Registration form

Collection System Operator CEU Training Course $150.00
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

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**_____

Class/Grade_____
Your certificate will be mailed to you in about two weeks.

Please circle/check which certification you are applying the course CEU's.
Wastewater Collection_____ Wastewater Treatment _____ Onsite Installer _____

Other _____

Technical Learning College PO Box 420, Payson AZ 85547-0420
Fax (928) 468-0675 info@tlch2o.com
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Visa or MasterCard #_____**Exp. Date**_____

If you've paid on the Internet, Please write your customer#_____

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We will e-mail you a copy of the certificate of completion.

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 also understand that this type of study program deals with dangerous conditions and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable for any errors or omissions or advice contained in this CEU education training course or for any violation or injury caused by this CEU education training course material. I will 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.

State Approval Listing Link, check to see if your State accepts or has pre-approved this course. Not all States are listed. Not all courses are listed. If the course is not accepted for CEU credit, we will give you the course free if you ask your State to accept it for credit.

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.

State Approval Listing URL…
http://www.tlch2o.com/PDF/CEU%20State%20Approvals.pdf

You can obtain a printed version of the course manual from TLC for an additional $79.95 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.

Thank you…

Collection System Operator Answer Key

Name_____

Phone _____

Please Circle, Bold, Underline or X, one answer per question.

1.	A B C D E	42.	A B C D E	83.	A B C D E
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276.	A	B	C	D	E	285.	A	B	C	D	E	294.	A	B	C	D	E
277.	A	B	C	D	E	286.	A	B	C	D	E	295.	A	B	C	D	E
278.	A	B	C	D	E	287.	A	B	C	D	E	296.	A	B	C	D	E
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282.	A	B	C	D	E	291.	A	B	C	D	E	300.	A	B	C	D	E

Please fax or e-mail the answer key to TLC
Western Campus Fax (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.

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.

Thank you…

Please e-mail or fax this survey along with your final exam

COLLECTION SYSTEM OPERATOR CEU 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.

Collection System Operator CEU Training Assignment

The Collection System Operator Assignment is available in Word on the Internet for your convenience, please visit www.ABCTLC.com and download the assignment and e-mail it back to TLC. You will have 90 days from receipt of this manual to complete it in order to receive your Professional Development Hours (PDHs) or Continuing Education Unit (CEU). A score of 70 % or better is necessary to pass this course. If you should need any assistance, please email or fax all concerns and the completed ANSWER KEY to info@tlch2o.com.

Please select one answer per question and mark the best answer on the answer key.

Wastewater Collection System Introduction

1. Every house, restaurant, business, and industry produces waste. Wastewater collection protects public health and the environment by removing this _____.

A. Almost infinite
B. Storm sewers
C. Infectious waste and recycling the water
D. Wastewater
E. None of the Above

2. A network of _____ accepts the flow from each building's sewer connection and delivers it to the treatment facilities. In addition to what homes and businesses flush down the drain, the system also collects excess groundwater, infiltration liquids, and inflow water.

A. Interconnected pipes
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

3. Wastewater collection is therefore a comprehensive _____ removal system.

A. Almost infinite
B. Storm sewers
C. Liquid waste
D. Wastewater
E. None of the Above

4. The _____ distributed through this system is about 98% water.

A. Fluid waste
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

5. The waste floats on, is carried along by, and goes into _____ in water. Possible waste includes anything that can be flushed down the drain--human excretion, body fluids, paper products, soaps and detergents, foods, fats, oil, grease, paints, chemicals, hazardous materials, solvents, disposable and flushable items; the list is almost infinite.

A. Almost infinite
B. Storm sewers
C. Suspension or solution
D. Wastewater
E. None of the Above

6. This mixture of water and wastes is called "_____." In the past, it was known as "sewage," but this term is now falling out of favor because it refers specifically to domestic sanitary wastewater, like toilet flushing, which represents only a portion of the entire fluid waste content.
A. Almost infinite
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

7. "Wastewater" is a more accurate description and has become the standard term for this fluid waste because it encompasses the total _____ in water that is gathered from homes and businesses.
A. Slurry of wastes
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

Types of Sewer Systems
8. Centralized sewer systems are generally broken out into three different categories: sanitary sewers, storm sewers, and _____.
A. Almost infinite
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

9. Sanitary sewers carry wastewater or sewage from homes and businesses to treatment plants. Underground _____pipes can clog or break, causing unintentional "overflows" of raw sewage that flood basements and streets.
A. Sanitary sewer
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

10. _____are designed to quickly get rainwater off the streets during rain events. Chemical, trash and debris from lawns, parking lots, and streets are washed by the rain into the storm sewer drains.
A. Almost infinite
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

11. Most storm sewers do not connect with a _____, but instead drain directly into nearby rivers, lakes, or oceans.
A. Treatment plant
B. Storm sewers
C. Combined sewers
D. Wastewater
E. None of the Above

There are no intentional trick questions.

12. Combined sewers carry both wastewater and storm water in the same pipe. Most of the time, _____transport the wastewater and storm water to a treatment plant.
A. Wastewater collection system
B. Sewer systems
C. Combined sewers
D. Inspection equipment
E. None of the Above

13. However, when there is too much rain, combined sewer systems cannot handle the extra volume and designed "_____" of raw sewage into streams and rivers occur.
A. Wastewater collection system
B. Sewer systems
C. Combined sewers
D. Overflows
E. None of the Above

14. The great majority of _____have separated, not combined, sanitary and storm water pipes.
A. Wastewater collection system
B. Sewer systems
C. Combined sewers
D. Inspection equipment
E. None of the Above

15. As the infrastructure in the United States and other parts of the world ages, increasing importance is being placed on rehabilitating _____.
A. Wastewater collection system
B. Sewer systems
C. Combined sewers
D. Inspection equipment
E. None of the Above

16. Cracks, settling, tree root intrusion, and other disturbances that develop over time deteriorate pipelines and other conveyance structures that comprise _____, including stormwater, sanitary, and combined sewers.
A. Wastewater collection system
B. Sewer systems
C. Combined sewers
D. Inspection equipment
E. None of the Above

17. Leaking, overflowing, and insufficient wastewater collection systems can release untreated wastewater into receiving waters. Outdated pump stations, undersized to carry sewage from newly developed subdivisions or commercial areas, can also create a _____, adversely affecting human health and degrading the water quality of receiving waters.
A. Wastewater collection system
B. Potential overflow hazard
C. Combined sewers
D. Inspection equipment
E. None of the Above

18. The maintenance of the _____is therefore a continuous, never-ending cycle.
A. Wastewater collection system
B. Sewer system
C. Combined sewers
D. Inspection equipment
E. None of the Above

19. As sections of the system age, problems such as corroded concrete pipe, cracked tile, lost joint integrity, grease, and heavy root intrusion must be _____.
A. Wastewater collection system
B. Sewer systems
C. Constantly monitored and repaired
D. Inspection equipment
E. None of the Above

20. Technology has improved _____ with such tools as television camera assisted line inspection equipment, jet-cleaning trucks, and improvements in pump design.
A. Wastewater collection system
B. Sewer systems
C. Combined sewers
D. Collection system maintenance
E. None of the Above

21. Because of the increasing complexity of wastewater collection systems, _____ is evolving into a highly skilled trade.
A. Wastewater collection system
B. Collection system maintenance
C. Combined sewers
D. Inspection equipment
E. None of the Above

22. Collection system operators are charged with _____ and the environment, and therefore must have documented proof of their certifications in the respective wastewater management systems.
A. Protecting public health
B. Sewer systems
C. Combined sewers
D. Inspection equipment
E. None of the Above

23. These professionals ensure that the system pipes remain clear and open. They eliminate obstructions and are constantly striving to _____. They keep the wastewater moving underground, unseen and unheard.
A. Wastewater collection system
B. Sewer systems
C. Improve flow characteristics
D. Inspection equipment
E. None of the Above

24. Because this _____ and the professionals who maintain it operate at such a high level of efficiency, problems are very infrequent. So much so that the public often takes the wastewater collection system for granted. In truth, these operators must work hard to keep it functioning properly.
A. Wastewater collection system
B. Sewer systems
C. Combined sewers
D. Inspection equipment
E. None of the Above

Sewer Main
25. In a centralized _____, the sewer to which sewer connections are made from individual residences.
A. Sewer pipes
B. Wastewater treatment system
C. Combined sewers
D. Inspection equipment
E. None of the Above

Trunk Lines
26. Sewer pipes measuring more than 12 inches in diameter and having a capacity of 1 to 10 million gallons per day. Trunk lines connect smaller sewer pipes, or _____, to the largest transport pipes or interceptors.
A. Sewer pipes
B. Wastewater treatment system
C. Combined sewers
D. Collectors
E. None of the Above

Collectors
27. Small _____ measuring twelve inches or less in diameter.
A. Sewer pipes
B. Wastewater treatment system
C. Combined sewers
D. Inspection equipment
E. None of the Above

Wastewater Collection Rules and Regulations
Rule to Protect Communities from Overflowing Sewers
28. The _____ has clarified and expanded permit requirements under the Clean Water Act for 19,000 municipal sanitary sewer collection systems in order to reduce sanitary sewer overflows.
A. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

29. The requirements will help communities improve some of our Nation's most valuable infrastructure –our wastewater collection systems–by requiring facilities to develop and implement new capacity, management, operation, and maintenance programs and _____.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

30. The 19,000 systems covered by this rule include 4,800 municipal satellite collection systems which will be directly regulated under the _____for the first time. These requirements will result in fewer sewer overflows, leading to healthier communities, fewer beach closures, and fish and shellfish that are safer to eat.
A. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

Clean Water Act (Rule) Summary
33 U.S.C. s/s 1251 et seq. (1977)
31. The _____is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

32. The law gave _____the authority to set effluent standards on an industry basis (technology-based) and continued the requirements to set water quality standards for all contaminants in surface waters.
A. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

33. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (_____) is obtained under the Act.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

34. The 1977 amendments focused on toxic pollutants. In 1987, the _____ was reauthorized and again focused on toxic substances, authorized citizen suit provisions, and funded sewage treatment plants (POTW's) under the Construction Grants Program.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

35. The CWA provisions for the delegation by the _____ 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. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

36. In 1972, _____ enacted the first comprehensive national clean water legislation in response to growing public concern for serious and widespread water pollution.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

37. The _____is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers, and coastal areas. Lake Erie was dying.
A. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

38. The _____primary objective is to restore and maintain the integrity of the nation's waters. This objective translates into two fundamental national goals: eliminate the discharge of pollutants into the nation's waters, and achieve water quality levels that are fishable and swimmable.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

39. The _____focuses on improving the quality of the nation's waters. It provides a comprehensive framework of standards, technical tools and financial assistance to address the many causes of pollution and poor water quality, including municipal and industrial wastewater discharges, polluted runoff from urban and rural areas, and habitat destruction.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

40. The _____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 to meet them.
A. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

41. The _____provides funding to states and communities to help them meet their clean water infrastructure needs; protects valuable wetlands and other aquatic habitats through a permitting process that ensures development and other activities are conducted in an environmentally sound manner.
A. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

42. After 25 years, the _____continues to provide a clear path for clean water, and a solid foundation for an effective national water program.
A. POTW's
B. CWA or Act
C. EPA
D. NPDES
E. None of the Above

In 1972
43. Only a third of the _____were safe for fishing and swimming. Wetlands losses were estimated at about 460,000 acres annually.
A. POTW's
B. CWA
C. EPA
D. NPDES
E. None of the Above

44. Agricultural runoff resulted in the erosion of 2.25 billion tons of soil and the deposit of large amounts of _____into many waters. Sewage treatment plants served only 85 million people.
A. Nitrogen levels
B. Phosphorus and nitrogen
C. Annual wetlands
D. Additional losses
E. None of the Above

Today
45. Two-thirds of the nation's waters are safe for fishing and swimming. The rate of annual wetlands _____is estimated at about 70,000-90,000 acres according to recent studies.
A. Nitrogen levels
B. Phosphorus and nitrogen
C. Annual wetlands
D. Losses
E. None of the Above

46. The amount of soil lost due to _____ has been cut by one billion tons annually, and phosphorus and nitrogen levels in water sources are down. Modern wastewater treatment facilities serve 173 million people.
A. Nitrogen levels
B. Agricultural runoff
C. Annual wetlands
D. Additional losses
E. None of the Above

The Future
47. All Americans will enjoy clean water that is safe for _____. We will achieve a net gain of wetlands by preventing additional losses and restoring hundreds of thousands of acres of wetlands.
A. Fishing and swimming
B. Phosphorus and nitrogen
C. Annual wetlands
D. Additional losses
E. None of the Above

48. Soil erosion and runoff of phosphorus and nitrogen into watersheds will be minimized, helping to sustain the nation's farming _____. The nation's waters will be free of effects of sewage discharges.
A. Nitrogen levels
B. Economy and aquatic systems
C. Annual wetlands
D. Additional losses
E. None of the Above

CMOM - "Capacity, Management, Operation and Maintenance"
49. Proper function of sanitary sewer systems is vital to protect public health, property, and waterways in the surrounding area. Most utilities have a management, operation, and maintenance (_____) plan to ensure their system is in working order.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

50. More than 40,000 sanitary sewage overflows _____ occur every year, causing huge monetary losses, damage to fish/shellfish beds, polluting groundwater, and decreased tourism.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

51. _____release raw sewage from the collection system before it can reach a treatment facility.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

52. Sewage _____, into businesses and homes, and eventually ends up in local waterways.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

53. Many factors are involved in _____. Many municipalities started constructing sewer systems over 100 years ago. Some of these have not been adequately maintained, improved, or repaired over the last century.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

54. Cities have used a wide variety of building materials, designs, and installation techniques, which aren't _____to withstand heavy, continuous use.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

55. Problems can be especially bad where an older system is attached to a new system or an older system has _____.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

56. The Management, Operation and Maintenance (MOM) Programs Project is a pilot enforcement approach developed by EPA Region 4 to bring municipal sewer systems into full compliance with the Clean Water Act by eliminating sanitary sewer overflows (_____) from municipal sewer systems.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

57. A _____is a release of untreated wastewater before the flow reaches a treatment plant. SSOs pose a significant threat to public health and water quality.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

Municipality Self-Assessment
58. Under the MOM Programs Project, Region 4 invites municipalities to undertake a detailed self assessment of their _____programs.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

59. The municipalities submit this self-assessment along with recommendations for improvements to the _____ programs and/or remedial measures to correct sewer infrastructure problems.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

60. In consideration for undertaking the self-assessment, the municipality is able to establish its own reasonable goals and schedules, and the Region may use its discretion to significantly reduce penalties related to _____.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

61. Where an enforcement action is necessary, the Region works with the municipality to identify necessary _____and to establish schedules. The Region will likely defer any penalty decision until after the completion of the necessary improvements.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

Project Initiation
62. In 1998, Region 4 began the _____Programs Project by identifying priority watersheds and geographical areas in each of the eight States in the Region.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

63. These included areas where _____ could cause significant public health concerns, such as beaches, shellfish harvesting areas and drinking water supplies. In addition, watersheds already listed as impaired by collection system overflows or bacterial contamination were identified.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

64. Those municipalities wanting to participate in the _____ Project undertake the self-assessment using the guidance materials provided and submit the self-assessment to the Region within seven months of the kickoff.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

65. Municipalities that don't participate are inspected by the Region and/or State and are subject to traditional enforcement actions, including penalties where appropriate. Improper management and maintenance cause a majority of avoidable _____.
A. SSOs
B. CMOM or MOM
C. Infiltration and Inflow (I/I)
D. Clean Water Act
E. None of the Above

66. Blockages may be caused by tree roots or a build-up of sediment and other materials (i.e., grease, grit, debris). Structural defects and a flat slope can also cause excessive deposits of material. Build-ups can cause pipes to _____.
A. Combined Sewer Overflows
B. Break or collapse
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

Infiltration and Inflow (I/I)
67. _____occurs when rain or snowmelt enters the ground and seeps into leaky sanitation sewers, which were not designed to carry rainfall or drain property.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

68. _____can also occur when excess waters from roof drains, broken pipes and bad connections at sewer service lines infiltrates the sanitary sewer.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

Structural Failures
69. _____ are a major result of structural failure. Undersized systems do not have large enough pumps or lines to carry all the sewage generated by the buildings attached to them. This is especially true for new subdivisions or commercial areas.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Line/main breaks
E. None of the Above

70. SSOs can occur at sewer service connections to houses or buildings. Some cities estimate that up to 60% of _____come from service lines.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

What are Sanitary Sewer Overflows?
71. _____are discharges of raw sewage from municipal sanitary sewer systems.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

72. _____ 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. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

73. _____ are often caused by blockages and breaks in the sewer lines.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

Why do Sewers Overflow?
74. SSOs occasionally occur in almost every _____, even though systems are intended to collect and contain all the sewage that flows into them.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

75. When _____happen frequently, it means something is wrong with the system.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

Problems that Can Cause Chronic SSOs Include:
76. Infiltration and Inflow (I&I): too much rainfall or snowmelt infiltrating through the ground into leaky sanitary sewers not designed to hold rainfall or to drain property, and excess water inflowing through roof drains connected to sewers, broken pipes, and_____.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Badly connected sewer service lines
E. None of the Above

77. Undersized Systems: Sewers and pumps are too small to _____ from newly-developed subdivisions or commercial areas.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Carry sewage
E. None of the Above

78. Pipe Failures: blocked, broken or cracked pipes, tree roots grow into the sewer, sections of pipe settle or shift so that pipe joints no longer match, and sediment and other material builds up causing pipes to _____.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Break or collapse
E. None of the Above

79. Sewer Service Connections: discharges occur at _____ to houses and other buildings; some cities estimate that as much as 60% of overflows comes from the service lines.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sewer service connections
E. None of the Above

80. Deteriorating Sewer System: _____, improper maintenance; widespread problems that can be expensive to fix develop over time, some municipalities have found severe problems necessitating billion-dollar correction programs, often communities have to curtail new development until problems are corrected or system capacity is increased.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

Why are SSOs a Problem?
81. The EPA has found that _____ caused by poor sewer collection system management pose a substantial health and environmental challenge. The response to this challenge varies considerably from state to state.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

82. Many municipalities have asked for national consistency in the way permits are considered for wastewater discharges, including _____, and in enforcement of the law prohibiting unpermitted discharges. In response, the EPA has convened representatives of states, municipalities, health agencies, and environmental advocacy groups to advise the Agency on how to best meet this challenge.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

83. This SSO Federal Advisory Subcommittee examines the need for national consistency in permitting and enforcement, effective sewer operation and maintenance principles, public notification for _____ with potential health or environmental dangers, and other public policy issues.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

84. The EPA carefully considers the Subcommittee's recommendations for regulatory and nonregulatory actions to reduce _____ nationally.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

How Big is the SSO Problem?
85. The total number of _____ that occur nationwide each year is not known. In some areas, they might not be reported or are underreported to the EPA and state environmental agencies. Two surveys, however, help to define the size of the problem:
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

86. In a 1994 survey of 79 members of the Association of Metropolitan Sewerage Agencies, 65 percent of the respondents reported wet weather _____. They reported that between 15 and 35 percent of their sewers were filled above capacity and/or overflowed during wet weather.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

87. Municipal respondents with _____had only limited information about them. Only 60 percent had estimated the annual number. Half of those had estimated the amount of sewerage discharged, and 17 percent had determined what pollutants were in their overflows.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

Combined Sewer Overflows
88. _____are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

89. Most of the time, _____transport all of their wastewater to a sewage treatment plant, where it is treated and then discharged to a water body.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

90. During periods of heavy rainfall or snowmelt, however, the wastewater volume in a combined sewer system can exceed the capacity of the sewer system or treatment plant. For this reason, _____are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

91. These overflows, called _____contain not only storm water but also untreated human and industrial waste, toxic materials, and debris.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

92. They are a major water pollution concern for the approximately 772 cities in the U.S. that have combined sewer systems. _____may be thought of as a type of "urban wet weather" discharge.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

93. This means that, like _____and storm water discharges, they are discharges from a municipality's wastewater conveyance infrastructure that are caused by precipitation events such as rainfall or heavy snowmelt.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

94. The Policy provides guidance on how communities with combined sewer systems can meet Clean Water Act goals in as flexible and cost-effective a manner as possible. EPA's Report to Congress on implementation of the _____Control Policy assesses the progress made by EPA, states, and municipalities in implementing and enforcing the CSO Control Policy.
A. Combined Sewer Overflows
B. Infiltration and inflow
C. Inflow
D. Sanitary Sewer Overflows (SSOs)
E. None of the Above

The Elements of a Proper CMOM Program
Utility Specific
95. The complexity and expense associated with a utility's CMOM or MOM programs is specific to the size and complexity of the _____and related infrastructure. Factors such as population growth rate and soil/groundwater conditions also dictate the level of investment which should be made.
A. Maintenance activities
B. POTW
C. MOM
D. Goals
E. None of the Above

Purposeful
96. When MOM programs are present and _____, they support customer service and protect system assets, public health, and water quality.
A. Maintenance activities
B. POTW
C. Properly maintained
D. Goals
E. None of the Above

Goal-Oriented
97. Proper _____programs have goals directed toward their individual purposes. Progress toward these goals is measurable, and the goals are attainable.
A. Maintenance activities
B. POTW
C. MOM
D. Goals
E. None of the Above

Uses Performance Measures
98. Performance measures should be established for each MOM program in conjunction with the program goal. These _____, and used in determining progress to, or beyond, the program goal.
A. Measures are quantifiable
B. POTW
C. MOM
D. Goals
E. None of the Above

Periodically Evaluated
99. An evaluation of the progress toward reaching the _____, or a reassessment of the goals, should be made periodically and based upon the quantified performance measures.
A. Maintenance activities
B. POTW
C. MOM
D. Goals
E. None of the Above

Available In Writing
100. 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 _____programs to improper ones.
A. Maintenance activities
B. POTW
C. MOM
D. Goals
E. None of the Above

101. Written _____programs are useful only if they are made readily available to all personnel and clearly documented.
A. Maintenance activities
B. POTW
C. MOM
D. Goals
E. None of the Above

Implemented by Trained Personnel
102. Appropriate safety, equipment, technical, and program training is essential for implementing _____ programs properly.
A. Maintenance activities
B. POTW
C. MOM
D. Goals
E. None of the Above

What MOM programs should be audited?
103. MOM activity at a utility involves its entire wastewater infrastructure. Common utility management _____ and maintenance activities associated with sewer systems and pretreatment are listed in the Self-Audit Review Document.
A. Maintenance activities
B. POTW
C. Activities and operations
D. Goals
E. None of the Above

What are the elements of a proper Self-Audit?
Initial Assessment
104. Begin by performing a general assessment of the utility, and prioritizing the order of programs to be audited. The _____ Compliance Inspection Manual and Guidance may be useful references in making this assessment.
A. Maintenance activities
B. POTW
C. MOM
D. NPDES
E. None of the Above

Develop the Audit Plan
105. Identify the _____ programs present and/or needed at the utility, establish performance measures, and develop a schedule for auditing the programs.
A. Maintenance activities
B. POTW
C. MOM
D. Audit Plan
E. None of the Above

Conduct the Audit
106. Evaluate each _____ 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 both personnel and management.
A. Maintenance activities
B. Programs needed
C. MOM
D. Audit Plan
E. None of the Above

Identify Deficiencies
107. Define any programs needed, or improvements to programs needed, and any infrastructure deficiencies found. Identify any _____ which have occurred in the past five years.
A. Maintenance activities
B. Unpermitted discharges
C. MOM
D. Audit Plan
E. None of the Above

Develop Improvement Plan
108. Define the utility's plan/schedule to remediate the necessary improvements. This plan should include any short-term or long-term program improvements, and any short-term or long-term _____ which need addressing.
A. Maintenance activities
B. Programs needed
C. MOM
D. None of the Above

What Health Risks do SSOs present?
109. Because _____contain raw sewage they can carry bacteria, viruses, protozoa (parasitic organisms), helminths (intestinal worms), and borroughs (inhaled molds and fungi). The diseases they may cause range in severity from mild gastroenteritis (causing stomach cramps and diarrhea) to life-threatening ailments such as cholera, dysentery, infectious hepatitis, and severe gastroenteritis.
A. Maintenance activities
B. Programs needed
C. MOM
D. SSOs
E. None of the Above

110. What other Damage can SSOs do?
_____also damage property and the environment. When basements flood, the damaged area must be thoroughly cleaned and disinfected to reduce the risk of disease.
A. Maintenance activities
B. Programs needed
C. MOM
D. SSOs
E. None of the Above

111. _____ can be expensive for homeowners and municipalities. Rugs, curtains, flooring, wallboard panels, and upholstered furniture usually must be replaced.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

112. A key concern with _____ that enter oceans, bays, estuaries, rivers, lakes, streams, or brackish waters is their effect on water quality. When bodies of water cannot be used for drinking water, fishing, or recreation, society experiences an economic loss.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

113. Tourism and waterfront home values may fall. Fishing and shellfish harvesting may be restricted or halted. _____ can also close beaches.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

114. One 1994 study claims that _____ closed beaches across the nation that year for a total of more than 300 days.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

How can SSOs be Reduced or Eliminated?
115. Many avoidable _____ are caused by inadequate or negligent operation or maintenance, inadequate system capacity, and improper system design and construction. These SSOs can be reduced or eliminated by sewer system cleaning and maintenance.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

116. Reducing _____ through system rehabilitation and repairing broken or leaking service lines.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Infiltration and inflow
E. None of the Above

117. Enlarging or _____pump station, or sewage treatment plant capacity and/or reliability. Construction of wet weather storage and treatment facilities to treat excess flows.
A. Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

118. Communities also should address _____ during sewer system master planning and facilities planning, or while extending the sewer system into previously unsewered areas.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

119. A few SSOs may be unavoidable. Unavoidable _____ include those occurring from unpreventable vandalism, some types of blockages, extreme rainstorms, and acts of nature such as earthquakes or floods.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

What Costs are Involved with Reducing or Eliminating SSOs?
120. _____are a valuable part of the nation's infrastructure. The EPA estimates that our nation's sewers are worth a total of more than $1 trillion.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

121. The collection system of a single large municipality is an asset _____of dollars and that of a smaller city could cost many millions to replace.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

122. Sewer _____to reduce or eliminate SSOs can be expensive, but the cost must be weighed against the value of the collection system asset and the added costs if this asset is allowed to further deteriorate.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

123. Ongoing maintenance and _____ adds value to the original investment by maintaining the system's capacity and extending its life.
A. Rehabilitation
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

124. The costs of rehabilitation and other measures to correct _____ can vary widely by community size and sewer system type. Those being equal, however, costs will be highest and ratepayers will pay more in communities that have not put together regular preventive maintenance or asset protection programs.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

Overflow Response Plan
125. The overflow response plan should be designed provide a quick response to _____. Rapid response to an SSO can mitigate structural damage, pollution of waterways, and the public health risk.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

System Evaluation and Capacity Assurance Plan
126. These two activities work hand-in-hand to detect and address deficiencies and scheduling. These will provide an _____ of parts of the collection system that have substandard performance.
A. Rehabilitation or Upgrading sewer
B. Evaluation
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

127. Performance measures and indicators are important in evaluating collection system performance and _____, operation and maintenance programs.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Implementing capacity management
D. Performance measures
E. None of the Above

Communication/Notification
128. If an _____ 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. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

129. This rule will also require an annual report of all overflows, including minor SSOs such as building backups. Facilities must post locations of recurrent _____ and let the public know that the annual report is available to them.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

130. The _____ mandate that facilities must maintain records for three years about all overflows, complaints, work orders on the system, and implementation measures.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Record keeping provisions
D. Performance measures
E. None of the Above

131. According to the EPA, an effective _____ program would help NPDES permitees to: Develop/revise routine preventive maintenance activities that prevent service interruption and protect capital investments.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. CMOM
D. Performance measures
E. None of the Above

132. Create an _____ and respond to the inspection results.
A. Inspection schedule
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

133. Investigate the causes of _____ and take corrective measures.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

134. Respond quickly to _____ to minimize impacts to human health and the environment.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Sanitary sewer collection systems
D. Performance measures
E. None of the Above

135. Identify _____ and physical deficiencies and prioritize responses, including capital investments.
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Hydraulic (capacity)
D. Performance measures
E. None of the Above

136. Identify and develop _____ to program deficiencies (e.g., lack of legal authority, inadequate funding, and inadequate preventive maintenance).
A. Rehabilitation or Upgrading sewer
B. SSOs
C. Appropriate responses
D. Performance measures
E. None of the Above

Continuous Training

137. _____ for emergency response plans should be understood and practiced by all personnel in order to ensure safety of the public and the collection system personnel responding.
A. Routine preventative operations
B. Procedures
C. Routine operations and maintenance activities
D. Industrial users
E. None of the Above

138. _____ should be specific to the type of emergency that could occur. It is important to keep detailed records of all past emergencies in order to constantly improve response training, as well as the method and timing of future responses.
A. Routine preventative operations
B. Procedures
C. Routine operations and maintenance activities
D. Industrial users
E. None of the Above

139. The ability to deal with emergencies depends on the knowledge and _____, in addition to availability of equipment.
A. Routine preventative operations
B. Procedures
C. Routine operations and maintenance activities
D. Skill of the responding crews
E. None of the Above

140. The crew should be able to _____ in the field under stress and select the right equipment needed to correct the problem.
A. Routine preventative operations
B. Procedures
C. Routine operations and maintenance activities
D. Rapidly diagnose problems
E. None of the Above

141. If resources are limited, consideration should be given to contracting other departments or private industries to respond to some emergency situations, for example, those rare emergencies that would _____.
A. Routine preventative operations
B. Procedures
C. Routine operations and maintenance activities
D. Exceed the capacity of staff
E. None of the Above

Routine Preventative O&M Activities – Wastewater Collection Lines

142. _____and maintenance activities for wastewater collection lines shall be performed by the system's personnel and outside contractors.
A. Routine preventative operations
B. Procedures
C. Routine operations and maintenance activities
D. Industrial users
E. None of the Above

143. A qualified outside contractor can also _____ hydraulic cleaning using a jet hydro-vac combination truck and mechanical cleaning using a rodding machine.
A. Routine preventative operations
B. Procedures
C. Be utilized to perform
D. Industrial users
E. None of the Above

144. _____including cleaning and removing roots from small and large diameter lines. The system's goal should be a minimum of cleaning between 20-30% of the sewers every year.
A. Routine preventative operations
B. Procedures
C. Routine operations and maintenance activities
D. Industrial users
E. None of the Above

145. Closed-circuit television (CCTV) is used to assess the condition of the sewers. There are four types of activities that the system or a CCTV contractor can also perform: 1) inspect new work, 2) inspect condition of older portions of the wastewater collection system, 3) routine inspection of approximately 10% of the wastewater collection, and 4) _____ to determine the cause of selected overflow events. Manhole inspection, manhole coating (to prevent concrete deterioration) and manhole painting (for roach control) are also routinely performed.
A. Routine preventative operations
B. Routine inspection
C. Routine operations and maintenance activities
D. Problem identification
E. None of the Above

146. Sewer filled with grass will _____, pumps, and upset the wastewater treatment system. Require your industrial users like golf courses to install grass, grease, and sand/oil interceptors.
A. Damage your system
B. Routine inspection
C. Routine operations and maintenance activities
D. Industrial users
E. None of the Above

147. Certain compounds and undesirable solids, like grease and grass clippings, can disturb this delicate balance and _____ at the wastewater treatment facility.
A. Routine preventative operations
B. Routine inspection
C. Routine operations and maintenance activities
D. Necessary process
E. None of the Above

148. There are compounds and mixtures that should never be introduced into a _____. These destructive compounds include but are not limited to: cleaning solvents, grease (both household and commercial), oils (both household and commercial), pesticides, herbicides, antifreeze and other automotive products.
A. Stormwater Program
B. Sanitary sewer system
C. WET
D. Permit conditions
E. None of the Above

National Pollutant Discharge Elimination System (NPDES) Permit Program

149. The Clean Water Act requires that all point source wastewater dischargers obtain and comply with an _____ permit.

A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

150. _____ permits regulate the discharges from publicly owned wastewater treatment facilities, other wastewater treatment facilities, industrial facilities, concentrated animal feeding operations, aquiculture, and other “point source” dischargers.

A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

151. The _____ program also regulates wet weather discharges such as stormwater discharges from industrial activities (e.g. factory stormwater runoff) and municipal stormwater discharges including urban storm-water runoff, combined sewer overflows, and storm sewer overflows.

A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

152. _____ permits are developed to ensure that such discharges to receiving waters are protective of human health and the environment. They establish specific discharge limits, monitoring, and reporting requirements and may also require that dischargers undertake measures to reduce or eliminate pollution to receiving waters.

A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

153. Violations of permit conditions are enforceable under the _____. The EPA uses a variety of techniques to monitor permittee compliance status, including on-site inspections and review of data submitted by permittees. NPDES permits are issued for a term of five years (or less).

A. Stormwater Program
B. NPDES
C. WET
D. Clean Water Act
E. None of the Above

Stormwater Management

154. Stormwater discharges from many sources are largely uncontrolled. For this reason, the mandate of the _____is particularly challenging.

A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

155. Amendments to the _____ established a two-phased approach to address stormwater discharges. Phase 1, currently being implemented, requires permits for separate storm water systems serving large and medium-sized communities (those with over 100,000 inhabitants), and for stormwater discharges associated with industrial and construction activity involving at least five acres.
A. Stormwater Program
B. NPDES
C. WET
D. Clean Water Act
E. None of the Above

156. To address the large number of industrial dischargers of stormwater—for populations over 100,000--_____ has developed a strategy with a tiered framework to control administrative burden while emphasizing reduction in risk to human health and ecosystems. Phase 2 will address remaining stormwater discharges. This new regulatory approach would require permits for municipalities in urban areas with populations under 100,000, and smaller construction sites.
A. Stormwater Program
B. NPDES
C. EPA
D. Permit conditions
E. None of the Above

Combined Sewer Overflows (CSOS)
157. A combined sewer overflow is a discharge from a sewer system that is designed to carry sanitary wastewater and stormwater in the same pipe to a sewage treatment plant. In periods of rainfall or snowmelt, a _____ can discharge excess wastewater directly to rivers, lakes, and estuaries, causing health and environmental hazards because treatment plants can not handle the extra flow.
A. Stormwater Program
B. NPDES
C. Combined sewer system
D. Permit conditions
E. None of the Above

Whole Effluent Toxicity (WET)
158. _____ is the total toxic effect of an effluent measured by a biological toxicity test.
A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

159. A _____ test captures the effect of all toxicants on exposed test organisms without requiring the identification of specific toxicants.
A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

160. WET replicates to the greatest extent possible the actual environmental exposure of aquatic life to effluent toxicants. _____ tests use the same essential procedures as those used to generate water quality criteria.
A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

161. NPDES permit limits for WET typically are expressed either as a concentration of effluent in clean water that must not result in an unacceptable _____ test endpoint (such as lethality of more than half of the test organisms) or a number of toxic units (such as 3 TU) which corresponds to an effluent concentration.
A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

WET Limits
162. _____ limits are typically calculated to ensure that state water quality criteria for toxicity (numeric or narrative) are attained and maintained.
A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

163. WET monitoring requirements instead of WET limits are often included in NPDES to generate toxicity data for use in making future decisions about whether _____ needs to be controlled at a particular discharge point.
A. Stormwater Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

Pretreatment
164. The _____is a cooperative effort of federal, state, and local regulatory environmental agencies established to protect water quality.
A. National Pretreatment Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

165. The _____ is designed to reduce the level of pollutants discharged by industry and other non-domestic wastewater sources into municipal sewer systems, and thereby, reduce the amount of pollutants released into the environment through wastewater.
A. Program
B. NPDES
C. WET
D. Permit conditions
E. None of the Above

166. The objective of the program is to protect the Publicly Owned Treatment Works (POTW) from pollutants that may interfere with plant operation, prevent untreated pollutants from being introduced into the _____, and to improve opportunities for the POTW to reuse wastewater and biosolids that are generated.
A. National Pretreatment Program
B. NPDES
C. WET
D. POTW
E. None of the Above

167. The General Pretreatment Regulations require _____ that meet certain requirements to develop local pretreatment programs to control industrial discharges into their municipal sewer systems.
A. National Pretreatment Program
B. NPDES
C. WET
D. EPA
E. None of the Above

168. These programs must be approved by either _____or the state acting as the pretreatment Approval Authority.
A. National Pretreatment Program
B. NPDES
C. WET
D. EPA
E. None of the Above

169. More than 1,500 POTWs have developed Approved Pretreatment Programs. EPA has also developed national categorical pretreatment standards that apply _____ to industrial users in specific industrial categories.
A. National Pretreatment Program
B. NPDES
C. WET
D. Numeric pollutant limits
E. None of the Above

170. The _____ include reporting and other requirements necessary to implement these categorical standards.
A. General Pretreatment Regulations
B. NPDES
C. WET
D. EPA
E. None of the Above

Categorical Standards
171. Categorical pretreatment standards (i.e., categorical standards) are national, uniform, technology-based standards that apply to discharges to POTWs from specific industrial categories (i.e., indirect dischargers) and _____ of specific pollutants.
A. Limit the discharge
B. Existing and new sources
C. Designed to prevent the discharge
D. Discharge from facilities directly to waters
E. None of the Above

172. Categorical pretreatment standards for both _____ (PSES and PSNS, respectively) are promulgated by the EPA pursuant to Section 307(b) and (c) of the CWA.
A. Limit the discharge
B. Existing and new sources
C. Designed to prevent the discharge
D. Discharge from facilities directly to waters
E. None of the Above

173. Limitations developed for indirect discharges are _____of pollutants that could pass through, interfere with, or otherwise be incompatible with POTW operations.
A. Limit the discharge
B. Existing and new sources
C. Designed to prevent the discharge
D. Discharge from facilities directly to waters
E. None of the Above

174. Effluent limitations guidelines (ELGs), developed in conjunction with categorical standards, _____ of the U.S. (i.e., direct dischargers) and do not apply to indirect dischargers.
A. Limit the discharge
B. Existing and new sources
C. Designed to prevent the discharge
D. Discharge from facilities directly to waters
E. None of the Above

175. The significant difference between categorical standards and effluent limitations guidelines is that categorical standards account for any pollutant removal that may be afforded through treatment at the POTW while effluent limitations guidelines do not. Industries identified as major sources of toxic pollutants are typically targeted for _____development.
A. Produced, and characteristics
B. Treatment and management
C. Documents and publishing
D. Effluent guideline and categorical standard
E. None of the Above

176. If limits are deemed necessary, the EPA investigates affected IUs and gathers information regarding process operations, _____practices accounting for differences in facility size and age, equipment age, and wastewater characteristics.
A. Produced, and characteristics
B. Treatment and management
C. Documents and publishing
D. Effluent guideline and categorical standard
E. None of the Above

177. Sub categorization within an industrial category is evaluated based on variability in processes employed, raw materials used, types of items _____of wastes generated.
A. Produced, and characteristics
B. Treatment and management
C. Documents and publishing
D. Effluent guideline and categorical standard
E. None of the Above

178. Availability and cost of control technologies, non-water quality environmental impacts, available pollution prevention measures, and economic impacts are then identified prior to the EPA's presentation of findings in proposed development _____ a notice of the proposed regulations in the Federal Register. Based on public comments on the proposed rule, the EPA promulgates (i.e., publishes) the standards.
A. Produced, and characteristics
B. Treatment and management
C. Documents and publishing
D. Effluent guideline and categorical standard
E. None of the Above

Wastewater Collection Chapter 2
179. A very economical and quick method of determining if a new sewer line is straight and unobstructed is called "_____" and can be done with a mirror and a bright source of light, for example a headlight at night or Sunlight.
A. Video inspection And/Or Closed circuit television (CCTV)
B. Lamping
C. Gravity-flow sanitary sewers
D. Designed to transport the wastewater
E. None of the Above

180. _____coupled with a good cleaning program can be a highly effective maintenance tool.
A. Video inspection
B. Lamping
C. Gravity-flow sanitary sewers
D. Designed to transport the wastewater
E. None of the Above

181. By cleaning and root sawing your lines, restrictions caused by debris, roots and grease buildup can be prevented—thus drastically_____
A. Video inspection And/Or Closed circuit television (CCTV)
B. Reducing the number of emergency backups and surcharge calls.
C. Gravity-flow sanitary sewers
D. Designed to transport the wastewater
E. None of the Above

182. Sewage collection systems that have video inspection closed circuit television (CCTV) and cleaning programs, _____in the number of emergency calls because the system was cleaned and potential trouble spots were located prior to problems occurring.
A. Video inspection And/Or Closed circuit television (CCTV)
B. Lamping
C. Gravity-flow sanitary sewers
D. Designed to transport the wastewater
E. None of the Above

183. Sanitary sewers are designed to transport the wastewater by utilizing the potential energy provided by the _____ of the earth resulting in a downstream flow.
A. Video inspection And/Or Closed circuit television (CCTV)
B. Natural elevation
C. Gravity-flow sanitary sewers
D. Designed to transport the wastewater
E. None of the Above

184. This energy, if not designed properly, can cause losses due to free falls, _____, and sharp bends.
A. Designed to follow the topography of the land
B. Dissipate excess potential energy
C. Turbulent junctions
D. Population served, density of population, and water consumption
E. None of the Above

185. Sewer systems are designed to _____.
A. Designed to follow the topography of the land
B. Dissipate excess potential energy
C. Maintain proper flow velocities with minimum head loss
D. Population served, density of population, and water consumption
E. None of the Above

186. Higher elevations in the system may find it necessary to _____.
A. Designed to follow the topography of the land
B. Dissipate excess potential energy
C. Turbulent junctions
D. Population served, density of population, and water consumption
E. None of the Above

187. Design flows are _____.
A. Designed to follow the topography of the land
B. Dissipate excess potential energy
C. Based on the quantity of wastewater to be transported
D. Population served, density of population, and water consumption
E. None of the Above

188. Flow is determined largely by _____.
A. Designed to follow the topography of the land
B. Dissipate excess potential energy
C. Turbulent junctions
D. Population served, density of population, and water consumption
E. None of the Above

189. Sanitary sewers should be _____.
A. Designed to follow the topography of the land
B. Dissipate excess potential energy
C. designed for peak flow of population
D. Population served, density of population, and water consumption
E. None of the Above

190. Stormwater inflow is highly discouraged and should be _____.
A. Designed separate from the sanitary system
B. Dissipate excess potential energy
C. Turbulent junctions
D. Population served, density of population, and water consumption
E. None of the Above

191. Gravity-flow sanitary sewers are usually _____and to flow full or nearly full at peak rates of flow and partly full at lesser flows.
A. Designed to follow the topography of the land
B. Dissipate excess potential energy
C. Turbulent junctions
D. Population served, density of population, and water consumption
E. None of the Above

192. Most of the time the flow surface is exposed to the atmosphere within the sewer and it functions as an open channel. At extreme peak flows the wastewater will _____. This surcharge produces low pressure in the sewer system.
A. Surcharge back into the manholes
B. Dissipate excess potential energy
C. Turbulent junctions
D. Population served, density of population, and water consumption
E. None of the Above

193. In order to design a sewer system, many factors are considered. The purpose of this topic is to aid in the _____understanding of flow velocities and design depths of flow.
A. General inspection
B. Flow and rainfall monitoring
C. Understanding of flow velocities
D. Address hydraulic deficiencies
E. None of the Above

194. The ultimate goal for our industry is to_____. This is achieved by prevention of sewer manhole overflows.
A. General inspection
B. Protect the health of the customers we serve
C. Capacity evaluation program
D. Address hydraulic deficiencies
E. None of the Above

Sewer System Capacity Evaluation - Testing and Inspection
195. The collection system owner or operator should have a program in place to periodically _____ of the sewer system in both wet and dry weather flows and ensure the capacity is maintained as it was designed.
A. General inspection
B. Flow and rainfall monitoring
C. Evaluate the capacity
D. Address hydraulic deficiencies
E. None of the Above

196. The _____builds upon ongoing activities and the everyday preventive maintenance that takes place in a system.
A. General inspection
B. Flow and rainfall monitoring
C. Capacity evaluation program
D. Address hydraulic deficiencies
E. None of the Above

197. The system then undergoes general inspection which serves to _____ and add to the inventory information.
A. Continuously update
B. Flow and rainfall monitoring
C. Capacity evaluation program
D. Address hydraulic deficiencies
E. None of the Above

Capacity Limitations
198. The next step in the _____is to identify the location of wet weather related SSOs, surcharged lines, basement backups, and any other areas of known capacity limitations.
A. General inspection
B. Flow and rainfall monitoring
C. Capacity evaluation
D. Address hydraulic deficiencies
E. None of the Above

199. These areas warrant further investigation in the form of _____and inspection procedures to identify and quantify the problem.
A. General inspection
B. Flow and rainfall monitoring
C. Capacity evaluation program
D. Address hydraulic deficiencies
E. None of the Above

200. The reviewer should determine that the capacity evaluation includes an estimate peak flows experienced in the system, an estimate of the _____ components, and identifies the major sources of I/I that contribute to hydraulic overloading events.
A. General inspection
B. Flow and rainfall monitoring
C. Capacity of key system
D. Address hydraulic deficiencies
E. None of the Above

201. The capacity evaluation should also make use of a hydraulic model. This model will help identify areas that need to _____.
A. General inspection
B. Alleviate capacity limitations
C. Capacity evaluation program
D. Address hydraulic deficiencies
E. None of the Above

202. Short and long term alternatives to _____should be identified, prioritized, and scheduled for implementation.
A. General inspection
B. Flow and rainfall monitoring
C. Capacity evaluation program
D. Address hydraulic deficiencies
E. None of the Above

203. A sewer inspection is an important part of a sewer system capacity evaluation and determining your _____.
A. General inspection
B. Flow and rainfall monitoring
C. Options or alternatives
D. Address hydraulic deficiencies
E. None of the Above

Flow Monitoring
204. Fundamental information about the collection system is obtained by _____.
A. Flow monitoring
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

205. _____provides information on dry weather flows as well as areas of the collection system potentially affected by I/I.
A. Flow monitoring
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

206. _____ may also be performed for billing purposes, to assess the need for new sewers in a certain area, or to calibrate a model.
A. Flow measurement
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

207. Permanent installations are done at key points in the collection system such as the _____ of a satellite collection system, pump stations, and key junctions.
A. Flow meter inspection
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

208. _____ consists of flow meters typically installed for 30-90 days. Instantaneous flow metering is performed by collection system personnel, one reading is taken and then the measuring device is removed.
A. Flow meter inspection
B. Records of each inspection
C. Discharge point
D. Temporary monitoring
E. None of the Above

209. The collection system owner or operator should have a flow monitoring plan that describes their flow monitoring strategy, or should at least be able to provide the following information: Purpose of the flow monitoring, Location of all flow meters, Type of flow meters and _____and calibration frequency.
A. Flow meter inspection
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

Flow Monitoring Plan
210. A _____should provide for routine inspection, service, and calibration checks (as opposed to actual calibration). In some cases, the data is calibrated rather than the flow meter.
A. Flow monitoring plan
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

211. Checks should include taking independent water level (and ideally velocity readings), cleaning accumulated debris and silt from the flow meter area, downloading data (sometimes only once per month), and checking the desiccant and battery state.
_____should be maintained.
A. Flow meter inspection
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

Flow Measurements
212. Flow measurements performed for the purpose of quantifying I/I are typically separated into three components: _____, infiltration, and inflow.
A. Flow meter inspection
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

213. _____ is generally taken to mean the wastewater generated without any I/I component. Infiltration is the seepage of groundwater into pipes or manholes through defects such as cracks, broken joints, etc.
A. Flow meter inspection
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

214. Inflow is the water which enters the sewer through _____such as roof leaders, direct connections from storm drains or yard, area, and foundation drains, the holes in and around the rim of manhole covers, etc.
A. Flow meter inspection
B. Records of each inspection
C. Discharge point
D. Direct connections
E. None of the Above

215. Many collection system owners or operators add a third classification: _____.
A. Rainfall induced infiltration
B. Records of each inspection
C. Discharge point
D. Base flow
E. None of the Above

216. RII is stormwater that enters the collection system through defects that lie so close to the ground surface that they are easily reached. Although not from piped sources, _____ tends to act more like inflow than infiltration.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. RII
E. None of the Above

217. In addition to the use of flow meters, which may be expensive for a small owner or operator, other methods of inspecting flows may be employed, such as visually monitoring manholes during low-flow periods to determine areas with excessive _____.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. I&I
E. None of the Above

218. For a very small system, this technique may be an effective and low-cost means of identifying problem areas in the system which _____.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. Require further investigation
E. None of the Above

219. Inside a new manhole, the _____is the inside bottom of the pipe.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. RII
E. None of the Above

220. The _____is used to determine the depth which is used to determine the Rise or Slope of the pipe.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. RII
E. None of the Above

Flow Capacity

221. Most sewers are designed with the capacity to flow half full for less than 15 inches in diameter; larger sewers are _____.
A. Deposition of solids
B. Prevent blockages
C. Designed to flow at three-fourths flow
D. RII
E. None of the Above

222. The _____ is based on calculated peak flow, which is commonly considered to be twice the average daily flow.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. Velocity
E. None of the Above

223. Accepted standards dictate that the minimum design _____ should not be less than 0.60 m/sec (2 fps) or generally greater than 3.5 m/sec (10 fps) at peak flow.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. Velocity
E. None of the Above

224. A velocity in excess of 3.5 m/sec (10 fps) can be tolerated with proper consideration of pipe material, abrasive characteristics of the wastewater, turbulence, and thrust at changes of direction. The _____is necessary to prevent the deposition of solids.
A. Deposition of solids
B. Prevent blockages
C. Invert
D. Minimum velocity
E. None of the Above

225. The _____ with a utility's CMOM or MOM programs is specific to the size and complexity of the Publicly Owned Treatment Works (POTW) and related infrastructure.
A. Deposition of solids
B. Prevent blockages
C. Complexity and expense associated
D. Minimum design velocity
E. None of the Above

226. Factors such as _____ and soil/groundwater conditions also dictate the level of investment which should be made.
A. Deposition of solids
B. Prevent blockages
C. Population growth rate
D. Minimum design velocity
E. None of the Above

Sewer Cleaning

227. The purpose of _____is to remove accumulated material from the sewer.
A. Prevent blockages
B. Identify
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

228. _____ helps to prevent blockages and is also used to prepare the sewer for inspections.
A. Prevent blockages
B. Identify
C. Cleaning
D. Recordkeeping
E. None of the Above

229. Stoppages in gravity sewers are usually caused by a structural defect, poor design, poor construction, an _____ (especially grease), or root intrusion.
A. Prevent blockages
B. Identify
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

230. Protruding traps (lateral sewer connections _____ so that they protrude into the main sewer) may catch debris, which then causes a further buildup of solids that eventually block the sewer.
A. Prevent blockages
B. Incorrectly installed
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

Sewer Cleaning Methods

231. There are three major methods of _____: hydraulic, mechanical, and chemical.
A. Prevent blockages
B. Identify
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

232. Hydraulic _____ (also referred to as flushing) refers to any application of water to clean the pipe.
A. Prevent blockages
B. Identify
C. Cleaning
D. Recordkeeping
E. None of the Above

233. Mechanical _____ uses physical devices to scrape, cut, or pull material from the sewer.
A. Prevent blockages
B. Identify
C. Cleaning
D. Recordkeeping
E. None of the Above

234. Chemical cleaning can _____ the control of odors, grease buildup, root growth, corrosion, and insect and rodent infestation.
A. Prevent blockages
B. Identify
C. Sewer cleaning
D. Facilitate
E. None of the Above

Sewer Cleaning Records
235. The backbone of an effective sewer cleaning program is accurate recordkeeping. Accurate _____ provides the collection system owner or operator with information on the areas.
A. Prevent blockages
B. Identify
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

236. The owner or operator should be able to _____ problem collection system areas, preferably on a map.
A. Prevent blockages
B. Identify
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

237. Potential problem areas _____ should include those due to grease or industrial discharges, hydraulic bottlenecks in the collection system, areas of poor design (e.g., insufficiently sloped sewers), areas prone to root intrusion, sags, and displacements.
A. Prevent blockages
B. Identified
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

238. The connection between problem areas in the collection system and the preventive maintenance _____ schedule should be clear.
A. Prevent blockages
B. Identified
C. Cleaning
D. Recordkeeping
E. None of the Above

239. The owner or operator should also be able to identify the number of _____ experienced per mile of sewer pipe.
A. Prevent blockages
B. Identified
C. Stoppages
D. Recordkeeping
E. None of the Above

240. If the system is experiencing a steady increase in_____, 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 grease producing activities, etc).
A. Prevent blockages
B. Stoppages
C. Sewer cleaning
D. Recordkeeping
E. None of the Above

Parts and Equipment Inventory
241. An _____ of spare parts, equipment, and supplies should be maintained by the collection system owner or operator.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

242. The _____should be based on the equipment manufacturer's recommendations, supplemented by historical experience with maintenance and equipment problems.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

243. Without such an _____, the collection system may experience long down times or periods of inefficient operation in the event of a breakdown or malfunction.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

244. _____on all pieces of equipment and major tools. The owner or operator should have a system to assure that each crew member has adequate and correct tools for the job.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

245. The _____should maintain a yard where equipment, supplies, and spare parts are maintained and personnel are dispatched.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

246. Very large systems may maintain more than one yard. In this case, the reviewer should perform a visual survey at the main yard. In small to medium size systems, collection system operations may share the yard with the department of public works, water department, or other municipal agencies. In this case, the _____should determine what percentage is being allotted for collection system items. The most important features of the yard are convenience and accessibility.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

247. The _____should observe a random sampling of inspection and maintenance crew vehicles for equipment as described above.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

248. A review of the equipment and_____ will determine what spare parts should be maintained.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Manufacturer's manuals aids
E. None of the Above

249. The _____should then consider the frequency of usage of the part, how critical the part is, and finally, how difficult the part is to obtain when determining how many of the part to keep in stock. Spare parts should be kept in a clean, well-protected stock room.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

Owner or Operator - Point to Note
250. The _____should have a procedure for determining which spare parts are critical for the proper operation of the collection system.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

251. A tracking system should be in place, including Guide for Evaluating CMOM Programs at Sanitary Sewer Collection Systems procedures on logging out materials, and when _____ must use them.
A. Reviewer
B. Inventory
C. Maintenance personnel
D. Owner or operator
E. None of the Above

252. The _____ should be able to produce the spare parts inventory and clearly identify those parts deemed critical. The reviewer should evaluate the inventory and selected items in the stockroom to determine whether the specified numbers of these parts are being maintained.
A. Reviewer
B. Inventory
C. Files should be maintained
D. Owner or operator
E. None of the Above

Infiltration and Inflow
253. Infiltration occurs when groundwater enters the sewer system through cracks, holes, faulty connections, or other openings.
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

254. _____ 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. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

255. The sanitary sewer collection system and treatment plants have a maximum flow capacity of wastewater that can be handled. _____, which is essentially clean water.
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

256. _____ is water (typically groundwater) entering the sewer underground through cracks or openings in joints.
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

257. _____is water (typically stormwater or surface runoff) that enters the sewer from grates or unsealed manholes exposed to the surface.
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

Determining I/I
258. Flow monitoring and flow modeling provide measurements and data used to determine estimates of _____.
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

259. Flow meters are placed at varying locations throughout the sewer collection system to take measurements and identify general _____source areas.
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

260. Measurements taken before and after a precipitation event indicate the extent that I/I is increasing total flow. Both _____increase with precipitation.
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

261. _____ increases when groundwater rises from precipitation, and inflow is mainly stormwater and rainwater. Rainfall monitoring is also performed to correlate this data.
A. Inflow
B. Infiltration
C. I/I
D. None of the Above

Identifying sources of I/I
262. A _____) involves inspection of the sewer system using several methods to identify sources of I/I:
A. Inflow
B. Infiltration
C. I/I
D. Sewer System Evaluation Survey (SSES)
E. None of the Above

263. _____ - accessible pipes, gutter and plumbing connections, and manholes are visually inspected for faults.
A. Inflow
B. Infiltration
C. I/I
D. Visual inspection
E. None of the Above

264. Smoke testing – smoke is pumped into sewer pipes. Its reappearance aboveground indicates points of _____.
A. SSES
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

265. These points can be on public property such as along street cracks or around manholes, or on private property such as along house foundations or in yards where _____ lay underground.
A. SSES
B. I/I
C. Sewer pipes
D. Characterize peaking factors
E. None of the Above

266. TV inspection – camera equipment is used to do internal pipe inspections. The City will usually have one 2-3 person crew that can perform _____on over 20 miles of sewer pipe per year.
A. SSES
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

267. Dye testing – Dye is used at suspected _____sources. The source is confirmed if the dye appears in the sewer system.
A. SSES
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

268. Sources of _____are also sometimes identified when sewer backups or overflows bring attention to that part of the system.
A. SSES
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

269. The purpose of the _____is to reduce these incidences by finding sources before they cause a problem.
A. SSES
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

Repairing I/I Sources

270. _____ include manhole wall spraying, Insituform pipe relining, manhole frame and lid replacement, and disconnecting illegal plumbing, drains, and roof downspouts.

A. Repair techniques
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

Efficient Identification of Excessive I/I

271. The owner or operator should have in place a program for the efficient identification of excessive _____.

A. SSES
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

272. The program should look at the wastewater treatment plant, pump stations, permanent meter flows, and rainfall data to _____for the whole system and major drainage basins.

A. SSES
B. I/I
C. TV inspection
D. Characterize peaking factors
E. None of the Above

273. The reviewer should evaluate the program, including procedures and records associated with the flow monitoring plan. Temporary meters should be used on a “roving” basis to identify areas with high wet weather flows. Areas with high wet weather flows should then be subject to inspection and _____.

A. SSES
B. I/I
C. Rehabilitation activities
D. Characterize peaking factors
E. None of the Above

Sewer System Testing

274. Sewer system testing techniques are often used to identify leaks which allow unwanted infiltration into the sewer system and determine the _____and other sources of stormwater inflow.

A. The location of illicit connections
B. The reviewer should evaluate
C. The public during these tests
D. Works best suited for detecting
E. None of the Above

275. Two commonly implemented techniques include smoke testing and dyed water testing. Regardless of the program(s) _____, the reviewer should evaluate any procedures and records that have been established for these programs.

A. The location of illicit connections
B. The reviewer should evaluate
C. Implemented by the owner or operator
D. Works best suited for detecting
E. None of the Above

276. The reviewer should also evaluate any _____ and assess how the owner or operator communicates with the public during these tests (i.e., when there is a possibility of smoke entering a home or building).
A. Building inspections
B. Public relations program
C. Detecting sources
D. Positive smoke tests
E. None of the Above

277. _____is a relatively inexpensive and quick method of detecting sources of inflow in sewer systems, such as down spouts, or driveway and yard drains, and works best suited for detecting cross connections and point source inflow leaks.
A. Building inspections
B. Smoke testing
C. Detecting sources
D. Positive smoke tests
E. None of the Above

278. _____ is not typically used on a routine basis, but rather when evidence of excessive I/I already exists. With each end of the sewer of interest plugged, smoke is introduced into the test section, Guide for Evaluating CMOM Programs at Sanitary Sewer Collection Systems usually via a manhole.
A. Building inspections
B. Public relations program
C. Detecting sources
D. Smoke testing
E. None of the Above

279. Sources of inflow can then be identified when _____escapes through them.
A. Building inspections
B. Public relations program
C. Detecting sources
D. Smoke
E. None of the Above

280. If the collection system owner or operator implements a regular program of smoke testing, the program should include a public notification procedure. The owner or operator should also have procedures to define how line segments are isolated, the maximum amount of line to be smoked at one time and the weather conditions in which _____ is conducted (i.e., no rain or snow, little wind and daylight only).
A. Building inspections
B. Public relations program
C. Detecting sources
D. Smoke testing
E. None of the Above

281. The results of _____should be documented with carefully labeled photographs.
A. Building inspections
B. Public relations program
C. Detecting sources
D. Positive smoke tests
E. None of the Above

282. _____ are sometimes conducted as part of a smoke testing program and, in some cases, may be the only way to find illegal connections.
A. Building inspections
B. Public relations program
C. Detecting sources
D. Positive smoke tests
E. None of the Above

283. If properly _____, smoke should exit the vent stacks of the surrounding properties. If traces of the smoke or its odor enter the building, it is an indication that gases from the sewer system may also be entering.
A. Building inspections
B. Connected to the sanitary sewer system
C. Detecting sources
D. Positive smoke tests
E. None of the Above

284. _____ can be labor intensive and require advanced preparation and communication with the public.
A. Building inspections
B. Public relations program
C. Detecting sources
D. Positive smoke tests
E. None of the Above

Dye Testing
285. Dyed water testing may be used to establish the connection of a fixture or appurtenance to the sewer. It is often used to confirm _____or to test fixtures that did not smoke.
A. Smoke testing
B. Visual inspections
C. Dyed water
D. Identification
E. None of the Above

286. As is the case with _____, it is not used on a routine basis, but rather in areas that have displayed high wet weather flows.
A. Smoke testing
B. Visual inspections
C. Dyed water
D. Identification
E. None of the Above

287. Dyed water testing can be used to identify structurally damaged manholes that might create potential I/I problems. This is accomplished by flooding the area close to the suspected manholes with dyed water and checking for entry of _____at the frame-chimney area, cone or corbel, and walls of the manhole.
A. Smoke testing
B. Visual inspections
C. Dyed water
D. Identification
E. None of the Above

Sewer System Inspection

288. Visual inspection of manholes and pipelines are the first line of defense in the _____ of existing or potential problem areas.
A. Smoke testing
B. Visual inspections
C. Dyed water
D. Identification
E. None of the Above

289. _____should take place on both a scheduled basis and as part of any preventive or corrective maintenance activity.
A. Smoke testing
B. Visual inspections
C. Dyed water
D. Identification
E. None of the Above

290. _____provide additional information concerning the accuracy of system mapping, the presence and degree of I/I problems, and the physical state-of-repair of the system.
A. Smoke testing
B. Visual inspections
C. Dyed water
D. Identification
E. None of the Above

291. By observing the manhole directly and the incoming and outgoing lines with a mirror, it is possible to _____, the presence of roots, condition of joints, depth of debris in the line, and depth of flow.
A. Smoke testing
B. Visual inspections
C. Dyed water
D. Determine structural condition
E. None of the Above

Manholes

292. Manholes should undergo routine inspection typically every one to five years. There should be a baseline for manhole _____ (e.g., once every two years) with problematic manholes being inspected more frequently.
A. Lamping
B. Routine inspection
C. Inspections
D. Evaluate records
E. None of the Above

293. The reviewer should conduct _____ at a small but representative number of manholes for the items listed above.
A. Visual observation
B. Routine inspection
C. Inspection techniques
D. Evaluate records
E. None of the Above

294. There are various pipeline _____, the most common include: lamping, camera inspection, sonar, and CCTV.
A. Lamping
B. Routine inspection
C. Inspection techniques
D. Evaluate records
E. None of the Above

Sewer System Inspection Techniques
295. Sewer inspection is an important component of any maintenance program. There are a number of _____that may be employed to inspect a sewer system.
A. Lamping
B. Routine inspection
C. Inspection techniques
D. Evaluate records
E. None of the Above

296. The reviewer should determine if an inspection program includes frequency and schedule of _____ and procedures to record the results.
A. Lamping
B. Routine inspection
C. Inspections
D. Evaluate records
E. None of the Above

297. Sewer system cleaning should always be considered before _____ is performed in order to provide adequate clearance and inspection results.
A. Lamping
B. Inspection
C. Inspection techniques
D. Evaluate records
E. None of the Above

298. A reviewer should _____ maintained for inspection activities, including whether information is maintained on standardized logs, and should include: Location and identification of line being inspected. Pipe size and type. Name of personnel performing inspection. Distance inspected. Cleanliness of the line. Condition of the manhole with pipe defects identified by footage from the starting manhole. Results of inspection, including estimates of I/I.
A. Lamping
B. Routine inspection
C. Inspection techniques
D. Evaluate records
E. None of the Above

Camera Inspection
299. Lamping involves lowering a still camera into a manhole. The camera is lined up with the centerline of the junction of the manhole frame and sewer. A picture is the taken down the pipe with a _____.
A. Inspected upstream and downstream
B. Routine inspection
C. Inspection techniques
D. Strobe-like flash
E. None of the Above

300. A disadvantage of this technique is that only the first 10-12 feet of the pipe can be _____ of the access point. Additionally, it has limited use in small diameter sewers.

A. Inspected upstream and downstream
B. Routine inspection
C. Inspection techniques
D. Strobe-like flash
E. None of the Above

You are finished with your assignment, please fax or e-mail your assignment and registration page back to TLC and call us to confirm that we've received it. Thank you and God bless you.