

**Registration Form**

**WASTEWATER COLLECTION CEU TRAINING COURSE \$100.00**  
**48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL \$50.00**

**Start and finish dates:** \_\_\_\_\_

*You will have 90 days from this date in order to complete this course*

**List number of hours worked on assignment must match State Requirement.** \_\_\_\_\_

**Name** \_\_\_\_\_ **Signature** \_\_\_\_\_

*I have read and understood the disclaimer notice on page 2. Digitally sign XXX*

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

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

**Email** \_\_\_\_\_ **Fax ( \_\_\_\_\_ )** \_\_\_\_\_

**Phone:**  
**Home ( \_\_\_\_\_ )** \_\_\_\_\_ **Work ( \_\_\_\_\_ )** \_\_\_\_\_

**Operator ID #** \_\_\_\_\_ **Exp Date** \_\_\_\_\_

*Please circle/check which certification you are applying the course CEU's.*

Collection \_\_\_ Wastewater Treatment \_\_\_ Other \_\_\_\_\_

***Your certificate will be e-mailed to you in about two weeks unless you pay for the rush service.***

Technical Learning College PO Box 3060, Chino Valley, AZ 86323  
Toll Free (866) 557-1746 Fax (928) 272-0747 e-mail info@tlch2o.com

**If you've paid on the Internet, please write your Customer#** \_\_\_\_\_

**Please invoice me, my PO#** \_\_\_\_\_

**Please pay with your credit card on our website under Bookstore or Buy Now. Or call us and provide your credit card information.**

***We will stop mailing the certificate of completion we need your e-mail address. We will e-mail the certificate to you, if no e-mail address; we will mail it to you.***

## **DISCLAIMER NOTICE**

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible.

I fully understand that this type of study program deals with dangerous, changing conditions and various laws and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable in any fashion for any errors, omissions, advice, suggestions or neglect contained in this CEU education training course or for any violation or injury, death, neglect, damage or loss of your license or certification caused in any fashion by this CEU education training or course material suggestion or error or my lack of submitting paperwork. It is my responsibility to call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded. It is my responsibility to ensure all information is correct and to abide with all rules and regulations.

**Professional Engineers;** Most states will accept our courses for credit but we do not officially list the States or Agencies. Please check your State for approval.

*You can obtain a printed version of the course manual from TLC for an additional \$69.95 plus shipping charges.*

## **AFFIDAVIT OF EXAM COMPLETION**

I affirm that I personally completed the entire text of the course. I also affirm that I completed the exam without assistance from any outside source. I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

## **Grading Information**

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

**Do not solely depend on TLC's Approval list for it may be outdated.**

**Some States and many employers require the final exam to be proctored.**

<http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf>

**A second certificate of completion for a second State Agency \$50 processing fee.**

**All downloads are electronically tracked and monitored for security purposes.**

# For Texas Wastewater Licensed Operators

## Wastewater/Collections Rule Changes (Texas Only)

### Rule Changes and Updates for Domestic Wastewater Systems

On Nov. 4, 2014, TCEQ commissioners adopted revisions to 30 Texas Administrative Code (TAC), Chapter 217, Design Criteria for Domestic Wastewater Systems, and “re-adopted” previously repealed rules in 30 TAC, Chapter 317, Design Criteria Prior to 2008.

#### ***Some of the changes to Chapter 217 include:***

- Adding new definitions and clarifying existing definitions;
- Adding design criteria and approval requirements for rehabilitation of existing infrastructure;
- Adding design criteria for new technologies, including cloth filters and air lift pumps;
- Making changes to reflect modern practices, standards and trends;
- Modifying rule language to improve readability and enforceability; and
- Modifying the design organic loadings and flows for a new wastewater treatment facility.

### **SUBCHAPTER A: ADMINISTRATIVE REQUIREMENTS §§217.1 - 217.18**

Effective December 4, 2015 §217.1. Applicability. (a) Applicability. (1) This chapter applies to the design, operation, and maintenance of: (A) domestic wastewater treatment facilities that are constructed with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (B) treatment units that are altered, constructed, or re-rated with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (C) collection systems that are constructed with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (D) collection system units that are altered, constructed, or re-rated with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (E) existing domestic wastewater treatment facilities that do not have a current Texas Pollutant Discharge Elimination System permit or a Texas Land Application Permit and are required to have an active wastewater permit; (F) existing wastewater treatment facilities and collection systems that never received approval for plans and specifications from the executive director; and (G) collection system rehabilitation projects covered in §217.56(c) and §217.69 of this title (relating to Trenchless Pipe Installation; and Maintenance, Inspection, and Rehabilitation of the Collection System). (2) Domestic wastewater treatment facilities, treatment units, collection systems, and collection system units with plans and specifications approved by the executive director that were received on or after August 28, 2008 and before the effective date of this chapter must comply with the rules in this chapter, as they existed immediately before the effective date of the amendments to this chapter.

The rules in Texas Commission on Environmental Quality Page 2 Chapter 217 - Design Criteria for Domestic Wastewater Systems effect immediately before the effective date of the amendments to this chapter are continued in effect for that purpose. (3) This chapter does not apply to: (A) the design, installation, operation, or maintenance of domestic wastewater treatment facilities, treatment units, collection systems, or collection system units with plans and specifications that were approved by the executive director on or before August 27, 2008, which are governed by Chapter 317 of this title (relating to Design Criteria Prior to 2008) or design criteria that preceded Chapter 317 of this title; and (B) systems regulated by Chapter 285 of this title (relating to On-Site Sewage Facilities); or collection systems or wastewater treatment facilities that collect, transport, treat, or dispose of wastewater that does not have the characteristics of domestic wastewater, although the wastewater may contain domestic wastewater.

(b) The executive director may grant variances from new requirements added by the amendments of this chapter to a person who proposes to construct, alter, or re-rate a collection system or wastewater treatment facility if the plans and specifications for the project are submitted within 180 days after the date the amendments to this chapter are effective, provided the plans and specifications comply with the rules in effect immediately prior to the amendment. Adopted November 4, 2015 Effective December 4, 2015

**The link to the rules is available on the TCEQ website at <https://www.tceq.texas.gov/rules/indxpdf.html>**

***For Texas Students Only....***

Please sign and date this notice

Printed Name

---

Signature

Date

---

**Texas Students Only**  
**Acknowledgement of Notice of Potential Ineligibility for License**  
*You are required to sign and return to TLC or your credit will not be reported.*

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

Date of Birth: \_\_\_\_\_

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

By signing this form, I acknowledge that Technical Learning College notified me of the following:

- the potential ineligibility of an individual who has been convicted of an offense to be issued an occupational license by the Texas Commission on Environmental Quality (TCEQ) upon completion of the educational program;
- the current TCEQ Criminal Conviction Guidelines for Occupational Licensing, which describes the process by which the TCEQ's Executive Director determines whether a criminal conviction:
  - renders a prospective applicant an unsuitable candidate for an occupational license;
  - warrants the denial of a renewal application for an existing license; or
  - warrants revocation or suspension of a license previously granted.
- the right to request a criminal history evaluation from the TCEQ under Texas Occupations Code Section 53.102; and
- that the TCEQ may consider an individual to have been convicted of an offense for the purpose of denying, suspending or revoking a license under circumstances described in Title 30 Texas Administrative Code Section 30.33.

Enrollee Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Training Provider/Organization: Technical Learning College

Contact Person: Melissa Durbin      Role/Title: Dean



# Wastewater Collections Answer Key

Name \_\_\_\_\_

Phone \_\_\_\_\_

**You are solely responsible in ensuring that this course is accepted for credit by your State. No refunds. Did you check with your State agency to ensure this course is accepted for credit?**

**Method of Course acceptance confirmation. Please fill this section**

Website \_\_\_ Telephone Call \_\_\_ Email \_\_\_ Spoke to \_\_\_\_\_

**Do not solely depend on TLC's Approval list for it may be outdated.**

**What is the approval number if Applicable? \_\_\_\_\_**

**You are responsible to ensure that TLC receives the Assignment and Registration Key. Please call us to ensure that we received it.**

**You can use Adobe Acrobat DC Program to complete the assignment.**

**Please circle, underline, bold or X only one correct answer**

- |                 |                 |                 |
|-----------------|-----------------|-----------------|
| 1. A B C D E F  | 16. A B C D E F | 31. A B C D E F |
| 2. A B C D E F  | 17. A B C D E F | 32. A B C D E F |
| 3. A B C D E F  | 18. A B C D E F | 33. A B C D E F |
| 4. A B C D E F  | 19. A B C D E F | 34. A B C D E F |
| 5. A B C D E F  | 20. A B C D E F | 35. A B C D E F |
| 6. A B C D E F  | 21. A B C D E F | 36. A B C D E F |
| 7. A B C D E F  | 22. A B C D E F | 37. A B C D E F |
| 8. A B C D E F  | 23. A B C D E F | 38. A B C D E F |
| 9. A B C D E F  | 24. A B C D E F | 39. A B C D E F |
| 10. A B C D E F | 25. A B C D E F | 40. A B C D E F |
| 11. A B C D E F | 26. A B C D E F | 41. A B C D E F |
| 12. A B C D E F | 27. A B C D E F | 42. A B C D E F |
| 13. A B C D E F | 28. A B C D E F | 43. A B C D E F |
| 14. A B C D E F | 29. A B C D E F | 44. A B C D E F |
| 15. A B C D E F | 30. A B C D E F | 45. A B C D E F |

46. A B C D E F      78. A B C D E F      110. A B C D E F  
47. A B C D E F      79. A B C D E F      111. A B C D E F  
48. A B C D E F      80. A B C D E F      112. A B C D E F  
49. A B C D E F      81. A B C D E F      113. A B C D E F  
50. A B C D E F      82. A B C D E F      114. A B C D E F  
51. A B C D E F      83. A B C D E F      115. A B C D E F  
52. A B C D E F      84. A B C D E F      116. A B C D E F  
53. A B C D E F      85. A B C D E F      117. A B C D E F  
54. A B C D E F      86. A B C D E F      118. A B C D E F  
55. A B C D E F      87. A B C D E F      119. A B C D E F  
56. A B C D E F      88. A B C D E F      120. A B C D E F  
57. A B C D E F      89. A B C D E F      121. A B C D E F  
58. A B C D E F      90. A B C D E F      122. A B C D E F  
59. A B C D E F      91. A B C D E F      123. A B C D E F  
60. A B C D E F      92. A B C D E F      124. A B C D E F  
61. A B C D E F      93. A B C D E F      125. A B C D E F  
62. A B C D E F      94. A B C D E F      126. A B C D E F  
63. A B C D E F      95. A B C D E F      127. A B C D E F  
64. A B C D E F      96. A B C D E F      128. A B C D E F  
65. A B C D E F      97. A B C D E F      129. A B C D E F  
66. A B C D E F      98. A B C D E F      130. A B C D E F  
67. A B C D E F      99. A B C D E F      131. A B C D E F  
68. A B C D E F      100. A B C D E F      132. A B C D E F  
69. A B C D E F      101. A B C D E F      133. A B C D E F  
70. A B C D E F      102. A B C D E F      134. A B C D E F  
71. A B C D E F      103. A B C D E F      135. A B C D E F  
72. A B C D E F      104. A B C D E F      136. A B C D E F  
73. A B C D E F      105. A B C D E F      137. A B C D E F  
74. A B C D E F      106. A B C D E F      138. A B C D E F  
75. A B C D E F      107. A B C D E F      139. A B C D E F  
76. A B C D E F      108. A B C D E F      140. A B C D E F  
77. A B C D E F      109. A B C D E F      141. A B C D E F

142. A B C D E F                      162. A B C D E F                      182. A B C D E F  
143. A B C D E F                      163. A B C D E F                      183. A B C D E F  
144. A B C D E F                      164. A B C D E F                      184. A B C D E F  
145. A B C D E F                      165. A B C D E F                      185. A B C D E F  
146. A B C D E F                      166. A B C D E F                      186. A B C D E F  
147. A B C D E F                      167. A B C D E F                      187. A B C D E F  
148. A B C D E F                      168. A B C D E F                      188. A B C D E F  
149. A B C D E F                      169. A B C D E F                      189. A B C D E F  
150. A B C D E F                      170. A B C D E F                      190. A B C D E F  
151. A B C D E F                      171. A B C D E F                      191. A B C D E F  
152. A B C D E F                      172. A B C D E F                      192. A B C D E F  
153. A B C D E F                      173. A B C D E F                      193. A B C D E F  
154. A B C D E F                      174. A B C D E F                      194. A B C D E F  
155. A B C D E F                      175. A B C D E F                      195. A B C D E F  
156. A B C D E F                      176. A B C D E F                      196. A B C D E F  
157. A B C D E F                      177. A B C D E F                      197. A B C D E F  
158. A B C D E F                      178. A B C D E F                      198. A B C D E F  
159. A B C D E F                      179. A B C D E F                      199. A B C D E F  
160. A B C D E F                      180. A B C D E F                      200. A B C D E F  
161. A B C D E F                      181. A B C D E F

*This course contains general EPA's CWA federal rule requirements. Please be aware that each state implements wastewater/safety/environmental /building regulations that may be more stringent than EPA's regulations. Check with your state environmental/health agency for more information. These rules change frequently and are often difficult to interpret and follow. Be careful to not be in non-compliance and do not follow this course for proper compliance.*

**Please fax the answer key to TLC  
(928) 272-0747**

**Rush Grading Service**

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of \$50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line. Thank you...

**WASTEWATER COLLECTIONS CEU TRAINING COURSE  
CUSTOMER SERVICE RESPONSE CARD**

NAME: \_\_\_\_\_

E-MAIL \_\_\_\_\_ PHONE \_\_\_\_\_

**PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.**

1. Please rate the difficulty of your course.  
Very Easy    0    1    2    3    4    5    Very Difficult
2. Please rate the difficulty of the testing process.  
Very Easy    0    1    2    3    4    5    Very Difficult
3. Please rate the subject matter on the exam to your actual field or work.  
Very Similar    0    1    2    3    4    5    Very Different
4. How did you hear about this Course? \_\_\_\_\_
5. What would you do to improve the Course?

---

---

How about the price of the course?

Poor \_\_\_\_\_ Fair \_\_\_\_\_ Average \_\_\_\_\_ Good \_\_\_\_\_ Great \_\_\_\_\_

How was your customer service?

Poor \_\_\_\_\_ Fair \_\_\_\_\_ Average \_\_\_\_\_ Good \_\_\_\_\_ Great \_\_\_\_\_

Any other concerns or comments.

---

---



# Wastewater Collections CEU Training Course Assignment

*The Assignment (Exam) is also available in Word on the Internet for your Convenience, please visit [www.ABCTLC.com](http://www.ABCTLC.com) and download the assignment and e-mail it back to TLC.*

You will have 90 days from the start of this course to complete in order to receive your Professional Development Hours (**PDHs**) or Continuing Education Unit (**CEU**). A score of 70 % is necessary to pass this course. We prefer if this exam is proctored. No intentional trick questions. If you should need any assistance, please email all concerns and the completed manual to [info@tlch2o.com](mailto:info@tlch2o.com).

We would prefer that you utilize the enclosed answer sheet in the front, but if you are unable to do so, type out your own answer key. Please include your name and address on your Answer Key and make copy for yourself. You can e-mail or fax your Answer Key along with the Registration Form to TLC. **(S) Means answer may be plural or singular**

## Wastewater Collection Rules and Regulations

### Chapter 1

#### Clean Water Act (Rule) Summary 33 U.S.C. s/s 1251 et seq. (1977)

1. Which of the following terms gave the authority to set effluent standards on an industry basis and continued the requirements to set water quality standards for all contaminants in surface waters?
  - A. Clean Water Act or CWA
  - B. EPA
  - C. Congress
  - D. Water quality standard(s)
  - E. Public notification program(s)
  - F. None of the Above
2. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (NPDES) is obtained under the?
  - A. Act
  - B. Water quality levels
  - C. Clean water legislation
  - D. EPA
  - E. OSHA
  - F. None of the Above
3. Which of the following terms focused on toxic pollutants?
  - A. Clean Water Act or CWA
  - B. EPA
  - C. Congress
  - D. Water quality standard(s)
  - E. The 1977 amendments
  - F. None of the Above
4. \_\_\_\_\_ primary objective is to restore and maintain the integrity of the nation's waters.
  - A. Clean Water Act
  - B. Water quality levels
  - C. Clean water legislation
  - D. EPA still retains oversight responsibilities
  - E. Valuable wetlands and other aquatic habitats
  - F. None of the Above
5. Which of the following terms focuses on improving the quality of the nation's waters?
  - A. Clean Water Act
  - B. EPA
  - C. Congress
  - D. Water quality standard(s)
  - E. Public notification program(s)
  - F. None of the Above

6. Which of the following terms requires major industries to meet performance standards to ensure pollution control; charges states and tribes with setting specific water quality criteria appropriate for their waters and developing pollution control programs?

- A. Clean Water Act
- B. Water quality levels
- C. Clean water legislation
- D. EPA oversight responsibilities
- E. Valuable wetlands and other aquatic habitats
- F. None of the Above

7. The CWA provisions for the delegation by which term of many permitting, administrative, and enforcement aspects of the law to state governments? In states with the authority to implement CWA programs, the EPA still retains oversight responsibilities.

- A. Clean Water Act or CWA
- B. Water quality levels
- C. Clean water legislation
- D. EPA
- E. Valuable wetlands and other aquatic habitats
- F. None of the Above

8. Which of the following terms is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers, and coastal areas. Lake Erie was dying?

- A. Clean Water Act
- B. EPA
- C. Congress
- D. Water quality standard(s)
- E. Public notification program(s)
- F. None of the Above

**CMOM - "Capacity, Management, Operation and Maintenance"**

9. Which of the following terms is vital to protect public health, property, and waterways in the surrounding area?

- A. Sanitary sewage overflows (SSOs)
- B. Wastewater
- C. Clean decantible water
- D. Management, operation, and maintenance
- E. Proper function of sanitary sewer systems
- F. None of the Above

10. Which of the following terms occur every year, causing huge monetary losses, damage to fish/shellfish beds, polluting groundwater, and decreased tourism?

- A. Public health and water quality
- B. Disrepair
- C. 40,000 Sanitary sewage overflows SSOs
- D. Dissolved organics
- E. Undesirable solids
- F. None of the Above

11. Which of the following terms release raw sewage from the collection system before it can reach a treatment facility?

- A. Sanitary sewage overflows (SSOs)
- B. Wastewater
- C. Clean decantible water
- D. Management, operation, and maintenance
- E. Full compliance with the Clean Water Act
- F. None of the Above

12. Cities have used a wide variety of building materials, designs, and installation techniques, which aren't durable enough to withstand heavy, continuous use.

- A. True
- B. False

13. The Management, Operation and Maintenance (MOM) Programs Project is a pilot enforcement approach developed by \_\_\_\_\_.

- A. Clean Water Act
- B. EPA
- C. Congress
- D. Water quality standard(s)
- E. EPA Region 4
- F. None of the Above

14. A SSO is a release of untreated wastewater before the flow reaches a treatment plant. SSOs pose a significant threat to public health and?

- A. Public health and water quality
- B. Disrepair
- C. Water quality
- D. Dissolved organics
- E. Certain compounds and undesirable solids
- F. None of the Above

**Treatment Balance and the Effects of Undesirable Solids**

15. Which of the following terms to operate properly, the operator has to maintain a skillfully balanced mixture of microorganisms that contact and digest the organics in the wastewater, and bacteria then grows on this media to treat the wastewater?

- A. Sanitary sewage overflows (SSOs)
- B. Wastewater
- C. Wastewater treatment plant
- D. Management, operation, and maintenance
- E. Full compliance with the Clean Water Act
- F. None of the Above

16. When a plant is properly maintained these bacteria or bugs eat the dissolved organics in the water, thus removing?

- A. Public health and water quality
- B. BOD, Ammonia, Nitrates, and Phosphorus
- C. Sanitary sewage overflows SSOs
- D. Dissolved organics
- E. Certain compounds
- F. None of the Above

17. The wastewater treatment process leaves extremely clean and reusable water that can be injected back into the ground, sent to ponds or used for?

- A. Irrigation
- B. Wastewater
- C. Clean decantable water
- D. Management, operation, and maintenance
- E. Full compliance with the Clean Water Act
- F. None of the Above

**What are Sanitary Sewer Overflows?**

18. Sanitary Sewer Overflows (SSOs) are discharges of raw sewage from?

- A. Deteriorating Sewer System
- B. Pipe Failure(s)
- C. Destructive compounds
- D. Municipal sanitary sewer systems
- E. Sanitary Sewer Overflows or (SSOs)
- F. None of the Above

19. Which of the following terms can release untreated sewage into basements or out of manholes and onto city streets, playgrounds, and into streams before it can reach a treatment facility?

- A. Deteriorating Sewer System
- B. Pipe Failure(s)
- C. Destructive compounds
- D. Badly connected sewer service lines
- E. SSOs
- F. None of the Above

20. Which of the following terms occasionally occur in almost every sewer system, even though systems are intended to collect and contain all the sewage?

- A. SSOs
- B. Undersized Systems
- C. Sewer Service Connections
- D. Poor sewer collection system management
- E. Back-ups and sewer overflows
- F. None of the Above

**Problems that Can Cause Chronic SSOs Include:**

21. Which of the following terms is too much rainfall or snowmelt infiltrating through the ground into leaky sanitary sewers?

- A. Deteriorating Sewer System
- B. Infiltration and Inflow (I&I)
- C. Destructive compounds
- D. Badly connected sewer service lines
- E. Sanitary Sewer Overflows or (SSOs)
- F. None of the Above

22. Which of the following terms describes sewers and pumps are too small to carry sewage from newly-developed subdivisions or commercial areas?

- A. SSOs occasionally occur
- B. Undersized Systems
- C. Sewer Service Connections
- D. Poor sewer collection system management
- E. Back-ups and sewer overflows
- F. None of the Above

23. Which of the following terms describes blocked, broken or cracked pipes, tree roots grow into the sewer, sections of pipe settle or shift?

- A. Deteriorating Sewer System
- B. Pipe Failure(s)
- C. Destructive compounds
- D. Badly connected sewer service lines
- E. Sanitary Sewer Overflows or (SSOs)
- F. None of the Above

24. Which of the following terms describes discharges that occur at sewer service connections to houses and other buildings; some cities estimate that as much as 60% of overflows comes from the service lines?

- A. SSOs occasionally occur
- B. Undersized Systems
- C. Sewer Service Connections
- D. Poor sewer collection system management
- E. Back-ups and sewer overflows
- F. None of the Above

25. Which of the following terms is the improper installation, improper maintenance; widespread problems that can be expensive to fix develop over time?

- A. Deteriorating Sewer System
- B. Pipe Failure(s)
- C. Destructive compounds
- D. Badly connected sewer service lines
- E. Sanitary Sewer Overflows or (SSOs)
- F. None of the Above

### **Why are SSOs a Problem?**

26. Which of the following terms has found that SSOs caused by poor sewer collection system management pose a substantial health and environmental challenge?

- A. Clean Water Act or CWA
- B. EPA
- C. Congress
- D. Water quality standard(s)
- E. 1977 amendments
- F. None of the Above

27. Many municipalities have asked for national consistency in the way permits are considered for wastewater discharges, including this term, and in enforcement of the law prohibiting unpermitted discharges.

- A. Deteriorating Sewer System
- B. Pipe Failure(s)
- C. Destructive compounds
- D. Badly connected sewer service lines
- E. SSOs
- F. None of the Above

### **Combined Sewer Overflows**

28. Which of the following terms are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe?

- A. Written MOM programs
- B. Program goal
- C. Water quality
- D. Publicly Owned Treatment Works (POTW)
- E. Combined sewer systems
- F. None of the Above

29. Which of the following terms transport all of their wastewater to a sewage treatment plant, where it is treated and then discharged to a water body?

- A. MOM program(s)
- B. Combined sewer system(s)
- C. Utility's plan/schedule
- D. NPDES Compliance Inspection Manual
- E. Utility's CMOM or MOM programs
- F. None of the Above

30. Which of the following terms are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies?
- A. Written MOM programs
  - B. Program goal
  - C. Water quality
  - D. Publicly Owned Treatment Works (POTW)
  - E. Combined sewer systems
  - F. None of the Above

### **The Elements of a Proper CMOM Program**

#### **Utility Specific**

31. The complexity and expense associated with a NPDES program is specific to the size and complexity of the Publicly Owned Treatment Works and related infrastructure.
- A. True
  - B. False

#### **Purposeful**

32. Which of the following terms when present and properly maintained, they support customer service and protect system assets, public health, and water quality?
- A. MOM programs
  - B. Program goal
  - C. Water quality
  - D. Publicly Owned Treatment Works (POTW)
  - E. Combined sewer systems
  - F. None of the Above

#### **Goal-Oriented**

33. Which of the following terms have goals directed toward their individual purposes? Progress toward these goals is measurable, and the goals are attainable.
- A. MOM program(s)
  - B. Combined sewer system(s)
  - C. Utility's plan/schedule
  - D. Proper MOM programs
  - E. Utility's CMOM or MOM programs
  - F. None of the Above

#### **Available In Writing**

34. The effectiveness of a MOM program quickly breaks down unless it is available in writing. Personnel turnover and lapses in communication between staff and management can change otherwise proper MOM programs to improper ones.
- A. True
  - B. False

#### **Implemented by Trained Personnel**

35. Appropriate safety, equipment, technical, and program training is essential for implementing?
- A. MOM program(s)
  - B. Combined sewer system(s)
  - C. Utility's plan/schedule
  - D. NPDES Compliance Inspection Manual
  - E. Utility's CMOM or MOM programs
  - F. None of the Above

#### **What MOM programs should be audited?**

36. Which of the following terms at a utility involves its entire wastewater infrastructure. Common utility management activities and operations and maintenance activities associated with sewer systems and pretreatment are listed in the Self-Audit Review Document?
- A. Written MOM programs
  - B. Program goal
  - C. Water quality
  - D. Publicly Owned Treatment Works (POTW)
  - E. MOM activity
  - F. None of the Above

37. If a utility owns treatment works or a pond system, then activities associated with the management, operation, and maintenance of these facilities should also be included in the audit.
- A. True
  - B. False

**What are the elements of a proper Self-Audit?**

**Initial Assessment**

38. Begin by performing a general assessment of the utility, and prioritizing the order of programs to be audited. Which of the following terms may be useful references in making this assessment?

- A. Written MOM programs
- B. Program goal
- C. Water quality
- D. Publicly Owned Treatment Works (POTW)
- E. NPDES Compliance Inspection Manual and Guidance
- F. None of the Above

**Develop the Audit Plan**

39. Identify the MOM programs present and/or needed at the utility, establish performance measures, and?

- A. MOM program(s)
- B. Combined sewer system(s)
- C. Utility's plan/schedule
- D. NPDES Compliance Inspection Manual
- E. Develop a schedule for auditing the programs
- F. None of the Above

**Conduct the Audit**

40. Evaluate each MOM program against the defined elements of a proper program. This can be accomplished by reviewing the program's records and resources, conducting a field evaluation, and comparing the program understanding of?

- A. CMOM regulation(s)
- B. Both personnel and management
- C. NPDES permit authority
- D. Preventative operations
- E. Recurrent SSOs
- F. None of the Above

**Identify Deficiencies**

41. Identify any permitted discharges that have occurred in the past seven years.

- A. True
- B. False

**Develop Improvement Plan**

42. Define the utility's plan/schedule to remediate the \_\_\_\_\_.

- A. Necessary improvements
- B. Routine operation(s)
- C. NPDES permit authority
- D. Preventative operations
- E. Recurrent SSOs
- F. None of the Above

**Prepare the Self-Audit Report**

43. Which of the following terms including any deficiencies found and the corresponding improvement plan, which is useful for the utility?

- A. Audit results
- B. Unpermitted discharges
- C. SSOs
- D. Raw sewage
- E. Infiltration and inflow
- F. None of the Above

**Are there federal grants or other compliance assistance resources available to conduct a Self-Audit?**

44. Which of the following terms offers a number of financial resources to assist qualified utilities in making improvements to their programs?

- A. Utility's plan/schedule
- B. MOM Programs Self-Audit
- C. SSOs
- D. Both personnel and management
- E. Office of Wastewater Management
- F. None of the Above

**What other Damage can SSOs do?**

45. Which of the following terms also damage property and the environment?

- A. Utility's plan/schedule
- B. MOM Programs Self-Audit
- C. SSOs
- D. Both personnel and management
- E. Capacity and/or reliability
- F. None of the Above

46. Which of the following terms enter oceans, bays, estuaries, rivers, lakes, streams, or brackish waters is their effect on water quality?

- A. Self-audit results
- B. Unpermitted discharges
- C. SSOs
- D. Raw sewage
- E. Infiltration and inflow
- F. None of the Above

**How can SSOs be Reduced or Eliminated?**

47. Which of the following terms are caused by inadequate or negligent operation or maintenance, inadequate system capacity, and improper system design and construction?

- A. Utility's plan/schedule
- B. MOM Programs Self-Audit
- C. SSOs
- D. Both personnel and management
- E. Capacity and/or reliability
- F. None of the Above

48. Reducing which of the following terms through system rehabilitation and repairing broken or leaking service lines?

- A. Self-audit results
- B. Unpermitted discharges
- C. SSOs
- D. Raw sewage
- E. Infiltration and inflow
- F. None of the Above

49. Enlarging or upgrading sewer, pump station, or sewage treatment plant capacity and/or?

- A. Utility's plan/schedule
- B. MOM Programs Self-Audit
- C. SSOs
- D. Reliability
- E. Preventative operations
- F. None of the Above

50. Construction of wet weather storage and treatment facilities to treat?

- A. Utility's plan/schedule
- B. MOM Programs Self-Audit
- C. SSOs
- D. Excess flows
- E. Capacity and/or reliability
- F. None of the Above

51. Which of the following terms communities should address during sewer system master planning and facilities planning, or while extending the sewer system into previously unsewered areas?

- A. Utility's plan/schedule
- B. MOM Programs Self-Audit
- C. SSOs
- D. Both personnel and management
- E. Capacity and/or reliability
- F. None of the Above

52. Which of the following terms include those occurring from unpreventable vandalism, some types of blockages, extreme rainstorms, and acts of nature such as earthquakes or floods?

- A. Utility's plan/schedule
- B. MOM Programs Self-Audit
- C. SSOs
- D. Unavoidable SSOs
- E. Capacity and/or reliability
- F. None of the Above

### **CMOM Audits**

53. CMOM will require regular, comprehensive audits, done by each facility. These audits will help identify non-conformance to?

- A. CMOM regulation(s)
- B. Routine operation(s)
- C. NPDES permit authority
- D. Preventative operations
- E. Recurrent SSOs
- F. None of the Above

### **Communication/Notification**

54. If an SSO occurs, sanitary sewer facilities will be required to immediately notify the NPDES permit authority, appropriate health agencies, state authorities, drinking water suppliers, and, if necessary, the general public in the risk area.

- A. True
- B. False

55. Facilities must post locations of which missing term and let the public know that the annual report is available to them?

- A. CMOM regulation(s)
- B. Routine operation(s)
- C. NPDES permit authority
- D. Preventative operations
- E. Recurrent SSOs
- F. None of the Above

### **Wastewater Collection Chapter 2**

#### **Understanding Gravity Sanitary Sewers**

56. Sanitary sewers are designed to transport the wastewater by utilizing the missing term provided by the natural elevation of the earth resulting in a downstream flow.

- A. Potential energy
- B. Peak flow of population
- C. Wastewater
- D. Flow velocities and design depths of flow
- E. SSO
- F. None of the Above

57. Sewer systems are designed to maintain proper flow velocities with?

- A. Design flow(s)
- B. Stormwater inflow
- C. I/I
- D. Both wet and dry weather flows
- E. Minimum head loss
- F. None of the Above

58. Which of the following terms may find it necessary to dissipate excess potential energy?

- A. I/I
- B. Peak flow of population
- C. Wastewater
- D. Flow velocities and design depths of flow
- E. Higher elevations in the system
- F. None of the Above

59. Which of the following terms is determined largely by population served, density of population, and water consumption?

- A. Design flow(s)
- B. Stormwater inflow
- C. Flow
- D. In flow
- E. I and I
- F. None of the Above

60. Sanitary sewers should be designed for?

- A. I/I
- B. Peak flow of population
- C. Wastewater
- D. Flow velocities and design depths of flow
- E. SSOs, surcharged lines, basement backups
- F. None of the Above

61. Most of the time the flow surface is exposed to the atmosphere within the sewer and it functions as?

- A. I/I
- B. Peak flow of population
- C. An open channel
- D. Flow velocities and design depths of flow
- E. SSOs, surcharged lines, basement backups
- F. None of the Above

62. Which of the following terms produces low pressure in the sewer system?

- A. Surge
- B. Stormwater inflow
- C. I/I
- D. Dry weather flows
- E. Low pressure
- F. None of the Above

63. In order to design a sewer system, many factors are considered. The purpose of this topic is to aid in the understanding of?

- A. I/I
- B. Peak flow of population
- C. Wastewater
- D. Flow velocities and design depths of flow
- E. SSOs, surcharged lines, basement backups
- F. None of the Above

### **Sewer System Capacity Evaluation - Testing and Inspection**

64. The collection system owner or operator should have a program in place to periodically evaluate this missing term in both wet and dry weather flows and ensure the capacity is maintained as it was designed.

- A. Design flow(s)
- B. Stormwater inflow
- C. I/I
- D. Capacity of the sewer system
- E. Low pressure in the sewer system
- F. None of the Above

65. The capacity evaluation program evaluation begins with an inventory and characterization of the?

- A. I/I
- B. System components
- C. Wastewater
- D. Flow velocities and design depths of flow
- E. SSOs, surcharged lines, basement backups
- F. None of the Above

66. The system then undergoes general inspection which serves to continuously update and add to the?

- A. Design flow(s)
- B. Stormwater inflow
- C. I/I
- D. Inventory information
- E. Low pressure in the sewer system
- F. None of the Above

### **Capacity Limitations**

67. The next step in the capacity evaluation is to identify the location of wet weather related \_\_\_\_\_, surcharged lines, basement backups, and any other areas of known capacity limitations.

- A. I/I
- B. Peak flow of population
- C. Wastewater
- D. Flow velocities and design depths of flow
- E. SSOs
- F. None of the Above

68. The reviewer should determine that the capacity evaluation includes an estimate peak flows experienced in the system, an estimate of the capacity of this missing term, and identifies the major sources of I/I that contribute to hydraulic overloading events.

- A. Design flow(s)
- B. Stormwater inflow
- C. I/I
- D. Both wet and dry weather flows
- E. Key system components
- F. None of the Above

69. The capacity evaluation should also make use of a hydraulic model; this will help identify areas that need to alleviate?

- A. I/I
- B. Peak flow of population
- C. Capacity limitations
- D. Flow velocities and design depths of flow
- E. SSOs, surcharged lines, basement backups
- F. None of the Above

70. A sewer inspection is an important part of a sewer system capacity evaluation and determining your?

- A. Design flow(s)
- B. Stormwater inflow
- C. I/I
- D. Both wet and dry weather flows
- E. Low pressure in the sewer system
- F. None of the Above

### Flow Monitoring

71. Flow monitoring provides information on dry weather flows as well as areas of the collection system potentially affected by?

- A. I/I
- B. Peak flow of population
- C. Wastewater
- D. Flow velocities and design depths of flow
- E. SSOs, surcharged lines, basement backups
- F. None of the Above

72. Which of the following terms may also be performed for billing purposes, to assess the need for new sewers in a certain area, or to calibrate a model?

- A. Design flow(s)
- B. Stormwater inflow
- C. I/I
- D. Both wet and dry weather flows
- E. Flow measurement
- F. None of the Above

### Flow Monitoring Plan

73. In some cases, the data is calibrated rather than the flow meter. Checks should include taking independent water level, cleaning accumulated debris and silt from the flow meter area, downloading data, and checking the desiccant and battery state. Records of each inspection should be maintained.

- A. True
- B. False

### Flow Measurements

74. Base flow is generally taken to mean the wastewater generated without any?

- A. Stoppages
- B. Deposition of solids
- C. Infiltration
- D. Inflow
- E. Any I/I component
- F. None of the Above

75. Which of the following terms is the seepage of groundwater into pipes or manholes through defects such as cracks, broken joints, etc.?

- A. Velocity
- B. Infiltration
- C. RII
- D. Blockage(s)
- E. Sewer cleaning
- F. None of the Above

76. Which of the following terms is the water that enters the sewer through direct connections such as roof leaders, direct connections from storm drains or yard, area?

- A. Stoppages
- B. Deposition of solids
- C. Infiltration
- D. Inflow
- E. Any I/I component
- F. None of the Above

77. Many collection system owners or operators add a third classification: rainfall induced infiltration (RII).

- A. True      B. False

78. Although not from piped sources, \_\_\_\_\_ tends to act more like inflow than infiltration.

- A. Stoppages                      D. Inflow  
B. Deposition of solids        E. RII  
C. Infiltration                      F. None of the Above

79. Other methods of inspecting flows may be employed, such as visually monitoring manholes during low-flow periods to determine areas with?

- A. Velocity                      D. Blockage(s)  
B. Infiltration                  E. Excessive I/I  
C. RII                              F. None of the Above

### Flow Capacity

80. Most sewers are designed with the capacity to flow quarter full for less than 15 inches in diameter; larger sewers are designed to flow at half flow.

- A. True      B. False

81. A velocity in excess of 10 fps can be tolerated with proper consideration of pipe material, abrasive characteristics of the wastewater, \_\_\_\_\_, and thrust at changes of direction.

- A. Velocity                      D. Blockage(s)  
B. Infiltration                  E. Sewer cleaning  
C. RII                              F. None of the Above

82. The minimum velocity is necessary to prevent the?

- A. Stoppages                      D. Inflow  
B. Deposition of solids        E. Any I/I component  
C. Infiltration                      F. None of the Above

### Sewer Cleaning

83. The purpose of sewer cleaning is to remove accumulated material from the sewer. Cleaning helps to prevent?

- A. Velocity                      D. Blockage(s)  
B. Infiltration                  E. Sewer cleaning  
C. RII                              F. None of the Above

84. Which of the following terms in gravity sewers are usually caused by a structural defect, poor design, poor construction, and accumulation of material in the pipe?

- A. Stoppages                      D. Inflow  
B. Deposition of solids        E. Any I/I component  
C. Infiltration                      F. None of the Above

85. Protruding traps may catch debris, which then causes a further buildup of?

- A. Velocity                      D. Blockage(s)  
B. Infiltration                  E. Solids  
C. RII                              F. None of the Above

### **Sewer Cleaning Methods**

86. Mechanical cleaning uses physical devices to scrape, cut, or pull \_\_\_\_\_ .

- A. Velocity
- B. Infiltration
- C. Material from the sewer
- D. Blockage(s)
- E. Sewer cleaning
- F. None of the Above

87. Chemical cleaning can facilitate the control of odors, grease buildup, root growth, corrosion, and insect and \_\_\_\_\_ .

- A. Stoppages
- B. Deposition of solids
- C. Infiltration
- D. Inflow
- E. Rodent infestation
- F. None of the Above

### **Sewer Cleaning Records**

88. The backbone of an effective sewer cleaning program is accurate recordkeeping. Accurate recordkeeping provides the collection system owner or operator with information on the areas.

- A. True
- B. False

89. The owner or operator should also be able to identify the number of stoppages experienced per mile of sewer pipe. If the system is experiencing a steady increase in stoppages, the reviewer should try to determine the cause (i.e., lack of preventive maintenance funding, deterioration of the sewers due to age, an increase in?

- A. Grease producing activities
- B. Problem collection system areas
- C. Infiltration
- D. Maximum flow capacity of wastewater
- E. Breakdown or malfunction
- F. None of the Above

### **Parts and Equipment Inventory**

90. The inventory should be based on the equipment manufacturer's recommendations, supplemented by historical experience with?

- A. Both infiltration and inflow or I/I
- B. Inflow
- C. Potential problem areas
- D. Maintenance and equipment problems
- E. Equipment problems
- F. None of the Above

91. Without such an inventory, the collection system may experience long down times or periods of inefficient operation in the event of a?

- A. Grease producing activities
- B. Problem collection system areas
- C. Infiltration
- D. Maximum flow capacity of wastewater
- E. Breakdown or malfunction
- F. None of the Above

### **Infiltration and Inflow**

#### **What is Infiltration/Inflow (I/I)?**

92. Which of the following terms occurs when groundwater enters the sewer system through cracks, holes, faulty connections, or other openings?

- A. Grease producing activities
- B. Problem collection system areas
- C. Infiltration
- D. Maximum flow capacity of wastewater
- E. Breakdown or malfunction
- F. None of the Above

93. Which of the following terms occurs when surface water such as storm water enters the sewer system through roof downspout connections, holes in manhole covers, illegal plumbing connections, or other defects?

- A. Both infiltration and inflow or I/I
- B. Inflow
- C. Potential problem areas
- D. General I/I source areas
- E. Equipment problems
- F. None of the Above

94. The sanitary sewer collection system and treatment plants have which missing term that can be handled?

- A. Grease producing activities
- B. Problem collection system areas
- C. Infiltration
- D. Maximum flow capacity of wastewater
- E. Breakdown or malfunction
- F. None of the Above

### **Determining I/I**

95. Flow monitoring and flow modeling provide measurements and data used to determine estimates of?

- A. Both infiltration and inflow or I/I
- B. I/I
- C. Potential problem areas
- D. General I/I source areas
- E. Equipment problems
- F. None of the Above

96. Measurements taken before and after a precipitation event indicate the extent that this term is increasing total flow.

- A. Grease producing activities
- B. Problem collection system areas
- C. Infiltration
- D. Maximum flow capacity of wastewater
- E. I/I
- F. None of the Above

97. Infiltration increases when groundwater rises from precipitation, and inflow is mainly stormwater and rainwater. Rainfall monitoring is also performed to correlate this data.

- A. True
- B. False

### **Identifying sources of I/I**

98. Visual inspection - accessible pipes, gutter and plumbing connections, and manholes are visually inspected for?

- A. Smoke
- B. Excessive I/I
- C. Sources of I/I
- D. Sewer system testing techniques
- E. Faults
- F. None of the Above

99. Smoke testing – smoke is pumped into sewer pipes. Its reappearance aboveground indicates points of ?

- A. I/I
- B. High wet weather flows
- C. Stormwater and rainwater
- D. Smoke testing and dyed water testing
- E. Illegal plumbing, drains, and roof downspouts
- F. None of the Above

100. TV inspection – camera equipment is used to do?

- A. Smoke
- B. Excessive I/I
- C. Sources of I/I
- D. Sewer system testing techniques
- E. Faults
- F. None of the Above

101. Dye testing – Dye is used at suspected \_\_\_\_\_ sources.
- A. I/I
  - B. High wet weather flows
  - C. Stormwater and rainwater
  - D. Smoke testing and dyed water testing
  - E. Illegal plumbing, drains, and roof downspouts
  - F. None of the Above

102. Which of the following terms are also sometimes identified when sewer backups or overflows bring attention to that part of the system?
- A. Smoke
  - B. Excessive I/I
  - C. Sources of I/I
  - D. Sewer system testing techniques
  - E. Faults
  - F. None of the Above

### **Repairing I/I Sources**

103. Repair techniques include manhole wall spraying, Insituform pipe relining, manhole frame and lid replacement, and disconnecting?
- A. I/I
  - B. High wet weather flows
  - C. Stormwater and rainwater
  - D. Smoke testing and dyed water testing
  - E. Illegal plumbing, drains, and roof downspouts
  - F. None of the Above

### **Efficient Identification of Excessive I/I**

104. The owner or operator should have in place a program for the efficient identification of?
- A. Smoke
  - B. Excessive I/I
  - C. Sources of I/I
  - D. Sewer system testing techniques
  - E. Faults
  - F. None of the Above

105. Areas with high wet weather flows should then be subject to?
- A. I/I
  - B. High wet weather flows
  - C. Stormwater and rainwater
  - D. Smoke testing and dyed water testing
  - E. Inspection and rehabilitation activities
  - F. None of the Above

### **Sewer System Testing**

106. Sewer system testing techniques are often used to identify leaks that allows which term into the sewer system and determine the location of illicit connections and other sources of stormwater inflow?
- A. Exfiltration
  - B. Excessive I/I
  - C. Sources of I/I
  - D. Unwanted infiltration
  - E. Flow
  - F. None of the Above

107. Two commonly implemented techniques include?
- A. I/I
  - B. High wet weather flows
  - C. Stormwater and rainwater
  - D. Smoke testing and dyed water testing
  - E. Illegal plumbing, drains, and roof downspouts
  - F. None of the Above

108. Which of the following terms is a relatively inexpensive and quick method of detecting sources of inflow in sewer systems?
- A. Smoke
  - B. Excessive I/I
  - C. Sources of I/I
  - D. Sewer system testing techniques
  - E. Smoke testing
  - F. None of the Above

109. Which of the following terms can be identified when smoke escapes through them?

- A. I/I
- B. High wet weather flows
- C. Stormwater and rainwater
- D. Smoke testing and dyed water testing
- E. Sources of inflow
- F. None of the Above

110. The weather conditions in which this term is conducted?

- A. Smoke
- B. Excessive I/I
- C. Sources of I/I
- D. Sewer system testing techniques
- E. Smoke testing
- F. None of the Above

111. Building inspections are sometimes conducted as part of a smoke testing program and, in some cases, may be the only way to find?

- A. I/I
- B. High wet weather flows
- C. Stormwater and rainwater
- D. Smoke testing and dyed water testing
- E. Illegal connections
- F. None of the Above

112. If traces of the smoke or its odor enter the building, it is an indication that this term may also be entering.

- A. Smoke
- B. Excessive I/I
- C. Sources of I/I
- D. Gases from the sewer system
- E. Faults
- F. None of the Above

### **Dye Testing**

113. Dyed water testing may be used to establish this term to the sewer.

- A. Smoke testing
- B. Potential problem areas
- C. I/I problems
- D. Presence of roots
- E. Connection of a fixture or appurtenance
- F. None of the Above

114. Which of the following terms can be used to identify structurally damaged manholes that might create potential I/I problems?

- A. Smoke testing
- B. Potential problem areas
- C. I/I problems
- D. The presence of roots
- E. Dyed water testing
- F. None of the Above

### **Sewer System Inspection**

115. Which of the following terms and pipelines are the first line of defense in the identification of existing or potential problem areas?

- A. Smoke testing
- B. Potential problem areas
- C. Visual inspection of manholes
- D. The presence of roots
- E. Dyed water testing
- F. None of the Above

116. Visual inspections provide additional information concerning the accuracy of system mapping, the presence and?

- A. Smoke testing
- B. Potential problem areas
- C. I/I problems
- D. The presence of roots
- E. Degree of I/I problems
- F. None of the Above

117. By observing the manhole directly and the incoming and outgoing lines with this term, and it is possible to determine structural condition, the presence of roots, condition of joints, depth of debris in the line, and depth of flow.

- A. Smoke testing
- B. Potential problem areas
- C. I/I problems
- D. The presence of roots
- E. Dyed water testing
- F. None of the Above

### **Sewer System Inspection Techniques**

118. There are a number of inspection techniques that may be employed to inspect a sewer system. The reviewer should determine if an inspection program includes frequency and schedule of inspections and procedures to record the results.

- A. True
- B. False

119. Sewer system cleaning should always be considered before \_\_\_\_\_ is performed in order to provide adequate clearance and inspection results.

- A. Sewer system cleaning
- B. Capacity evaluation
- C. Inspection
- D. Closed Circuit Television (CCTV) inspections
- E. Confined space entry
- F. None of the Above

### **Closed Circuit Television (CCTV) Inspections**

120. Which of the following terms are a helpful tool for early detection of potential problems?

- A. Sewer system cleaning
- B. Capacity evaluation
- C. Odor
- D. Closed Circuit Television (CCTV) inspections
- E. Grade 1 Operator
- F. None of the Above

121. Which of the following terms may be done on a routine basis as part of the preventive maintenance program, as well as part of an investigation into the cause of I/I?

- A. Lamping
- B. Camera inspection
- C. Sonar
- D. CCTV inspections
- E. Sewer scanner and evaluation
- F. None of the Above

122. A benefit of \_\_\_\_\_ is that a permanent visual record is captured for subsequent reviews.

- A. Sewer system cleaning
- B. Capacity evaluation
- C. Trenchless technologies
- D. CCTV inspection
- E. Confined space entry
- F. None of the Above

### **Sewer System Rehabilitation**

123. The collection system owner or operator should have a?

- A. Sewer system program
- B. Capacity evaluation program
- C. Problem solving program
- D. Sewer rehabilitation program
- E. Lamping training program
- F. None of the Above

124. The rehabilitation program should build on information obtained as a result of all forms of maintenance and observations made as part of the sewer system cleaning to assure the continued ability of the system to provide sales and service at the greatest cost.

- A. True
- B. False

125. There are many rehabilitation methods; the choice of methods depends on pipe size, type, location, dimensional changes, sewer flow, material deposition, surface conditions, and?

- A. A significant source of infiltration
- B. A serious source of I/I
- C. Non-structural repairs
- D. Warm, moist, nutrient rich atmosphere
- E. Severity of I/I
- F. None of the Above

126. Manhole covers can allow significant inflow to enter the system because they are often located in the?

- A. Sanitary sewer service line
- B. Debris discharged
- C. Rehabilitation program
- D. Path of surface runoff
- E. Cracks or loose joints in the sewer pipe
- F. None of the Above

127. Manholes themselves can also be this term from cracks in the barrel of the manhole.

- A. A significant source of infiltration
- B. A serious source of I/I
- C. Non-structural repairs
- D. Warm, moist, nutrient rich atmosphere
- E. Severity of I/I
- F. None of the Above

### **Tree Roots vs. Sanitary Sewer Lines**

#### **Root Growth in Pipes**

128. Roots require oxygen to grow, they do not grow in this term or where high ground water conditions prevail.

- A. Sanitary sewer service line
- B. Debris discharged
- C. Pipes that are full of water
- D. Exert considerable pressure
- E. Cracks or loose joints in the sewer pipe
- F. None of the Above

129. The flow of warm water inside the sanitary sewer service pipe causes water with \_\_\_\_\_ surrounding the pipe.

- A. A significant source of infiltration
- B. A serious source of I/I
- C. Non-structural repairs
- D. Vapor to escape to the cold soil
- E. Severity of I/I
- F. None of the Above

130. Tree roots are attracted to the water vapor leaving the pipe and they follow the vapor trail to the source of the moisture, which are usually in?

- A. Sanitary sewer service line
- B. Debris discharged
- C. Rehabilitation program
- D. Exert considerable pressure
- E. Cracks or loose joints
- F. None of the Above

131. Upon reaching the crack or pipe joint, this term will penetrate the opening to reach the nutrients and moisture inside the pipe.

- A. A significant source of infiltration
- B. A serious source of I/I
- C. Non-structural repairs
- D. Tree roots
- E. Severity of I/I
- F. None of the Above

#### **Problems Caused by Roots Inside Sewers**

132. Once inside the pipe, roots will continue to grow, and if not disturbed, they will completely fill the pipe with multiple hair-like root masses at each point of entry.

- A. True
- B. False

133. Homeowners will notice the first signs of this term by hearing gurgling noises from toilet bowls and observing wet areas around floor drains after completing the laundry.

- A. A significant source of infiltration
- B. A serious source of I/I
- C. Non-structural repairs
- D. Slow flowing drainage system
- E. Severity of I/I
- F. None of the Above

134. As roots continue to grow, they expand and exert considerable pressure this term where they entered the pipe.

- A. Sanitary sewer service line
- B. Debris discharged
- C. Rehabilitation program
- D. At the crack or joint
- E. Cracks or loose joints in the sewer pipe
- F. None of the Above

135. Which of the following term and pipes that are structurally damaged will require replacement?

- A. A significant source of infiltration
- B. A serious source of I/I
- C. Non-structural repairs
- D. Severe root intrusion
- E. Severity of I/I
- F. None of the Above

### **Tree Roots in Sewer**

136. Roots from trees growing on private property and on parkways throughout the City are responsible for many of the sanitary sewer service backups and?

- A. Root intrusion
- B. Drought conditions
- C. Inflow and infiltration (I&I)
- D. Sanitary sewer service backup(s)
- E. Damaged sewer pipes
- F. None of the Above

137. The replacement cost of a sanitary sewer service line as a result of \_\_\_\_\_ may be very expensive.

- A. Root intrusion
- B. Damage from tree roots
- C. Tree roots
- D. Copper sulfate and sodium hydroxide
- E. The common method of removing roots
- F. None of the Above

### **Pipes Susceptible to Root Damage**

138. Clay tile pipe that was commonly installed by developers and private contractors until the late 1980's is easily penetrated and?

- A. Root intrusion
- B. Drought conditions
- C. Inflow and infiltration (I&I)
- D. Sanitary sewer service backup(s)
- E. Damaged by tree roots
- F. None of the Above

139. The tightly fitting PVC joints are less likely to do \_\_\_\_\_ as a result of settlement of backfill around the pipe.

- A. Root intrusion
- B. Sewer service
- C. Tree roots
- D. Leak
- E. The common method of removing roots
- F. None of the Above

### **Root Spread**

140. During drought conditions and in winter, tree roots travel long distances in search of moisture, as a general rule, tree roots will extend up to 10 times the height of the tree.

- A. True
- B. False

### Root Growth Control

141. The common method of removing roots from this term involves the use of augers, root saws, and high pressure flushers.

- A. Root intrusion
- B. Sewer service
- C. Sanitary sewer service pipes
- D. Sanitary sewer service backup(s)
- E. The common method of removing roots
- F. None of the Above

### Smoking out Sewer Leaks

142. Used extensively for over 40 years, smoke testing has proven to be a vital ingredient of successful inflow and infiltration (I&I) studies. It is as important now as it has ever been, as growing municipalities increase demands on aging, often deteriorating collection systems.

- A. True
- B. False

143. Smoke travels throughout the system, identifying problems in all connected lines, even sections of line that were not known to exist, or thought to be independent or unconnected.

- A. True
- B. False

### More on Manholes

144. When designing a wastewater system, the design engineer begins by first determining the amount of money that is available.

- A. True
- B. False

145. The design engineer bases his design on the average daily use of solids per person in the area to be served.

- A. True
- B. False

146. The average daily flow is multiplied by a peak flow factor to obtain the?

- A. Design flow
- B. Peak flow factor
- C. A typical value
- D. Water per person in the area to be served
- E. A typical infiltration allowance
- F. None of the Above

### Vacuum Lines

147. Which of the following terms are installed in narrow trenches in a saw tooth profile for grade and uphill transport?

- A. Vacuum sewer system(s)
- B. Lift station
- C. Downhill transport
- D. Vacuum pump(s)
- E. Vacuum service lines
- F. None of the Above

148. Unlike gravity sewers that must be laid at a minimum slope to obtain a 2 ft./sec. scouring velocity, vacuum has a flatter slope since a high scouring velocity is a feature of transporting?

- A. Raw sewage
- B. Vacuum sewage
- C. High scouring velocity
- D. Potential vacuum loss
- E. Vacuum pump(s)
- F. None of the Above

### Line Sizes

149. The vacuum service line from this term to the main in the street is 3".

- A. Vacuum sewer system(s)
- B. Lift station
- C. Valve
- D. Vacuum pump(s)
- E. Vacuum service line
- F. None of the Above

### **Vacuum Station**

150. The vacuum station is similar in function to a lift station in a gravity sewer system. Sewage pumps transfer the sewage from the?

- A. Vacuum sewer system(s)
- B. Lift station
- C. Collection tank
- D. Vacuum pump(s)
- E. Vacuum service line
- F. None of the Above

### **Vacuum Pumps**

151. Which of the following terms typically run 2 to 3 hours each per day and don't need to run continuously since the vacuum interface valves are normally closed?

- A. Raw sewage
- B. Solids
- C. High scouring velocity
- D. Potential vacuum loss
- E. Vacuum pump(s)
- F. None of the Above

### **Review Pressure Sewers**

152. Which of the following terms do not rely on gravity, the system's network of piping can be laid in very shallow trenches that follow the contour of the land?

- A. Gravity system
- B. Grinder pump(s)
- C. Pressure sewers
- D. Two kinds of pressure sewer systems
- E. Both the STEP and grinder systems
- F. None of the Above

### **Sewer Line Mapping**

153. Which of the following terms and repairs are unlikely if mapping is not adequate?

- A. Overflow points
- B. Introduction of flows
- C. Inspection
- D. Owner or operator's management program
- E. Efficient collection system maintenance
- F. None of the Above

154. Collection system maps should have a numbering system which uniquely identifies all manholes and?

- A. Engineering endeavors
- B. Sewer line maps
- C. Sewer cleanouts
- D. Quality sanitary sewer designs
- E. Numbering system
- F. None of the Above

### **Grease Chapter 3**

155. Which of the following terms due to grease build-up are a common cause of sanitary sewer overflows, and grease accumulation at treatment facilities can lead to pass-through of contaminants?

- A. Grease interceptor(s)
- B. POTW
- C. Notice of Violation
- D. Pass-through of contaminants
- E. Blockages
- F. None of the Above

156. Proactive municipal governments have a grease ordinance that provides them legal authority to require that grease generators have devices to catch the grease before it enters the public wastewater system; these devices are often referred to as?

- A. POTW(s)
- B. Local ordinance
- C. Grease interceptor(s)
- D. International Plumbing Code
- E. Grease traps
- F. None of the Above

157. Proactive municipal governments also have in place this term to ensure grease generators clean the traps on an appropriate schedule and in a proper manner.

- A. Grease interceptor(s)
- B. POTW
- C. Notice of Violation
- D. Pass-through of contaminants
- E. An inspection and enforcement program
- F. None of the Above

158. Which of the following terms have public education programs to ensure non-commercial contributions of grease to the wastewater system are minimized?

- A. Proactive municipalities
- B. Local ordinance
- C. Grease interceptor(s)
- D. International Plumbing Code
- E. POTW inspectors
- F. None of the Above

### **Grease Interceptors**

159. Which of the following terms use grease interceptors that are larger than the traps and are installed underground, outside of a facility?

- A. Grease interceptor(s)
- B. High-volume or new establishments
- C. Notice of Violation
- D. Pass-through of contaminants
- E. An inspection and enforcement program
- F. None of the Above

160. Which of the following terms should be accessible by three manhole covers, and a sample box?

- A. Sewer
- B. Manhole
- C. Grease interceptor(s)
- D. Grease trap
- E. POTW sampling point
- F. None of the Above

### **Plan Checks and Inspections**

161. All plans for new commercial food establishments should receive a plan review from the?

- A. Grease interceptor(s)
- B. POTW
- C. Notice of Violation
- D. Pass-through of contaminants
- E. An inspection and enforcement program
- F. None of the Above

### **Grease Blockages**

162. A determination should be made as to which commercial facilities contributed to the blockage, and more in-depth inspections are conducted at those facilities.

- A. True
- B. False

163. A Notice of Violation, with this term, is issued once a facility has passed its final due date.

- A. Grease interceptor(s)
- B. POTW
- C. An administrative fee
- D. Pass-through of contaminants
- E. An inspection and enforcement program
- F. None of the Above

### **Collection Systems O&M Section -Sewer Cleaning and Inspection**

164. As sewer system networks age, the risk of deterioration, \_\_\_\_\_, and collapses becomes a major concern.

- A. Sanitary sewer overflow(s)
- B. Rehabilitation
- C. Blockages
- D. Check with the local authorities
- E. Education and pollution prevention
- F. None of the Above

165. Which of the following terms are essential to maintaining a properly functioning system; these activities further a community's reinvestment into its wastewater infrastructure?

- A. Inspection technique(s)
- B. CCTV inspection(s)
- C. Inspection program(s)
- D. Visibility of manholes and other structures
- E. Cleaning and inspecting sewer lines
- F. None of the Above

### **Inspection Techniques**

166. Which of the following terms are required to determine current sewer conditions and to aid in planning a maintenance strategy?

- A. Documentation of inspections
- B. CCTV inspection(s)
- C. Visual inspection(s)
- D. Cleaning and inspecting sewer lines
- E. Inspection programs
- F. None of the Above

### **Most sewer lines are inspected using one or more of the following techniques:**

167. Which of the following terms are the most frequently used most cost efficient in the long term, and most effective method to inspect the internal condition of a sewer?

- A. Grade 1 operator
- B. Lamping
- C. Inspection program(s)
- D. Television (TV) inspections
- E. Polaroid still photographs
- F. None of the Above

168. Which of the following terms are recommended for sewer lines with diameters of 4 - 48 inches?

- A. Lining
- B. Rehabilitation
- C. CCTV inspection(s)
- D. Eyeballing
- E. Rodding
- F. None of the Above

169. To see details of the sewer walls, the camera and lights should swivel both vertically and horizontally.

- A. True
- B. False

170. Which of the following terms in smaller sewers are attached to a sled, to which a parachute or droge is attached and floated from one manhole to the next?

- A. Cable box
- B. Slick
- C. Kite
- D. Sewer boat
- E. The cable and camera
- F. None of the Above

### **Cleaning Techniques**

171. A sewer system needs a cleaning schedule, there are several traditional cleaning techniques used to clear blockages and to act as?

- A. Sanitary sewer overflow(s)
- B. Rehabilitation
- C. CCTV inspection(s)
- D. Preventative maintenance tools
- E. Education and pollution prevention
- F. None of the Above

172. When you are cleaning sewer lines, your local community need to be aware of EPA regulations on solid and hazardous waste as defined in 40 CFR 261.

- A. True
- B. False

173. The ideal method of reducing and controlling the materials found in sewer lines is education and?

- A. Sanitary sewer overflow(s)
- B. Rehabilitation
- C. CCTV inspection(s)
- D. Pollution prevention
- E. Maintaining sewer systems
- F. None of the Above

### Lamping Inspection

174. Which of the following terms is only able to inspect the first 10 feet of the pipe?

- A. Bucketing
- B. Rodding
- C. Rehabilitation
- D. Sewer line cleaning
- E. Lamping
- F. None of the Above

175. According to the text, older areas of the sewer system are inspected every four years; whereas, the inspection of relatively new areas may be completed in 1 to 2 years.

- A. True
- B. False

### Cleaning Method Limitation

176. Balling - Balling cannot be used effectively in pipes with \_\_\_\_\_ or protruding service connections because the ball can become distorted.

- A. Steep-grade hill areas
- B. Backups into residences
- C. Variety of cleaning methods
- D. Completely plugged
- E. Bad offset joints
- F. None of the Above

177. Which of the following terms cleaning larger lines, the manholes need to be designed to a larger size in order to receive and retrieve the equipment?

- A. Bucket machine(s)
- B. Jetting
- C. Chemicals' effectiveness
- D. Scooter
- E. Kite or Bag
- F. None of the Above

178. Bucket Machine- This device has been known to damage sewers and the set-up of this equipment is \_\_\_\_\_.

- A. Good for steep-grade hill areas
- B. Able to backups into residences
- C. Able for a variety of cleaning methods
- D. Time-consuming
- E. Not effectively remove sand or grit
- F. None of the Above

### Limitations of Cleaning Methods

179. Most of collection inspections use?

- A. Visual inspection(s)
- B. CCTV system
- C. Chemicals' effectiveness
- D. Flush and vacuum systems
- E. The cleaning and inspection crews
- F. None of the Above

### Pumps and Lift Stations Chapter 4

#### Pumps and Lift Stations

180. Lift Station: A facility in a sewer system consisting of a receiving chamber, pumping equipment, and associated drive and control devices that collect and lift wastewater to a higher elevation when the continuance of the sewer at reasonable slopes would involve excessive trench depths.

- A. True
- B. False

181. There should not be an odor coming from a?

- A. Lift Station
- B. Gravity driven
- C. Wet well
- D. Pumping Station
- E. Submersible pump(s)
- F. None of the Above

182. Pumping Station is a relatively large sewage pumping installation designed not only to lift sewage to a higher elevation, but also to convey it through force mains to gravity flow points located relatively long distances from the?

- A. Key elements of lift stations
- B. Lift Station's area
- C. Dry well
- D. Backup
- E. Pumping Station
- F. None of the Above

### Lift Stations

183. Wastewater flows slowly downhill until it reaches a certain low point, at that point a pump or "lift" stations push the wastewater back uphill to a high point where gravity can once again take over the process.

- A. True
- B. False

184. Most Wastewater Collection systems will have installed radio telemetry, or SCADA which is used to monitor and control pump stations via computer at the?

- A. Lift Station
- B. Gravity driven
- C. Wet well
- D. WW Collections facility
- E. Submersible pump(s)
- F. None of the Above

185. The lift station system can provide up to the minute pump station status such as wet well level, pump performance, electrical power conditions, etc. This allows our technicians to prevent wastewater spills and protect public health.

- A. True
- B. False

186. With the use of telemetry, we have the ability to identify potential problems instantaneously and take the proper steps to rectify the situation before it becomes a public health risk.

- A. True
- B. False

### Common Hydraulic Terms

187. Which of the following definitions is the engineering science pertaining to liquid pressure and flow?

- A. Pressure, Absolute
- B. Pressure
- C. Hydraulics
- D. Hydrokinetics
- E. Pascal's Law
- F. None of the Above

188. Which of the following definitions is the engineering science pertaining to the energy of liquid flow and pressure?

- A. Pressure, Absolute
- B. Pressure
- C. Hydraulics
- D. Hydrokinetics
- E. Pascal's Law
- F. None of the Above

## Safety Chapter 6

### Confined Space Entry Program Purpose

189. The Confined Space Entry Program is provided to protect authorized employees that will enter confined spaces and may be exposed to hazardous atmosphere, engulfment in materials, conditions which may trap or asphyxiate due to converging or sloping walls, or contains any other safety or health hazards.

A. True B. False

### Scope

190. According to the text, you are required to recognize this term associated with confined spaces.

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Dangers and hazards
- E. Atmospheric factors and physical agents
- F. None of the Above

### Confined space:

191. Is large enough or so configured that an employee can?

- A. Engulfing an entrant
- B. Bodily enter and perform work
- C. An internal configuration
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

192. Is not designed for?

- A. Engulfing an entrant
- B. Hazardous atmospheres
- C. An internal configuration
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

193. Permit required confined space (permit space), is a confined space that has one or more of the following characteristics: Contains or has a potential to contain a?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Entry or exit
- E. Atmospheric factors and physical agents
- F. None of the Above

194. Has limited or restricted means for entry or exit (i.e. tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Limited means of entry
- D. Entry or exit
- E. Atmospheric factors and physical agents
- F. None of the Above

195. Contains a material that has the?

- A. Engulfing an entrant
- B. Hazardous atmospheres
- C. Potential for engulfing an entrant
- D. Recognized serious safety or health hazard
- E. Continuous employee occupancy
- F. None of the Above

196. Has an internal configuration such that \_\_\_\_\_ could be trapped or asphyxiated by inwardly covering walls or by a floor which slopes downward and tapers to a smaller cross-section.

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. An entrant
- E. Atmospheric factors and physical agents
- F. None of the Above

197. Contains any other recognized serious safety or?
- A. Engulfing an entrant
  - B. Hazardous atmospheres
  - C. An internal configuration
  - D. Health hazard
  - E. Continuous employee occupancy
  - F. None of the Above

198. Which of the following terms -will be marked "Confined Space - Entry Permit Required"?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Entry or exit
- E. Atmospheric factors and physical agents
- F. None of the Above

### **Confined Space Hazards**

199. Fatalities and injuries constantly occur among construction workers who, during the course of their jobs, are required to enter?

- A. An internal configuration
- B. Hazardous atmosphere
- C. Ventilation ducts
- D. Entry or exit
- E. Confined spaces
- F. None of the Above

200. Throughout the construction jobsite, contractors and workers encounter both inherent and \_\_\_\_\_ within confined workspaces.

- A. An internal configuration
- B. Hazardous atmosphere
- C. Permit-Required Confined Space
- D. Induced hazards
- E. Atmospheric factors and physical agents
- F. None of the Above