam Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required text reading , view video, and any other study requirements in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 18.23 Minutes **quiz:** 10 minutes **accumulative: 28** minutes	Paying for the replacement of lines owned by the utility	● recognize that replacing the utility-owned portion of LSL can be treated like any other capital improvement ● identify state and federal government loan and grant programs available for LSL replacement ● review the general categories of financing options for LSL replacement	Streaming Online monitor of student's progress measured in elapsed time (in minutes) Reinforcement Techniques: utilize images and illustrations for double Reinforcement of Need-to-Know criteria	Computer based Exam Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required text reading , view video, and any other study requirements in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated
Lesson Name	**Time**	**Content Description**	**Learning Outcomes**	**Learning Styles**	**Assessment**	Instructional Materials	**Comments**
Section 3 **Final Course Section**	**content:** 20.46 Minutes **quiz:** 10 minutes **accumulative: 31** minutes	Paying for the replacement of lines owned by the property owners	● explore methods to pay for the replacement of the property-owned portion of the LSL ● discuss the legal barriers to using utility funds to improve private property ● identify the potential cost of not replacing your LSL	Streaming Online monitor of student's progress measured in elapsed time Reinforcement Techniques: utilize images and illustrations for double Reinforcement of Need-to-Know criteria	**Final Exam** Complete Evaluation form Essay – listing 3 things learned and how they apply to their workplace	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Indicate of any handout, pdf, or link required for external studies At the conclusion of the course section, instructions to proceed to the final quiz. Followed by the Evaluation form and essay requirement

Accumulative Time:

sec 1 =	25	sec 2 =	28	sec 3 =	31

accumulative time total : 84 minutes = 1 hours = 0.1 CEU

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2020-21. At the beginning of 2021, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the February - July 2021 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Beta Test:

Student Feedback: