BEFORE THE

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF CWA AUTHORITY, INC. FOR (1) AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR WASTEWATER UTILITY SERVICE IN THREE PHASES AND APPROVAL OF NEW SCHEDULES OF RATES AND CHARGES APPLICABLE THERETO; (2) APPROVAL OF A LOW-INCOME CUSTOMER ASSISTANCE PROGRAM; AND (3) APPROVAL OF CERTAIN CHANGES TO ITS GENERAL TERMS AND CONDITIONS FOR WASTEWATER SERVICE.	)	**CAUSE NO. 45151**

DIRECT TESTIMONY
of
MARK C. JACOB

On
Behalf of
Petitioner,
CWA Authority, Inc.

Petitioner's Exhibit No. 5

INTRODUCTION AND BACKGROUND

Q1. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A1. My name is Mark C. Jacob. My business address is 2150 Dr. Martin Luther King Jr. Street, Indianapolis, Indiana, 46202.

Q2. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A2. I am employed by the Board of Directors for Utilities of the Department of Public Utilities of the City of Indianapolis, which does business as Citizens Energy Group ("Citizens Energy Group" or "Citizens"). Citizens Energy Group is affiliated with CWA Authority, Inc. ("CWA Authority" or "CWA"), which owns the wastewater utility that provides wastewater collection and treatment utility services in Indianapolis and wastewater treatment services to surrounding communities. Pursuant to a Management and Operating Agreement approved by this Commission in Cause No. 43936, Citizens Energy Group provides management and operational services for the wastewater utility owned by CWA. CWA is the Petitioner in this proceeding. I serve as Vice President of Capital Programs & Engineering and Quality for Citizens. In that capacity, I am responsible for the planning, design and construction of all capital programs of Citizens' utilities, the Fleet, Facilities, Real Estate departments, and our Quality Lean Six Sigma deployment.

Q3. HOW LONG HAVE YOU BEEN EMPLOYED BY CITIZENS?

A3. I have been employed by Citizens since the acquisition of the water and wastewater systems in August 2011. I was appointed an Officer in January 2013.

Q4. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A4. I received a Bachelor's of Science Degree in Civil Engineering from Purdue University in 1983. Through 1987, I worked as a construction field engineer for the (f/k/a) Indiana Department of Highways. In 1987, I started working for the City of Indianapolis. During most of the 1990's, through 1999, I worked for the City as the Administrator, and then Deputy Director, of the Asset Management Division, of the Department of Capital Asset Management, managing and overseeing all wastewater, stormwater, and transportation capital programs. From 1999 through 2011, I was the Director, then Vice President, and then Senior Vice President, for DLZ, Indiana LLC ("DLZ"), a larger Midwestern Architectural/Engineering consulting firm. In addition to other duties for DLZ, I was the project manager, via DLZ, for the City's technical due diligence when the City acquired the Indianapolis Water Company in 2001. Still working for DLZ, I became the Program Manager for the establishment and management of the City's Stormwater Utility in 2002. Starting in 2005 and still working for DLZ, I became the Program Manager for the consolidated wastewater, stormwater and combined sewer overflow ("CSO") programs for the City. I was the Program Manager during the negotiation of the 2006 Federal Combined Sewer Overflow Consent Decree approved by the United States District Court for the Southern District of Indiana on December 19, 2006, as well as the two subsequent amendments thereto

in 2009 and 2010 (the "Consent Decree"). I remained in that position (via DLZ) until I joined Citizens in August 2011.

Q5. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A5. Yes. I testified in CWA's first rate case, Cause No. 44305, in which I provided an overview of the Consent Decree and offered information concerning the capital improvement projects CWA had performed and will perform under the terms of the Consent Decree, as well as CWA's proposal to continue the Septic Tank Elimination Program ("STEP"). I also testified in CWA's last rate case (Cause No. 44685) and Citizens Water's last rate case (Cause No. 44644) in support of the utilities' respective capital investments requirements.

Q6. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A6. The purpose of my testimony is to describe CWA's extensions and replacements ("E&R") investment requirements and strategies. To that end, I discuss CWA's capital investment levels during the test year, as well as upcoming years, including the three-year period beginning August 2019 and ending July 2022, the "Capital Investment Requirements Period" (the "CIRP"). This is the period during which the rates for which CWA has made application will be in effect. I also update the Commission on the status of the Consent Decree projects. In addition, I describe the need to continue the STEP projects in the upcoming years. I also discuss efficiencies CWA has achieved in completing capital projects. Finally, I discuss CWA's E&R focus beyond the CIRP.

Q7. IS THERE A DIFFERENCE BETWEEN THE TERMS CAPITAL AND E&R, AS USED IN YOUR TESTIMONY?

A7. No. All capital needs are described as either an extension of a collection system element(s), including traditional infrastructure, as well as support and treatment plant infrastructure needed to properly operate the collection system, or a replacement of an element of the collection system. A replacement can be in-kind or replacement of an older technology. The E&R needs of the entire collection system include both traditional E&R needs and Consent Decree E&R.

CWA'S MAJOR INFRASTRUCTURE ELEMENTS

Q8. WHAT ARE CWA'S MAJOR CAPITAL INFRASTRUCTURE ELEMENTS?

A8. CWA's major infrastructure elements are: (i) Consent Decree projects; (ii) STEP projects, (iii) Collection System projects; and (iv) Treatment Plant projects. Cost elements in each of these categories include: planning, design, construction, inspection, administration, and can also include ancillary costs, such as land acquisition, permitting, and/or geotechnical services.

Q9. DOES CWA HAVE OTHER LESS FINANCIALLY SIGNIFICANT CAPITAL NEED CATEGORIES?

A9. Yes. CWA has capital needs relating to fleet and facilities replacements or projects, environmental support projects, technology replacements or enhancements, and Corporate Support Services ("CSS") projects. In the test year, those categories collectively represented approximately 2% of CWA's total

capital investment. During the CIRP, investment levels related to these categories are expected to remain at approximately 2% of total capital investment. While less financially significant, it is important that CWA maintain a consistent level of investment in each category to ensure fleet, facilities and technology needs of the organization are met to allow for proper management of CWA. The environmental category is important because it involves investments such as river monitoring equipment and new lab equipment, as well as replacement of older equipment necessary to ensure compliance with environmental regulations.

Q10. PLEASE DESCRIBE THE TYPES OF CAPITAL INVESTMENTS COMPRISING THE "CONSENT DECREE" CATEGORY.

A10. This category encompasses capital costs associated with the Control Measures (*i.e.*, bundled projects collectively designed to address CSOs) required by the Consent Decree. Major components include:

- an approximately 28 mile, 250-million-gallon, Deep Rock Tunnel System, designed to store and convey CSO flows to the Southport Advanced Wastewater Treatment Plant ("AWTP"). There are six major segments to the Deep Rock Tunnel System: (i) the Deep Rock Tunnel Connector ("DRTC"), including the DRTC Pump Station; (ii) the White River Tunnel; (iii) the Fall Creek Tunnel; (iv) the Lower Pogues Run Tunnel; (v) the Pleasant Run Tunnel; and (vi) the Eagle Creek Deep Tunnel;
- CSO consolidation sewers along Fall Creek, White River, Pogues Run, Pleasant Run, and Eagle Creek; and

- significant improvements to both the Belmont and Southport AWTPs to provide newer technologies and to double their ability to treat incoming flows.

Most of the Consent Decree projects have been completed. CWA is on schedule to meet the prescribed final completion date of December 31, 2025. While the Consent Decree projects are noteworthy they comprise only a part of CWA's total annual E&R requirements.

Q.11 PLEASE DESCRIBE FURTHER HOW CONSENT DECREE PROJECTS REPLACE A CENTURY-OLD TECHNOLOGY.

A11. As larger population centers were forming in the mid- to late-1800s, open ditches and areas were built as primitive collection systems to begin to address stormwater drainage, as well as raw sewage, all of which led to health issues. Cities began building underground pipes to capture the stormwater and sewage, as well as to transport the combination of both to streams, with the expectation that dilution would solve health issues. In the early twentieth century, primitive wastewater treatment plants began to be built to reduce pollution of rivers and streams. However, volumes and strengths of discharges quickly exceeded capabilities of the plants. In 1972, Congress enacted the Clean Water Act and in the mid-1990s the United States Environmental Protection Agency ("U.S. EPA") issued a framework to control CSOs. This regulatory framework is continuously evolving, but generally requires E&R investments to better capture and treat CSOs and treat wastewater at the treatment plants.

Q12. WHAT ARE THE MOST COSTLY CONTROL MEASURES THAT MUST BE COMPLETED TO COMPLY WITH THE CONSENT DECREE?

A12. The most costly Control Measures are those comprising the construction of the Deep Rock Tunnel System, which is being built in multiple phases, approximately 250 feet in depth below the City, to store CSO flows during wet weather events.

Q13. SINCE YOUR UPDATE IN CWA'S LAST RATE CASE, ARE CONSTRUCTION OF THE DEEP ROCK TUNNEL SYSTEM AND OTHER CONSENT DECREE ELEMENTS STILL ON SCHEDULE?

A13. Yes. The DRTC and DRTC Pump Station have been completed, as has the Eagle Creek Deep Tunnel. Accordingly, approximately ten miles of the Deep Rock Tunnel System is complete, on-line and capturing CSO flows. Photographs of the DRTC, DRTC Pump Station and other "Dig Indy" projects are included in Attachment MCJ-1. Tunnel mining on the Lower Pogues Run Tunnel has been completed, although the tunnel lining is still under construction. Mining has commenced on the White River Tunnel. The improvements to both the Belmont and Southport AWTPs have been completed. As reported to the U.S. EPA and Indiana Department of Environmental Management ("IDEM") in Consent Decree Report No. 23 dated April 13, 2018, all elements of the Consent Decree are in compliance, including all aspects of the Control Measures set forth in the Long Term Control Plan ("LTCP"). In fact, 59 of the 64 LTCP Control Measure milestones have been completed as reported in Consent Decree Report No. 23, attached as Attachment MCJ-2,

Q14. PLEASE DESCRIBE THE TYPES OF CAPITAL INVESTMENTS COMPRISING THE STEP CATEGORY.

A14. Items in the STEP category include costs associated with construction of sanitary sewers for homes currently connected to private septic systems.

Q15. PLEASE DESCRIBE THE TYPES OF CAPITAL INVESTMENTS COMPRISING THE TREATMENT PLANTS CATEGORY.

A15. Treatment Plants category investments involve rehabilitation and replacement of process equipment at the Southport and Belmont AWTPs, but which are not Consent Decree projects. These two facilities process and treat wastewater from the Indianapolis community and certain areas outside Indianapolis. Improvements in this category are necessary to allow wastewater treatment to be in compliance with all permitting requirements.

Q16. PLEASE DESCRIBE THE TYPES OF CAPITAL INVESTMENTS COMPRISING THE COLLECTION SYSTEM CATEGORY.

A16. The majority of the activity in the Collection System category involves improvements to the overall collection network, including planning, design and construction of new interceptors and rehabilitation of pipes assigned with higher priority ratings. Renewals and replacements of lift stations also are generally included in this category.

Q17. WHICH OF THE CATEGORIES YOU DESCRIBE ABOVE IS THE LARGEST DRIVER OF CWA'S CAPITAL NEEDS?

A17. Even though most of the Consent Decree projects have been completed, the remaining portions will continue to be the largest single driver of CWA's capital needs through 2023. At that time, CWA will be nearing completion of most of the Consent Decree projects that are on schedule to be completed by the required Consent Decree completion date of 2025.

OVERVIEW OF CAPITAL NEEDS AND E&R REVENUE REQUIREMENT

Q18. PLEASE DESCRIBE PETITIONER'S ATTACHMENT MCJ-3.

A18. Attachment MCJ-3 presents CWA's capital investment levels during the test year (approximately $187.9 million) for all infrastructure categories described above.

Q19. PLEASE DESCRIBE PETITIONER'S ATTACHMENT MCJ-4.

A19. Attachment MCJ-4 presents CWA's projected capital investment levels during the CIRP by infrastructure category. The total capital investment requirements of CWA for the three-year CIRP are estimated to be approximately $589.4 million, with an average need for capital of $196.5 million per year. A breakdown of the planned three-year average investment need by project category is set forth below:

Category	3- Year Average
WW Treatment Plants	$ 13,835,454
Environmental	$ 235,833
Federal Consent Decree	$ 152,195,745
STEP Projects	$ 6,326,947
Collection Systems	$ 18,262,790
WW Fleet & Facilities	$ 2,128,050
WW Technology Projects	$ 548,000
Subtotal – CWA	**$ 193,532,819**

Subtotal - CSS	$ 2,927,181
TOTAL	**$ 196,460,000**

Q20. PLEASE DESCRIBE PETITIONER'S ATTACHMENT MCJ-5.

A20. Attachment MCJ-5 presents CWA's projected capital investment levels from August 2018 through July 2019, which Petitioner's witness John R. Brehm has used to determine CWA's financing requirements.

Q21. IN CAUSE NO. 44685, PETITIONER AGREED TO FILE IN ITS RATE CASES, A REPORT CONTAINING CERTAIN INFORMATION FOR EACH CAPITAL PROJECT THAT COMPRISES ITS CAPITAL INVESTMENT REQUIREMENTS. HAS CWA PREPARED SUCH A REPORT?

A21. Yes. Attachment MCJ-6 lists and briefly describes each project comprising CWA's projected capital investment requirements. Costs have not been included in the public version of this attachment to protect the integrity of the competitive proposal process. The cost estimates, categorized into specific estimate classes (Class 1 through 4), included in the exhibit are confidential.[1] The report also

[1] The estimate classes are developed pursuant to the recommended practices of AACE International ("AACE"), formerly Association for the Advancement of Cost Engineering International. AACE is a recognized leader in the field of cost estimating and has published many guides and recommended practices used by a variety of industries to establish standardized criteria and ranges for project estimates. AACE specifies five estimate classes, with Class 1 estimates representing those projects that have the greatest level of detail and an accuracy range of -10% to 15% and Class 5 having the least amount of detail with an expected accuracy range of -50% to 100%. Only classes 1 – 4 are used in this report.

includes: project numbers, brief project descriptions, need for the project, alternatives considered, and annual project schedules. In some cases, a detailed study was prepared to develop the scope, cost and alternatives to a project. However, many projects do not require a detailed study due to having a lesser scope and/or complexity. I also describe some of the significant projects in my testimony regarding each major infrastructure category.

Q22. COULD PROJECTS SHOWN IN ATTACHMENT MCJ-6 CHANGE DURING THE CIRP?

A22. Yes, in fact, it is probable that some of the projects will change. The project list shown in Attachment MCJ-6 is based upon the most current available information. However, data collection, changes, and system needs result in projects continuously evolving. The list should be viewed as a "snap shot" of a living document. For example, modeling data is frequently updated and may result in identification of a need to make changes to the particular projects to be completed in a specific timeframe. In addition, a new, unanticipated development may occur resulting in the need to complete an unlisted project. Infrastructure failures or vulnerabilities may occur that drive the need to modify the projects to be completed. External agencies also can develop projects, in which case, CWA must act to adjust, install, relocate or remove infrastructure. These issues must be evaluated and addressed in our living capital plan, and other aspects adjusted accordingly.

CONSENT DECREE PROJECTS

Q23. WHAT PARTICULAR CONSENT DECREE CONTROL MEASURES WILL BE IN VARIOUS STAGES OF PROGRESS DURING THE CIRP?

A23. Control Measures to be commenced, completed, constructed or continued during the CIRP include:

- Continuation of designs and construction for elements of the Fall Creek Tunnel, Collector Pipes and Watershed Projects (Control Measure 15), which are to be completed by December 31, 2025;
- Continuation of construction elements of the Lower Pogues Run Tunnel (Control Measure 18), which are to be completed by December 31, 2021;
- Continuation of designs and construction elements of the White River Tunnel, Collector Pipes and Watershed Projects (Control Measure 20), which are to be completed by December 31, 2021;
- Continuation of designs and construction elements of the Pleasant Run Deep Tunnel and Overflow Collector Pipe (Control Measure 29), which are to be completed by December 31, 2025; and
- Continuation of design and construction elements of the Upper Pogues Run Improvements (Control Measure 31), which are to be completed by December 31, 2021.

Q24. PLEASE DESCRIBE ATTACHMENT MCJ-7.

A24. Attachment MCJ-7 is a document titled "Combined Sewer Overflow Consent Decree Dashboard" (the "Dashboard"), which provides an overview of the

progress on the Consent Decree projects and CWA's ability to control CSOs. It also includes a general map of the Deep Rock Tunnel System. The Control Measures that will be ongoing during the CIRP also are summarized in the Dashboard, including maps and expected dates of completion. Additional information regarding each Control Measure can be found in the LTCP filed in Cause No. 43936. In addition, a majority of the ongoing Control Measures were discussed in CWA's last rate case, Cause No. 44685. The key updates to the Dashboard since Cause No. 44685 include the updated budget of the Consent Decree, the progress of the tunnel construction, and the overall progress in achieving Consent Decree milestones.

Q25. HOW MUCH DOES CWA ANTICIPATE INVESTING ON CONSENT DECREE PROJECTS DURING THE CIRP?

A25. Consent Decree costs will remain the largest capital requirement during this period. As presented on Attachment MCJ-4, on average, CWA estimates investing approximately $152.2 million annually on Consent Decree projects during the CIRP.

Q26. WHY IS CONTINUATION OF THE CONSENT DECREE PROJECTS NECESSARY?

A26. The projects are required by the Consent Decree and driven by requirements of the Clean Water Act of 1972 (and its amendments). As the Commission recognized in its Order in Cause No. 43936, "the terms of the Consent Decree must be complied with or CWA will be in violation of the Clean Water Act and

be subject to stipulated penalties." (Order in Cause No. 43936 at 27.) Additionally, the Consent Decree provides for Stipulated Penalties should CWA fail to comply with certain requirements. Examples include[2]:

- Failure to submit a timely and adequate report –$1,500 / day after 60 days;
- Failure to meet specific dates for bidding and implementing Control Measures – $5,000 / day after 60 days;
- Failure to comply with CWA's Capacity Management Operation and Maintenance (CMOM) plan – $5,000 / day after 60 days; and Failure to not meet any other requirement of the Consent Decree not already specified with a Stipulated Penalty – $2,000 / day after 60 days.

These Stipulated Penalties apply to each failure to comply with the Consent Decree, even if due to the same cause.

STEP PROJECTS

Q27. PLEASE DESCRIBE THE BACKGROUND OF PROJECTS IN THE STEP CATEGORY.

A27. STEP originally was approved by the Indianapolis City-County Council in 2006. Septic systems have a limited life or eventually fail due to ground conditions in the area, leaching human waste into groundwater, backyards and neighborhood ditches and streams. Also, septic systems are linked to high *E. coli* bacteria counts in neighborhood streams, adversely affecting the population that may come in contact with those streams. Although STEP was not specifically prescribed as a requirement of the Consent Decree, the original LTCP recognized

[2] Various lesser Stipulated Penalties apply before 60 days.

the adverse impact to water quality of failing septic systems and identified approximately 18,000 high priority septic systems as failing and posing a threat to human health and the environment. The cost of these prioritized STEP projects was estimated at approximately $319 million (2004 dollars) and identified in the LTCP.

Prior to implementation of STEP, septic tank elimination projects were funded primarily through the Barrett Law property tax assessments and City funds. Under the then STEP program, the City's Sanitary District began paying for all costs associated with the projects, except the property owner would pay a one-time $2,500 connection fee and various permit fees (totaling approximately $2,700), as well as costs associated with abandoning the septic tank and connecting to the sanitary sewer. The total cost to each homeowner was averaging almost $7,000, including the connection fee.

Q28. SINCE ACQUISITION OF THE WASTEWATER SYSTEM, HAS CWA CONTINUED THE STEP PROGRAM?

A28. Yes. The Commission "approve[d] the continued funding of the STEP program for 2014 and 2015" in CWA's first rate case (i.e., Cause No. 44305). The Commission found:

> [c]onversion of private on-site wastewater disposal systems (septic systems) is a public health and surface water quality issue. Although the STEP program replaces septic systems at individual locations, the cumulative effects of the program provide benefits for CWA's customers and for the residents of the City in general.

(Order in Cause No. 44305 at 20.) The Commission also approved continuation of the STEP program in CWA's most recent rate case, Cause No. 44685, noting: "Mr. Jacob expects that CWA's proposed investment of approximately $12 million per year in STEP projects will allow CWA to connect approximately 800 homes to the wastewater system per year on average." (Order in Cause No. 44685 at 20.)

Q29. WHAT IS CWA'S PROPOSED INVESTMENT LEVEL IN STEP PROJECTS THROUGH THE END OF THE CIRP?

A29. On average, CWA will invest approximately $6.3 million annually on STEP during the CIRP, which is approximately half the level approved in CWA's last rate case, due to a reduction in the cost per home of STEP projects, the number of homes to be provided access to new sewers, and also given the fact that Consent Decree investments during the CIRP are at their highest level.

Q30. WHAT IS THE HISTORICAL AVERAGE COST PER HOME TO REPLACE A SEPTIC SYSTEM WITH A GRAVITY SEWER?

A30. The cost per home can vary significantly, predominantly based upon housing density factors and the cost to extend sewers into the area. Costs for a gravity sewer STEP project over the past several years have varied, averaging approximately $32,000 per home for the period from 2005 through 2016. Typically, the homeowner is responsible for the connection and permit fee totaling approximately $2,700.

Q31. HOW HAS VALUE ENGINEERING IMPACTED THE ESTIMATED AVERAGE COST PER HOME OF STEP PROJECTS DURING THE CIRP AND HOW MANY SYSTEMS WILL BE REPLACED WITH THE PROPOSED ANNUAL INVESTMENT?

A31. Through value engineering, CWA has changed the construction practices of the STEP projects from primarily gravity systems to predominantly low-pressure systems. CWA estimates this approach has reduced STEP projects costs by approximately 30% to 40% of traditional gravity sewer construction methods (although many factors can impact this differential). As a result, the average cost per home of STEP projects during the CIRP is approximately $18,800 (down from approximately $32,000 for gravity sewers). Taking into account these savings, CWA's proposed investment of approximately $6.3 million per year in STEP projects during the CIRP is expected to allow CWA to connect more than 300 homes to the wastewater system per year. Illustrations of a low-pressure and gravity STEP projects are included in Attachment MCJ-1.

Q32. ARE THERE OTHER LONGER-TERM BENEFITS OF THIS VALUE ENGINEERING APPROACH FOR STEP PROJECTS?

A32. Yes. The larger pipes traditionally used for STEP projects required more maintenance and had a higher replacement cost. Low pressure systems use pipe requiring less maintenance and have significantly lower replacement cost when the useful life is complete and replacement is needed.

Q33. HAS CWA IDENTIFIED PRIORITIZED AREAS WHERE REPLACEMENT OF AGING SEPTIC SYSTEMS IS NEEDED DURING THE CIRP?

A33. Yes. Petitioner's Attachment MCJ-8 is a map presenting the prioritized STEP areas. CWA also may address 'pocketed' areas that might be considered non-prioritized areas, but are encountered along the route to a prioritized area. It is typically more cost-effective to address these pocketed non-prioritized areas at the same time as surrounding areas are addressed.

Q34. HOW MANY STEP LOCATIONS HAS CWA COMPLETED AND HOW MANY HAVE YET TO BE COMPLETED?

A34. Through 2017, approximately 13,500 homes have been provided sewers to connect to CWA's public sewer system. CWA has designated approximately 3,000 additional homes as "high priority" locations to be completed. CWA would like to complete the prioritized STEP projects by 2025, to coincide with the completion of the Consent Decree projects, as contemplated in the LTCP. Connection rates under the new low pressure system project designs have increased from historical levels of approximately 50% to over 95%. The increase in connection rates is driven by a number of factors, including significantly lower costs, ease of construction and ease of connectivity. However, I would note that CWA does not have the authority to force property owners to abandon their septic systems and connect to the sanitary sewer system; that authority resides with the Marion County Health Department.

Q35. HOW WERE PRIORITIZED STEP PROJECT AREAS IDENTIFIED?

A35. CWA coordinates prioritization of STEP project areas with the Marion County Health Department ("MCHD"), which surveys neighborhoods served by septic systems to determine failure rates. In addition to failure rate data received from the MCHD, CWA uses the following criteria as a guide:

- Housing Density Factor (*i.e.*, the number of homes per acre in a STEP project area);
- Presence of Residential Water Wells; and
- Location of STEP properties in the 100-year Flood Plain.

Housing density factors are given the most weight, as they drive cost effectiveness of projects selected, which in turn allows for the most cost effective impact to water quality.

Q36. IN YOUR OPINION, IS CONTINUATION OF STEP THROUGH THE CIRP APPROPRIATE AND IN THE PUBLIC INTEREST?

A36. Yes. Continuation of the STEP projects allow for environmental improvements as well as providing a higher quality of life in central Indiana. Many homeowners in high priority areas are not able to afford the cost of eliminating their septic system and connecting to the wastewater system absent STEP funds.

TREATMENT PLANT IMPROVEMENTS

Q37. PLEASE DESCRIBE SOME OF THE MAJOR TREATMENT PLANT PROJECTS CWA MUST COMPLETE DURING THE CIRP.

A37. Projects in this category generally include internal site improvements, odor control, instrumentation and control upgrades, pump repairs, equipment replacements, and projects addressing sludge production, or chemical process improvements. The projects generally are driven by environmental regulatory requirements, more efficient technologies, condition, age, and/or expansion needs. As presented in Attachment MCJ-6, major treatment plant improvements expected to be under construction during the CIRP include:

- Project No. 92BE02095, Belmont AWT Filter Valve Replacement: This project involves replacement of the flow control and backwash valves and actuators for twelve sand filters at the Belmont AWTP. These valves and actuators were installed in 1982 and are past their 30-year service life.
- Project No. 92BE02630, Belmont AWT Control Room Relocation: A new consolidated Control Room will replace three existing console rooms all of which are early-1980s vintage (with only some SCADA and HVAC upgrades having been made in the 2009-2014 timeframe). In addition to being outdated, the current console rooms present fire safety and security access risks.
- Project No. 92SO02062, Southport AWT Replace Raw Sewage Pump Station (RSPS) Valves: This project involves replacing the suction, discharge and check valves for four raw sewage pumps at the Southport AWTP. The existing valves were installed in the 1960s and are well past their 30-year service life.

- Project No. WW-BE-10-001, Primary Clarifier Improvements: The Belmont AWTP primary clarifiers are 1950s vintage and while they have gone through various upgrades and rehabilitations, they lack a scum collection system. The project will replace collector drives and add a dedicated scum collector separation facility.

Q38. WHAT IS THE PLANNED LEVEL OF INVESTMENT IN TREATMENT PLANT IMPROVEMENTS DURING THE CIRP?

A38. On average, as presented in Attachment MCJ-4, CWA plans to invest approximately $13.8 million annually on improvements to its two AWTPs.

Q39. DO THE PROJECTS IN THE TREATMENT PLANT CATEGORY INCLUDE PROJECTS NECESSARY TO COMPLY WITH THE CONSENT DECREE?

A39. No. Any treatment plant project identified as a Consent Decree project is classified under the Consent Decree category for tracking of compliance with regulatory requirements and total Consent Decree investments. This protocol is true for all projects, regardless of type (*i.e.*, collection system projects or treatment plant projects), which are required under the LTCP.

COLLECTION SYSTEM PROJECTS

Q40. PLEASE DESCRIBE THE KEY COLLECTION SYSTEM ASSETS.

A40. The collection system collects and transports wastewater flows from customers to our two AWTPs. The collection system is generally comprised of the following:

- Approximately 3,200 miles of collection system piping;

- Over 72,000 manholes (with over 400 in the downtown mile square area);
- Approximately 60 Siphons for river and stream crossings; and
- Approximately 265 Lift Stations.

Most of the collection system operates through gravity flow. Large sewer mains are called "interceptors" and are up to 12 feet in diameter.

Q41. WHAT IS THE GENERAL CONDITION OF CWA'S COLLECTION SYSTEM?

A41. Large parts of the collection system are very old and need significant and continuous investment. Due to the age of the system, CWA experiences, on average, approximately 80 sewer failures throughout our 3,200 mile collection system each year. Oftentimes, immediate needs are discovered through routine proactive inspection and maintenance programs, as described within our "Capacity, Management, Operations and Maintenance ("CMOM") program discussed below.

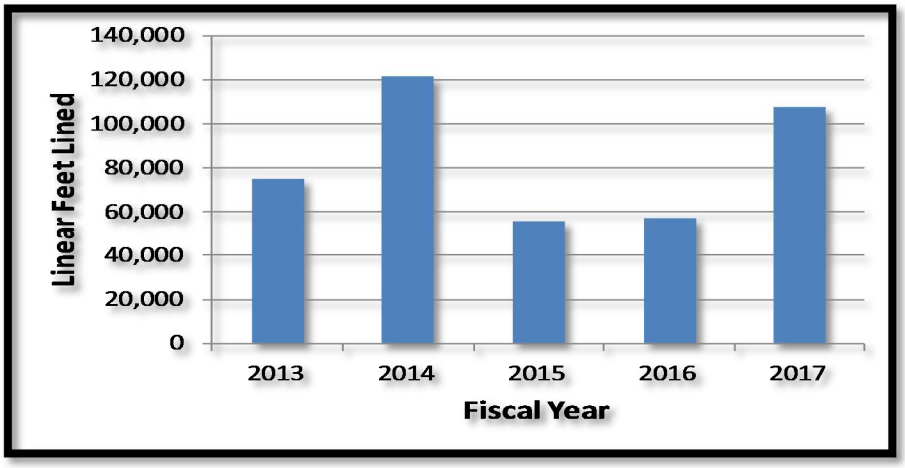
Q42. HOW OLD ARE COMPONENTS OF THE COLLECTION SYSTEM?

A42. Some components of the collection system were installed in the 1800s. For instance, Indianapolis has 71 miles of brick sewers. Sewers 30-inches or less in diameter were sometimes constructed from a single-ring of bricks. Those sewers that are 36-inches or larger were most often constructed of two to three rings of bricks. Pictures of some the typical brick sewers in Indianapolis are included in Attachment MCJ-1. A map showing the location of CWA's brick sewers also is included in Attachment MCJ-1. An even larger percentage (than the brick

sewers) of CWA's collection system consists of vitrified clay pipe installed from the late 1800s to the 1980s.

Q43. HOW HAS CWA ADDRESSED THE AGING OF ITS COLLECTION SYSTEM INFRASTRUCTURE?

A43. Prior to acquisition of the wastewater system by CWA, the Sanitary District, on average, performed approximately 10,000 feet per year of sewer rehabilitation investing approximately $3 to $5 million on an annual basis. During the acquisition in 2011, CWA identified a need for increased investment in the collection system. From 2013 through the end of 2017, CWA has been averaging approximately 83,700 feet per year of sewer rehabilitation, investing approximately $15 to 20 million on an annual basis. The chart below shows the levels rehabilitated within the collection system by CWA during that period:



Q44. HOW MUCH DOES CWA INTEND TO INVEST ON COLLECTION SYSTEM PROJECTS DURING THE CIRP?

A44. On average, as presented in Attachment MCJ-4, CWA plans to invest approximately $18.3 million annually on Collection System improvements during this period. Collection system needs can be broken down into costs related to: planning, design and construction of new interceptor works; some relocations; small and large diameter sewer rehabilitation, including manholes and structures; and investments in several lift station replacements and improvements. The majority of the activity involves improvements to the overall collection network. A number of collection system needs were identified in Petitioner's Sanitary Sewer Master Plan ("SSMP"), filed with the Commission on November 6, 2015 in Cause No. 44305. Other collection system projects are identified through proactive inspections or other means discussed below.

Q45. CAN YOU BRIEFLY DESCRIBE THE SSMP?

A45. Yes. The SSMP is a large-scale and higher-level capital plan, updated periodically, with information that aids CWA in the selection of larger-scale projects to be incorporated into the capital improvement plan. Projects in the SSMP are broken down into three priority tiers:

- Tier I – Projects planned in the next 0-5 years;
- Tier II – Projects planned in the next 5-10 years; and
- Tier III – Projects planned 10 years or more into the future.

Because of the longer term perspective and higher level planning nature of the projects identified in the SSMP, most estimated costs are presented as Class 5 estimates. The most current version of the SSMP identifies approximately $74

million of Tier I, $66 million of Tier II, and $136 million of Tier III collection system expansion needs through the next 10 plus years. The total cost for completion of all Tiers is estimated at $277 million in 2014 dollars.

Q46. DO THE SSMP COLLECTION SYSTEM PROJECTS NECESSARILY CORRELATE TO COLLECTION SYSTEM PROJECTS IDENTIFIED ON ATTACHMENT MCJ-6?

A46. No. The SSMP utilizes a large amount of data that is periodically updated, including level of service objectives, flow data, and new ideas on project alternatives. The SSMP is a large-scale planning document. Projects identified within the Capital Requirements Projects List, which was used to derive Attachment MCJ-6, focus on all capital needs, large and small. Additionally, whereas the SSMP is based on a longer-term perspective, the Capital Requirements Projects List is updated continuously to address constantly changing conditions.

Q47. DOES CWA PROACTIVELY INSPECT ITS COLLECTION SYSTEM TO IDENTIFY CONSTANTLY CHANGING CONDITIONS AND MAINS THAT NEED REPLACEMENT OR REHABILITATION, OR NEED MAINTENANCE?

A47. Yes. CWA proactively inspects approximately 10% of the collection system (approximately 300 miles) each year to identify and rehabilitate blockages or structural issues before they result in emergency repair situations. We also prioritize and then program those needs into our annual capital improvement

program or provide the needed maintenance. Those inspections can be done visually, with acoustics or using cameras.

Q48. ONCE AREAS ARE DISCOVERED THAT NEED REHABILITATION, HOW ARE THOSE AREAS PRIORITIZED?

A48. The two factors that are most important in prioritizing rehabilitation projects are: (i) likelihood of failure; and (ii) consequence of failure. In determining the likelihood of failure, CWA looks at the age of the infrastructure, the materials (*i.e.*, brick, clay, concrete, PVC) the condition of the infrastructure and the impact wet weather might have on causing failure. In analyzing the consequence of failure, CWA looks at the streets involved and buildings impacted.

Q49. ARE THERE OTHER PROTOCOLS CWA FOLLOWS TO PROPERLY OPERATE THE COLLECTION SYSTEM ASSETS?

A49. Yes. In addition to implementing CSO Control Measures, the Consent Decree requires that CWA have a CMOM Plan that is periodically updated and approved by IDEM.

Q50. WHAT IS A CMOM?

A50. The CMOM is a guide that uses accepted industry practices to properly manage, operate and maintain sewer systems, identify and inventory areas in sewer systems with capacity constraints, implement measures to ensure adequate capacity throughout a sewer system, and respond to sanitary sewer discharge events. The operator selects performance goal targets and designs CMOM activities to meet the goals. The CMOM planning framework covers operation

and maintenance (O&M) planning, capacity assessment and assurance, capital improvement planning, and financial management planning. Information collection and management practices are used to track how the elements of the CMOM program are meeting performance goals, and whether overall system efficiency is improving. The framework of the CMOM program allows for periodic reviews of a collection system by IDEM to assure compliance with the program elements. Typically, any system review would follow an established framework consisting of examining records, interviewing staff and conducting field investigations. CWA uses its CMOM as a guide to help maximize efforts to efficiently and properly manage the wastewater collection system for the residents of Indianapolis.

Q51. WHEN WAS CWA's CMOM LAST UPDATED?

A51. CWA updated its CMOM in December 2013 and provided that update to IDEM on December 19, 2013. All aspects of the CMOM that may need updating are also tracked and will be included in the next submission to IDEM.

Q52. CAN OTHER INSPECTIONS BE UNDERTAKEN FROM TIME-TO-TIME TO IDENTIFY AREAS IN NEED OF REHABILITATION?

A52. Yes. Most recently, CWA undertook a Rapid Condition Assessment ("RCA") of collection system infrastructure in the "Mile Square" (bounded by North Street, East Street, South Street and West Street) in response to two failures that occurred in the downtown area. CWA identified all key collection system manholes and pipe segments within the downtown area that needed to be inspected or re-

inspected, regardless of when the last inspection was performed. CWA then dispatched as many as ten crews at a time to site visit and inspect all manholes and pipe segments within the entire Mile Square area from July 21, 2018 through August 1, 2018. Crews performed a visual inspection and used closed circuit televising (*i.e.* television video) ("CCTV") to inspect all pipe segments. Manholes and sewer segments that could not be inspected are being verified through GIS, as well as additional CCTV inspections.

Q53. HOW WERE THE INSPECTION FINDINGS PRIORITIZED?

A53. Inspections resulted in action based on five levels as follows: Level 1 – Passed; Level 2 – Needs cleaning; Level 3 – Needs maintenance; Level 4 – Planned repair; and Level 5 – Urgent repair. Some locations could fall into more than one level of need; therefore, the sum of the various levels may be greater than the number inspected. For example, a manhole might need cleaning and be categorized as needing some maintenance work. The table below details our findings as of September 21, 2018:

Rapid Condition Assessment Progress

Description	Inspected	Level 1	Level 2	Level 3	Level 4	Level 5	Other
Manholes (#)	459	354	69	43	4	0	16
Sewer Segments (#)	500	434	56	4	2	0	129

Q54. DID CWA USE THIS DATA TO PRIORITIZE UPGRADES TO THE COLLECTION SYSTEM?

A54. Yes. CWA used the data to re-prioritize the rehabilitation capital program, as well as the operations and maintenance programs. Mr. Willman's testimony also addresses upgrades to the collection system. At this time, CWA also plans to update this condition assessment within the Mile Square on a more frequent basis, currently anticipated to be approximately every five years. The process used in the RCA also will be incorporated into CWA's CMOM.

Q55. DO YOU BELIEVE INVESTING APPROXIMATELY $18 MILLION ANNUALLY ON COLLECTION SYSTEM IMPROVEMENTS OVER THE NEXT THREE YEARS IS REASONABLE?

A55. Yes, although minimally. While Consent Decree investments are at very high levels, this minimal level allows us to maintain the collection system while making some incremental improvements to its reliability. As CWA nears the end of the Consent Decree projects, total E&R will decline significantly, based upon known needs at this time; however, as total E&R levels decline, non-Consent Decree E&R needs will continue to increase to more appropriate levels.

CAPITAL PROJECT SAVINGS AND OTHER INNOVATIONS

Q56. HOW HAVE INVESTMENTS ON CONSENT DECREE PROJECTS COMPARED TO THE ORIGINAL PROJECTED COST OF COMPLETING THE PROJECTS?

A56. As presented on Attachment MCJ-7, CWA is approximately $400 million under budget on the completion of the Consent Decree projects (in 2016 dollars). Even

though the current Consent Decree cost is significantly lower than current budget, risks still exist such as delays, penalties, injuries, and / or cost increases.

Q57. PLEASE DESCRIBE A FEW OF THE MAJOR DRIVERS OF THE POSITIVE CONSENT DECREE BUDGET VARIANCE.

A57. CWA realized substantial cost reductions offset by certain cost increases (discussed later in my testimony) in connection with the following key modifications of LTCP components:

- The original, high risk, shallow ground interceptor described as the Interplant Connection was changed (via a Consent Decree amendment with U.S. EPA and IDEM) to a less risky and more environmentally sound deep rock tunnel, now known as the DRTC. Bids on the DRTC came in lower than budget, reducing costs by more than $100 million. In 2011, nine bids for the DRTC project were received. The Engineer's Estimate for the project (including the levee construction) was $286,067,775. The actual award price to the low bidder was $179,323,115.
- CWA eliminated a number of tunnel drop shafts resulting in a cost reduction in excess of $25 million.
- CWA re-sequenced tunnel construction plans to reduce the number of expensive boring machines originally planned to be used and more strategically bundled projects. This re-sequencing plan provided for a smoother cash flow and savings estimated between $30 and $50 million.

- CWA used value engineering on a portion of the Upper Pogues Run project to change from cast-in-place concrete tanks to one deep, shaft-style tank, resulting in an estimated approximate $8 million cost reduction,.
- Similar to the DRTC, CWA modified the proposed Eagle Creek Overflow Collector Pipe from a shallow ground interceptor to a deep tunnel, which resulted in a cost reduction of an estimated $15 million.
- The original designs for both the Southport and Belmont AWTPs were changed and or eliminated, all in agreement with the U.S. EPA and IDEM (*e.g*., headworks, piping, disinfection, enhanced high rate clarification).

Q58. IS THERE AN EXAMPLE OF A COST REDUCTION THAT ALLOWED A PROJECT TO REMAIN WITHIN THE ORIGINAL BUDGET?

A58. Yes. The original projected cost for the Eagle Creek Overflow Collector Pipe project was $28 million in 2004 dollars, indexed to approximately $38 million in 2014 dollars. As the estimate for the project was refined, it was determined that completing the project as a near surface interceptor, that would convey wastewater, but would not store it, would cost approximately $55 million ($17 million over budget). However, CWA was able to redesign the project as a deep tunnel at a net cost of $40 million. The deep tunnel alternative has the added benefit of being favored by the U.S. EPA because it increases storage capacity available for wet weather events.

Q59. PLEASE DESCRIBE HOW RE-SEQUENCING TUNNEL PROJECTS HAS RESULTED IN COST REDUCTIONS.

A59. CWA re-sequenced the bidding schedules of certain sections of the Deep Rock Tunnel System, along with their various key elements. This re-sequencing resulted in a reduction in infrastructure, contractor mobilization costs, reductions in markups, and costs for tunnel boring machines. Infrastructure elements such as launch shafts and retrieval shafts could in some instances be eliminated, minimized, and/or downsized by starting the next tunnel segment from the most current tunnel segment. Contemporaneous construction of commonly-sized tunnels, as well as timing one tunnel to finish in time for the next to be started, also minimized costs associated with remobilization of equipment, particularly tunnel boring machines, which are in great demand around the world given their suitability for CSO tunnels and transportation tunnels. The recently completed Eagle Creek Overflow Collector Pipe was constructed immediately following completion of the DRTC, which allowed CWA's contractor to keep the tunnel boring machine moving and in the ground.

Q60. DOES CONSTRUCTION OF THE REMAINDER OF THE DEEP ROCK TUNNEL SYSTEM CONTINUE TO HAVE RISKS?

A60. Yes. As with any project, construction risks always exist. Deep underground construction has additional inherent risks, some of which may be more significant, due to the inability to adequately characterize the circumstances or conditions being built in, especially when the project is multiple miles in length. However, significant safety and training efforts are and continue to be integral to our construction program to mitigate typical inherent risks.

Q61. HAS CWA EXPERIENCED CHALLENGES RESULTING FROM AN INABILITY TO ACCURATELY CHARACTERIZE GROUND CONDITIONS?

A61. Yes. CWA discovered porous rock resulting in significant water inflow in constructing the section of Deep Rock Tunnel System known as the Lower Pogues Run Tunnel. In essence, rock 250 feet below the surface was formed by a prehistoric coral reef through which water flows more freely. Completion of tunnel mining required mitigating the increased infiltration of water. Although tunnel lining to reduce infiltration to acceptable levels is a planned part of the Deep Rock Tunnel System, the extraordinary amount of water infiltration had a significant negative impact on this section of the tunnel system. Addressing infiltration resulted in reduced production rates, increased equipment to dewater the tunnel, increased technical assistance needs, increased energy costs and additional measures to address a wetter mining material. Generally, tunnel lining is installed primarily to reduce the amount of groundwater infiltration into the tunnel system to acceptable industry standards. However, continued and significant water infiltration, even after mining, requires a special method and material to be used for the lining.

Q62. HAS THIS ADVERSE CONDITION CAUSED AN INCREASE IN COSTS TO THIS PROJECT?

A62. Yes. While the full costs have not been tallied, CWA estimates costs could exceed $40 million.

Q63. DOES CWA HAVE AN IMPACT MITIGATION PLAN FOR THIS CHALLENGE AND FUTURE SUCH CHALLENGES?

A63. Yes. CWA's impact mitigation plan includes meetings and workshops with global technical experts in the tunneling profession to understand the breadth of alternatives available to cost-effectively overcome this challenge. CWA also directly engaged with global tunnel contractors to meet with engineering experts and the project team to develop a collaborative approach with the greatest cost-benefit. As a result of this plan, CWA believes we will have significantly mitigated the current cost impacts to the overall Consent Decree program costs through elimination of some originally planned drop shafts, value engineering on some near surface Consent Decree consolidation sewer construction and other tunnel value engineering options still being evaluated.

Q64. COULD SIMILAR CHALLENGES BE FACED IN COMPLETING FUTURE TUNNEL WORK?

A64**.** Yes. However, as we have done since we started the tunnel system; we rely on lessons learned in every aspect, from construction sequencing to conveyor belt challenges. We also continue to add to our current geotechnical and hydro-geotechnical data by performing additional ground and ground water studies on the remaining alignments and use international expertise for these unique and rare conditions. Additionally, CWA engages global experts in third party technical reviews to maintain a broad spectrum of industry expert opinions as part of our

ongoing continuous improvement process. We anticipate this additional due diligence will mitigate any similar future risks as we complete this tunnel system.

Q65. HAS CWA UNDERTAKEN OTHER INNOVATIVE INITIATIVES TO MEET CONSENT DECREE REQUIREMENTS?

A65. Yes. CWA partnered with the Department of Public Works ("DPW"), the Department of Parks and Recreation ("Indy Parks"), and Keep Indianapolis Beautiful ("KIB") to plant 10,000 trees through 2025 to more cost-effectively foster compliance with the Consent Decree through an environmentally friendly means. As part of the "10,000 Trees Program," trees will be planted in parks and neighborhoods throughout the combined sewer area that will mitigate inflows to the combined sewer system over the long term. CWA is responsible for evaluating combined sewer areas that could most benefit from additional trees. KIB will plant the trees utilizing their Youth Tree Program. Once trees are planted, they will be maintained by CWA and KIB for the first three years of growth. After that time, DPW and Indy Parks will own and maintain the trees. This program promotes compliance with the Consent Decree at a lower cost.

Q66. ARE THE CONSENT DECREE PROJECTS THE ONLY CAPITAL PROJECTS FOR WHICH SAVINGS HAVE BEEN ACHIEVED?

A66. No. Improvements have been made to the STEP program through: (i) implementing STEP projects through a design/build procurement method; (ii) expanding the use of low-pressure systems (which rely on a small grinder pump located at each house to move wastewater to CWA's collection system, rather

than gravity); (iii) "bundling" STEP projects; and (iv) pre-procuring pipe and other materials to leverage bulk "buying power." CWA has reduced the overall cost per home of a STEP project by approximately $13,000 (or approximately 40%) and reduced the cost to a homeowner by $4,000 per home (or 60%) as shown below:

	Barrett Law Program	STEP (2005 to 2016)	STEP (2016 to present)
Typical Homeowner Costs			
Assessment (Mainline Construction)	$10,000	-	-
Typical Gravity Lateral Construction	$4,000	$4,000	-
Connection Fee/Permits	$2,700	$2,700	$2,766
Total Homeowner Cost	**$16,700**	**$6,700**	**$2,766**
Typical City of Indy/Citizens Energy Group Costs per Home			
Mainline Construction	$15,000	$25,000	$11,000
Grinder Pump Installation/Connection	-	-	$5,000
Total Utility Cost	**$15,000**	**$25,000**	**$16,000**
Total Cost	**$31,700**	**$31,700**	**$18,766**

Q67. WHAT FURTHER VALUE ENGINEERING ACTIVITIES HAVE OCCURRED WITHIN CWA'S CAPITAL PROGRAM?

A67. Value engineering processes take many forms. As an example, value engineering workshops are held with formal facilitators on more complex projects, while value engineering team meetings or more brief discussions occur on less complex projects. All of these methods contribute to more cost effective project solutions and there have been a number of significant successes achieved. For example, the

White River Tunnel Consent Decree project includes connection to a project along Fall Creek. In 2013, a property adjacent to upcoming Fall Creek work was developed into a multi-use facility and an adjacent hospital planned contemporaneous major upgrades. CWA made the strategic decision to include the Fall Creek work with the upgrade of facilities necessary to serve the hospital and multi-use facility to gain efficiencies of scale. In addition to reducing costs, this decision benefited adjacent stakeholders because CWA was able to construct a fairly disruptive project early in the growth of a quickly developing neighborhood, rather than waiting until 2019 or 2020, when development is projected to be much further along, and disruptions more impactful. Completing the work earlier resulted in cost savings over $1 million compared to the cost if the additional development was in place.

CAPITAL NEEDS BEYOND THE CIRP

Q68. PLEASE EXPLAIN THE ANTICIPATED CAPITAL INVESTMENT LEVELS BEYOND THE CIRP, AS THE CONSENT DECREE PROJECTS APPROACH COMPLETION BY 2025.

A68. CWA currently anticipates total E&R needs will begin to trend down soon after the CIRP and more significantly, with completion of the Consent Decree projects by 2025. However, non-Consent Decree E&R will need to increase beyond the current level of non-Consent Decree E&R currently projected within our CIRP.

Q69. EVEN THOUGH TOTAL E&R LEVELS WILL BE DECREASING AFTER THE CIRP, WHY WILL NON-CONSENT DECREE E&R LEVELS NEED TO INCREASE AFTER THAT TIME?

A69. From approximately the entry of the Consent Decree in 2006, capital investments for the wastewater collection system have been dominated by Consent Decree investments and are anticipated to continue to be dominated by Consent Decree investments during our CIRP. CWA has and continues to scrutinize non-Consent Decree collection system needs. This scrutiny works to balance overall collection system integrity, Consent Decree investment levels and customer affordability. Even as total E&R begins to decline due to Consent Decree investment levels declining after the CIRP and prioritized STEP projects nearing completion, non-Consent Decree E&R investment levels should be increased to better align with all wastewater system needs.

Q70. HAS CWA ESTIMATED WHAT IT FORESEES AS TOTAL LEVELS OF E&R COLLECTION SYSTEM NEEDS AFTER THE CIRP?

A70. Given the continued focus on the Consent Decree projects through their completion, it is difficult to accurately determine what future investment levels might look like, although we continue to analyze the collection system needs and industry best practices. Based upon known information, it is estimated that total E&R collection system needs will decrease from current levels to approximately $89 million annually as further explained below. This will allow CWA to better address all E&R investment needs of the system, including aging Consent Decree

E&R. However, even at $89 million annually, CWA's investment levels for pipelines, collections, treatment facilities and pumping would (only) be closer to the median quartile of reinvestment according to a 2011 AWWA Benchmarking Study. This AWWA Study indicates the top quartile utilities are renewing or replacing pipeline and collection system infrastructure at a rate of 20% per year and treatment plant and pumping facilities at a rate of 24.5% per year. The same study presents the industry median is at a 3.7% reinvestment rate for pipeline and collection systems and 5.8% for treatment plant and pumping facilities, with the bottom quartile reinvestment rate being 1.8% and 1.5%, respectively. Currently, if one were to take into account only CWA's non-Consent Decree E&R investments of $45.6 million, CWA's investment levels would be in the bottom quartile. An annual $89 million reinvestment level would equate to a total reinvestment rate of approximately 3.4%, closer to, but still below, the median investment levels presented by the AWWA benchmarking study.

Q71. AS COMPLETION OF THE CONSENT DECREE NEARS, WILL THERE STILL BE CONSENT DECREE E&R NEEDS TO BE ADDRESSED?

A71. Yes. There are Consent Decree projects, such as the White River East Bank Storage Basin that was completed in 2005 and the Pogues Run Inline Storage project that was completed in 2004, that will have been in service for 20 or more years by 2025. Additionally, by 2025, Consent Decree treatment plant works and some Consent Decree lift station projects completed between 2010 and 2014 will have exceeded more than half their anticipated useful life. The Consent Decree

requires continued and effective maintenance and recapitalization of aging infrastructure or CWA could be subject to penalties for non-compliance. Over $2 billion of new Consent Decree infrastructure will have been constructed by 2025 that does not include other collection system additions. Accordingly, continued and increasing levels of E&R investments in our Consent Decree infrastructure will be an ongoing part of CWA's total collection system E&R needs.

Q72. PLEASE EXPLAIN FURTHER WHY YOU PROJECT NON-CONSENT DECREE INVESTMENT LEVELS TO INCREASE.

A72. Even though collection system and Consent Decree investments have been at all-time high levels since the acquisition, CWA has been focusing on the higher priority needs of the collection system to strike an appropriate balance between Consent Decree and non-Consent Decree costs. However, we cannot continue to invest in the system at current levels without increasing risks of negative consequences. As stated above, although CWA has increased investments within the collection system comparative to the City, CWA currently is investing closer to the bottom quartile of the previously mentioned-AWWA study with respect to non-Consent Decree E&R, due to the significant investments needed to complete the Consent Decree projects within the prescribed schedules. However, this level of reinvestment in the collection system is not prudent over the long term and would lead to increased degradation, which could result in environmental violations, sewer failures, public safety risks, capacity limitations leading to restricted development, and treatment plant limitations.

Q73. PLEASE FURTHER EXPLAIN WHY YOU BELIEVE CWA'S LEVEL OF REINVESTMENT IN THE BOTTOM QUARTILE OF AWWA'S BENCHMARKING STUDY IS NOT PRUDENT LONG TERM.

A73. The U.S. EPA and industry guidance suggest the useful life of: (i) sewers are between 50-75 years; (ii) mechanical systems are 20 years; and (iii) control systems are 10 years. More than half of CWA's sewer infrastructure is close to 50 years in age, and most of the collection system will be at or beyond its useful life over the next 30 years. Approximately 5% of the wastewater collection system pipes are ranked as high priority for rehabilitation/replacement, which equates to approximately 150 miles of the approximately 3,200 mile collection system in Marion County. CWA has been averaging approximately 16 miles of sewer rehabilitation per year since 2013. However, as we address high priority areas of the system for relining and replacement, the system as a whole continues to age and additional miles of sewers become high priority rehabilitation/replacement projects, unless increased investment levels are initiated.

Q74. WHAT ARE THE CONSEQUENCES OF NOT BEING ABLE TO IMMEDIATELY REHABILITATE ALL HIGH PRIORITY AREAS?

A74. Typically, the consequence of not promptly repairing locations identified as high priority is some form of infrastructure failure, capacity issue, or possibly environmental violation, which then results in CWA working reactively instead of proactively, or possibly incurring fines. The consequence of reactive versus

proactive work is significantly increased costs and unplanned disruption to our customers or negative affects to other utilities proximate to those failures. Although it is difficult to predict precisely when a failure might occur, if proactive sewer rehabilitation can be performed on a segment of sewer, it is significantly less costly than the repair of a failed sewer. Depending upon the circumstances, the failed sewer typically requires a dig and replace that can be three (or more) times the normal cost of rehabilitation. Additionally, reactive repairs may not allow the best methods to be used due to the rapid nature needed for the fix. As a result the repair necessitates higher costs associated with traffic control, off-duty police or security, other utilities' unplanned costs, contractor pricing, and additional structures. Customer impacts and user delays due to unplanned traffic closures also are more disruptive with reactive repairs.

Q75. DO YOU HAVE AN EXAMPLE OF A RECENT REACTIVE REPAIR?

A75. Yes. On July 4, 2018, a century-old brick sewer line collapsed opening up a 3 foot by 8 foot sinkhole at the intersection of Ohio and Pennsylvania Streets. Repairing this area took approximately nine days and disrupted traffic in the area. We had estimated the normal lining process on this section of sewer would have cost approximately $100,000. However, we anticipate final costs of this reactive dig, replace and line project will be approximately $280,000. To provide context, that failure was to approximately 250 feet of the 150 miles of high priority pipe that needs to be rehabilitated on CWA's system.

Q76. HAVE THERE BEEN OTHER RECENT EMERGENCY REPAIR ACTIVITIES?

A76. Yes. On July 19, 2018, during a routine sewer cleaning and inspection along Illinois Street, a significant void was discovered at a manhole in the intersection of Illinois Street and Maryland Street. The void was below the pavement, although the street remained intact. Upon discovery of the void, additional CWA crews were dispatched to secure the area and further investigate. At that point, the intersection was closed in coordination with DPW and the Indianapolis Police and Fire departments. After appropriate actions to ensure safety, including performance of utility locates and acquisition of requisite permits, excavation and repair began on the same day. The sewer area was repaired and the intersection opened back to traffic on July 21, 2018 (within three days of closure).

Q77. WERE TWO EVENTS SUCH AS THESE, SO CLOSE IN PROXIMITY AND TIME UNIQUE TO THIS COLLECTION SYSTEM?

A77. Yes. Because of the timing and proximity of these two events, we immediately chose to implement the RCA of the entire Mile Square Area discussed above. As stated earlier, on average, there are approximately 80 sewer pipe and appurtenant structure repairs required each year. A failure can include issues such manhole failures, deteriorated pipe, misaligned joints, and pipe failures. Most failures do not occur in such a fashion and they typically do not occur in such prominent locations. With decades of under-investment levels prior to CWA's acquisition of

the wastewater system, issues such as these can only be mitigated through increased, continuous and prudent investment levels.

Q78. DOES CITIZENS ENERGY GROUP HAVE EXPERIENCE WITH ITS OTHER UTILITY OPERATIONS OF PROACTIVELY AND RATABLY INVESTING IN REPLACEMENT OF INFRASTRUCTURE TO MAINTAIN SAFE AND RELIABLE UTILITY SYSTEMS?

A78. Yes. It took more than 30 years of annual investments for the Citizens Gas system to now have more than 99% protected steel and plastic pipe in its distribution system. I believe as the Consent Decree projects are nearing completion, CWA will need to move its system in a similar proactive direction to renew and rehabilitate the aged sewer collection system, including Consent Decree infrastructure.

CONCLUSION

Q79. IN YOUR OPINION, IS THE PROPOSED CAPITAL INVESTMENT LEVEL OF $196.5 MILLION DURING THE CIRP REASONABLE AND NECESSARY?

A79. Yes. I would note that CWA's actual annual capital investment for the test year was $187,890,196. Attachment MCJ-4 represents a balanced and prioritized, minimal investment strategy, while also considering affordability, for the three-year period beginning August 2019 and ending July 2022.

Q80. WHAT DO YOU RECOMMEND TO THE COMMISSION?

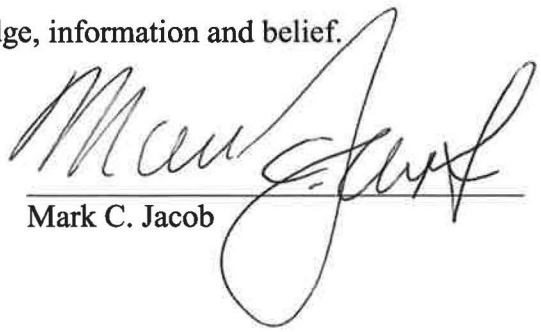
A80. I recommend the Commission approve the proposed capital investment level set forth in Attachment MCJ-4 as CWA's necessary capital investment levels during the CIRP. I also recommend the Commission authorize CWA to continue the STEP projects through at least 2022 and possibly longer in order to complete the prioritized STEP locations previously identified.

Q81. DOES THAT CONCLUDE YOUR PREPARED DIRECT TESTIMONY?

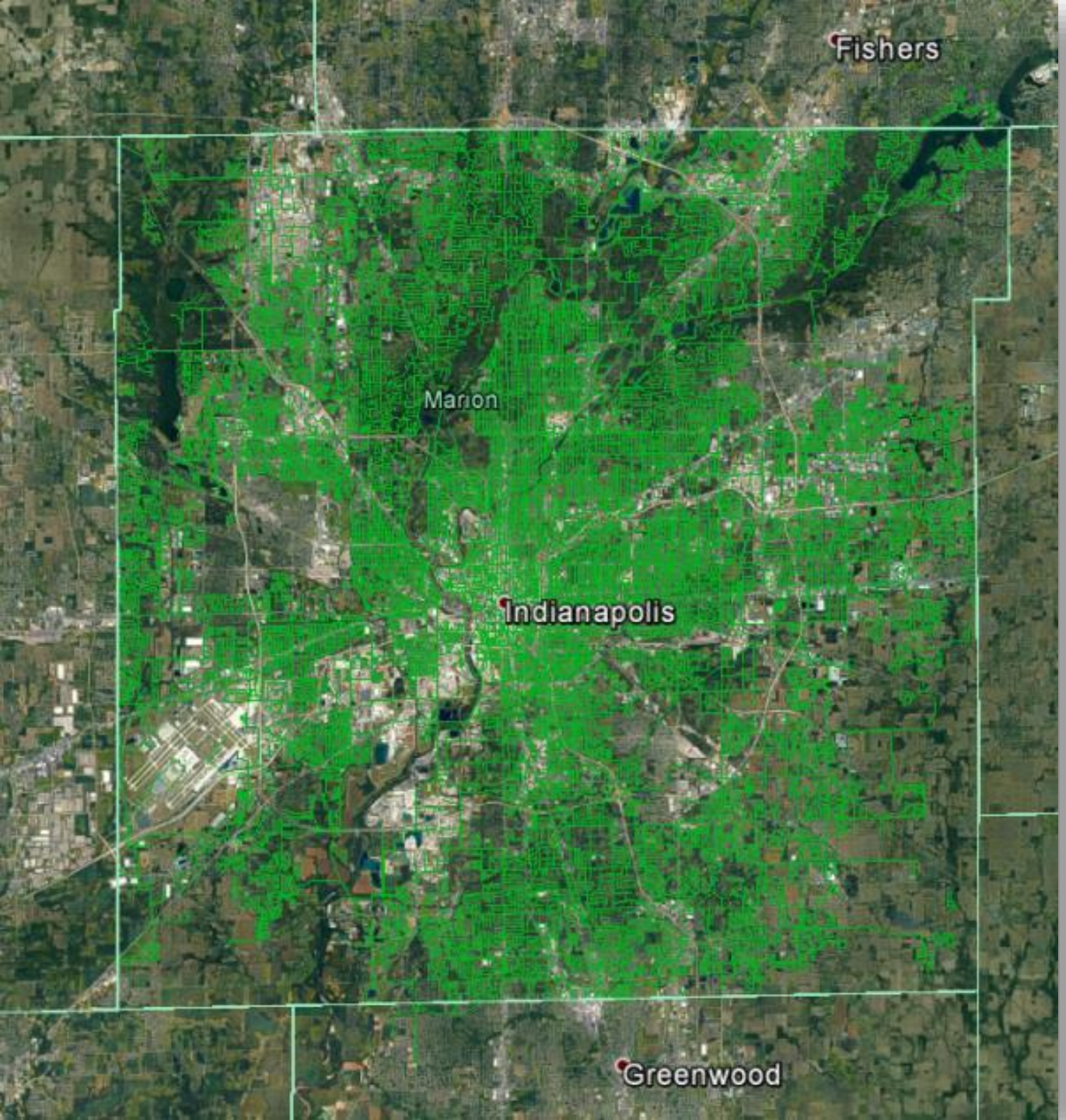
A81. Yes.

VERIFICATION

The undersigned affirms under the penalties for perjury that the foregoing testimony is true to the best of his knowledge, information and belief.



Mark C. Jacob



Attachment
MCJ – 1
CWA Collection System

Attachment MCJ - 1

Pipe Materials Through the Ages

Brick Sewer Pipe, 1800's – 1950's

Polyvinylchloride (PVC) Pipe
1970's - Present

Reinforced Concrete Pipe (RCP)
1940's - Present

Vitrified Clay Pipe (VCP), 1800's –
1970's

Attachment MCJ - 1

Pennsylvania Ave & Ohio Street Sewer Failure
Maryland St & Illinois St Sewer Failure

Pennsylvania Ave & Ohio St
Sewer Failure

Maryland St & Illinois St
Sewer Failure

Attachment MCJ - 1
Rehabilitation Methods

Slip Lining

Cured-in-Place-Pipe

Shotcrete

Smaller to Larger Diameter Pipe Rehab (8”to 120” dia.+)

Attachment MCJ – 1
Rapid Condition Assessment

Attachment MCJ - 1

Septic Tank Elimination, Gravity vs Low Pressure Systems

- Gravity System (Pre-2016)

- **No mechanical components**
- **Open-cut installation**
- **Potential for inflow and infiltration (I/I)**
- **Significant disruption within neighborhoods**

Low Pressure System (Post-2016)

- **Grinder pumps required**
- **Horizontal directional drilling (HDD) installation**
- **Limited I/I potential**
- **Minimal disruption within the right-of-way**

Attachment MCJ - 1

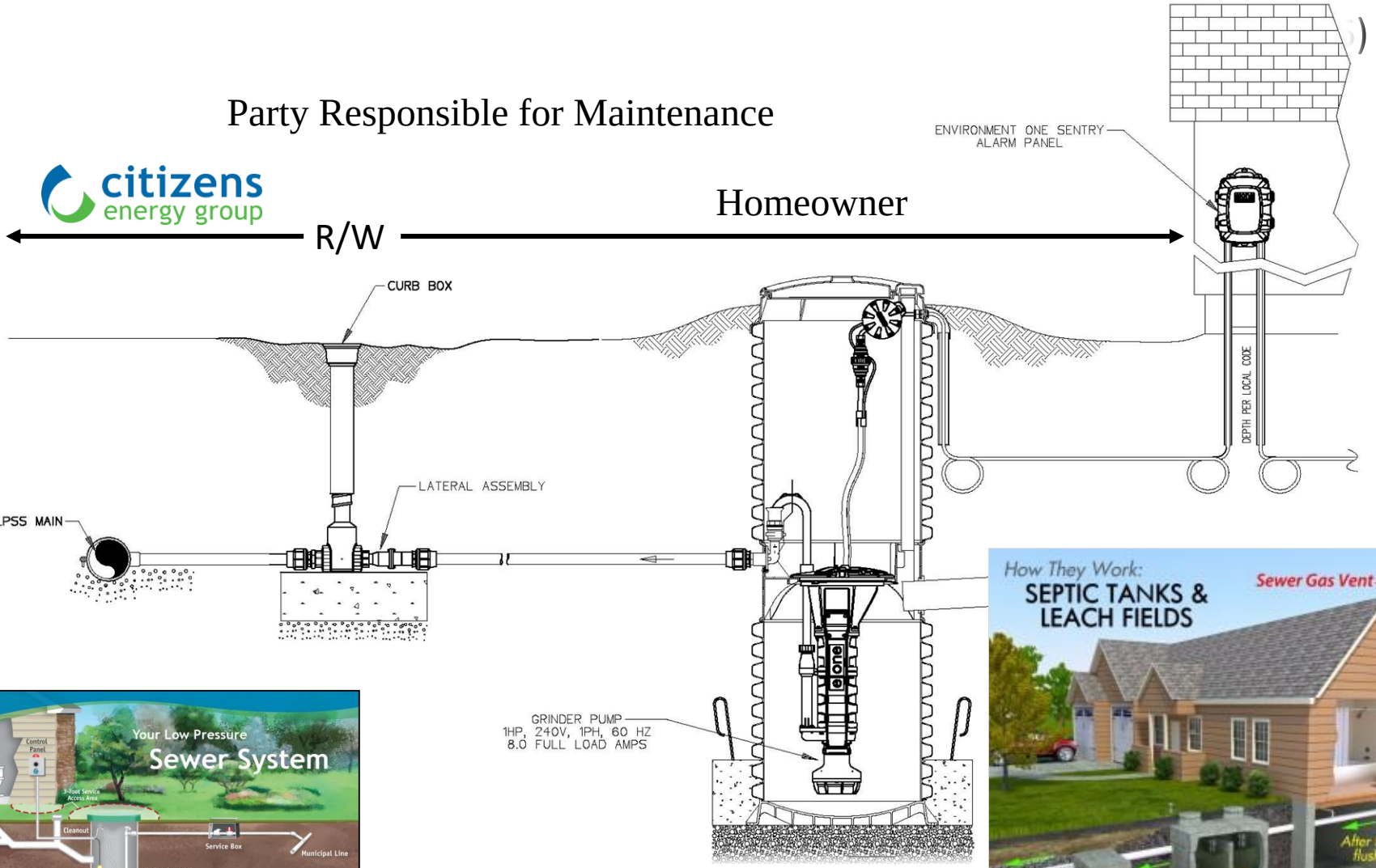
Septic Tank Elimination, Gravity vs Low Pressure Systems

Party Responsible for Maintenance

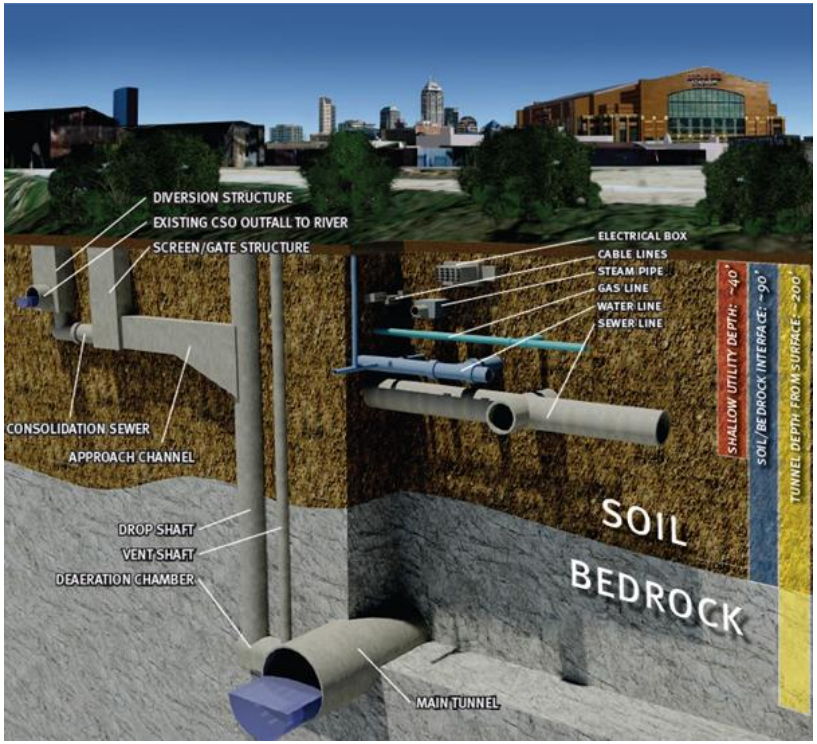
citizens energy group

R/W

Homeowner

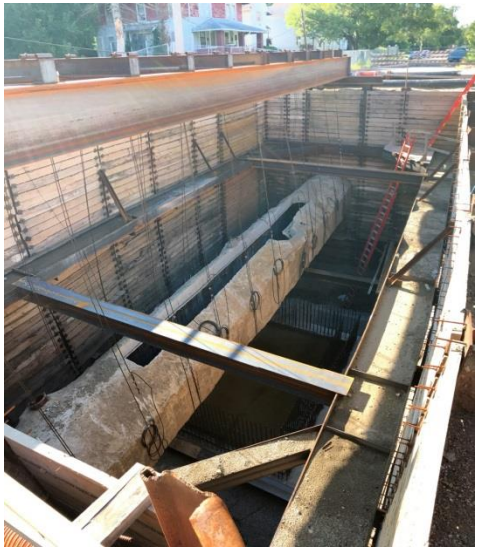


Attachment MCJ – 1
Consolidation Sewers



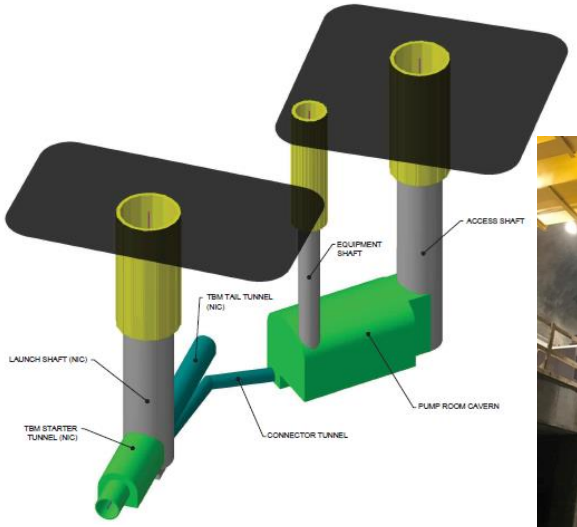
Capitol Ave. & 28th St.
Excavation Support and Sewer Bypass

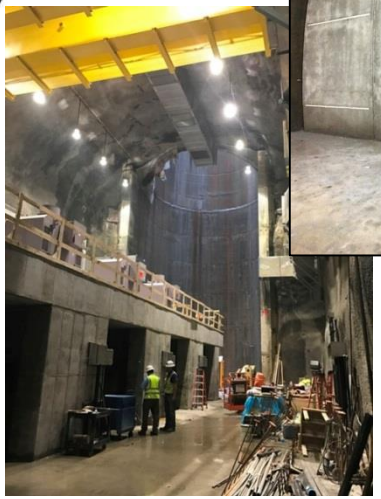
28th & Meridian St



Attachment MCJ – 1
DigIndy

Combined Sewer Overflow





CWA AUTHORITY, INC.
2020 North Meridian St., Indianapolis, IN 46202

April 13, 2018

VIA FEDEX OVERNIGHT DELIVERY

Mr. Patrick F. Kuefler
Chief, Water Enforcement and Compliance Assurance Branch
Water Division
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

W. Benjamin Fisherow
Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
ENRD Mail Room, Room 2121
601 D. Street, NW
Washington, D.C. 20044
Reference Case No. 90-5-1-1-07292

Mr. Mark Stanifer
Chief, Compliance Branch
Office of Water Quality
Indiana Dep't of Environmental Mgmt
100 North Senate Avenue
Mail Code 65-42
Indianapolis, Indiana 46206

Chief, Enforcement Section
Office of Legal Counsel
Indiana Dep't of Environmental Mgmt
100 North Senate Avenue
Mail Code 60-01
Indianapolis, Indiana 46204

Re: Consent Decree Case #1:06-cv-01456-SEB-TAB
Six-Month Status Report No. 23

Dear Mr. Kuefler, Mr. Fisherow, and Mr. Stanifer:

CWA Authority, Inc., (the Authority) is pleased to submit Six-Month Status Report No. 23 pursuant to Section XI, ¶ 36 of the Consent Decree referenced above. This report covers the period October 1, 2017 through March 31, 2018. Please note that all Consent Decree milestones to date have been met, and that the Authority has initiated the actions necessary to continue to be in compliance with all upcoming Consent Decree milestones and requirements.

Highlights of the Authority's accomplishments during this six-month reporting period include the following:

- Achievement of Full Operation for CSO CM 16 – Deep Rock Tunnel Connector, Deep Tunnel Pumping Station and Screening Facilities, and Connection of CSO 008, CSO 117, and CSO 118 to the Deep Rock Tunnel Connector.
- Achievement of Full Operation for CSO CM 30 – Eagle Creek Overflow Collector Pipe (CSO Collector Pipe Belmont West Cutoff via the Belmont North Relief Interceptor System) – Constructed as Eagle Creek Deep Tunnel and Consolidation Sewer.
- Submission of Citizens' five-year CSO Long-Term Control Plan update on 11/16/17 and accepted by Indiana Department of Environmental Management 02/09/18.
- The Authority has continued implementation of all Consent Decree projects.

Note that the following CSO Control Measures milestones are required within this reporting period and were achieved early and submitted with previous reports. See Table 1 for additional information.

- CSO CM 22, Southport Advanced Wastewater Treatment Plant Improvements - Secondary Treatment System Expansion – Achievement of Full Operation 01/18/16 and submitted with Six-Month Report No. 21 (April 2017).
- CSO CM 23, Southport Advanced Wastewater Treatment Plant Improvements – Wet Weather Disinfection - Achievement of Full Operations on 03/31/15 and submitted with Six-Month Report No. 17 (April 2015).
- CSO CM 24, Southport Advanced Wastewater Treatment Plant Improvements - Primary Clarifier Expansion - Achievement of Full Operations on 08/01/16 and submitted with Six-Month Report No. 20 (October 2016).
- CSO CM 26, Southport Advanced Wastewater Treatment Plant Improvements -- Headworks - Achievement of Full Operations on 12/01/16 and submitted with Six-Month Report No. 21 (April 2017).
- CSO CM 31, Upper Pogues Run Improvements – Achieved Bid Year on 08/14/17 and submitted with Six-Month Report No. 22 (October 2017).

The Authority believes the enclosed Six-Month Status Report is consistent with and fulfills the reporting requirements of the Consent Decree. We would appreciate your confirming that the requirements have been met by returning the enclosed acknowledgement to me in the enclosed, self-addressed stamped envelope. If you do not believe the report is compliant, please contact me as soon as possible so that we can address any deficiency promptly.

Please do not hesitate to contact me at 317-927-4393 if you have any questions or comments regarding the enclosed Six-Month Status Report.

Sincerely,

Ann W. McIver, QEP, Director,
Environmental Stewardship
Citizens Energy Group

Enclosures

cc: Gary Prichard, Office of Regional Counsel, U.S. EPA Region 5 (w/o attachments)
Noel Vargas, U.S. EPA Region 5
Steve Griffin, Deputy Attorney General, Indiana Office of the Attorney General (w/o attachments)
Martha Clark Mettler, Assistant Commissioner, Office of Water Quality, IDEM

(w/o attachments)
Paul Higginbotham, Deputy Assistant Commissioner, Office of Water Quality, IDEM
(w/o attachments)
Valerie Tachtiris, Deputy Assistant Commissioner, Office of Legal Counsel, IDEM
(w/o attachments)
Kara Wendholt, CSO Project Manager, IDEM
IDEM Data Information Services Section
Mr. Don Parker, Director, Department of Public Works, City of Indianapolis
Corporation Counsel, Office of Corporation Counsel, City of Indianapolis
John Trypus, Director, Underground Engineering & Construction, Citizens Energy Group

Acknowledgement of Compliance

The Six-Month Status Report No. 23 , submitted by CWA Authority, Inc on April 13, 2018, complies with the reporting requirements contained in Section XI, ¶36 of the Consent Decree entered in Case #1:06-cv-01456-SEB-TAB.

_____ Date_____

Patrick F. Kuefler, Chief
Water Enforcement and Compliance Assurance Branch
Water Division
U.S. Environmental Protection Agency, Region 5

Acknowledgement of Compliance

The Six-Month Status Report No. 23, submitted by the CWA Authority, Inc. on April 13, 2018, complies with the reporting requirements contained in Section XI, ¶36 of the Consent Decree entered in Case #1:06-cv-01456-SEB-TAB.

_____ Date_____

Mark Stanifer, Chief
Compliance Branch
Office of Water Quality
Indiana Department of Environmental Management

_____ Date_____

Chief
Enforcement Section
Office of Legal Counsel
Indiana Department of Environmental Management

CWA, Inc.

Six-Month Status Report

Report No. 23

(October 1, 2017 through March 31, 2018)

Consent Decree

Case # 1:06-cv-01456-SEB-TAB

CWA AUTHORITY, INC.

2150 Dr. Martin Luther King Jr. St. | Indianapolis, IN | 46202

Date Submitted: April 13, 2018

Report to: U. S. EPA	Chief Water Enforcement and Compliance Assurance Branch Water Division U. S. Environmental Protection Agency, Region 5 77 West Jackson Blvd Chicago, Illinois, 60604
IDEM	Chief, Compliance Branch Office of Water Quality Indiana Department of Environmental Management 100 North Senate Avenue Mail Code 65-42 Indianapolis, IN 46206 Chief, Enforcement Section Office of Legal Counsel Indiana Department of Environmental Management 100 North Senate Avenue Mail Code 60-01 Indianapolis, IN 46206
From:	CWA Authority, Inc. 2150 Dr. Martin Luther King Jr. St. Indianapolis, IN 46202

Table of Contents

List of Tables

1. CONSENT DECREE COMPLIANCE STATUS (XI. ¶ 36 (a))

A statement setting forth the deadlines and other terms that CWA Authority, Inc. has been required by this Consent Decree to meet since the date of the last statement, whether and to what extent CWA Authority, Inc. has met these deadlines, and the reasons for any noncompliance.

Table 1, attached, shows the deadlines and other terms CWA Authority, Inc. has been required by the Consent Decree to meet since the last report was submitted.

2. DESCRIPTION OF WORK (XI. ¶ 36 (b))

1) **A general description of the work completed within the prior six-month period and, to the extent known, a statement as to whether the work completed in that period meets applicable Design Criteria.**

Table 2, attached, provides a general description of work completed during the current reporting period (10/01/17 through 03/31/18) and whether the work completed meets applicable Design Criteria. Bid Year and AFO certification forms are attached as applicable to Table 2.

2) **A projection of work to be performed pursuant to this Consent Decree during the next six-month period.**

Table 3, attached, provides a description of work projected to be performed during the next six-month period (04/01/18 through 09/30/18).

3. STATUS OF REQUEST FOR REVISION OF WATER QUALITY STANDARDS (XI. ¶ 36 (c))

A statement as to CWA Authority, Inc.'s understanding regarding the status of IDEM's response to CWA Authority, Inc.'s request for a revision to water quality standards in accordance with Section 9 of CWA Authority Inc.'s Long Term Control Plan.

The City of Indianapolis received notice from U.S. EPA by way of email dated March 1, 2011 that information provided by the City during negotiations over the Second Amendment to the Consent Decree (CD) satisfied the requirement in Paragraph 16 of the CD to report on actual costs of implementing the LTCP compared to estimated costs. Because of the sufficiency of the information provided to U.S. EPA, EPA stated that the costs of the LTCP do not need to be updated for five years from January 27, 2011. Pursuant to this requirement, the Authority submitted a Consent Decree Cost Report on January 25, 2016.

On November 16, 2017, the Authority submitted an initial five-year LTCP update. On February 9, 2018, the Authority received acknowledgement of the update from IDEM. The next five-year update will be on November 16, 2022.

On August 5, 2011, U.S. EPA, in the context of responding to the City's request for a revision to water quality standards, also provided a letter to the City of Indianapolis stating that, as long as Indianapolis (and it successors or assigns) are implementing its control measures in compliance with all aspects of Section VII of the consent decree, U.S. EPA will not exercise its authority under Paragraph 8(a) to require the development and implementation of a Revised CSO Control Measures Plan. On August 22, 2011, IDEM transmitted an email confirming that it concurs with U.S. EPA's stance on Paragraph 8(a) and further stating that an update to the Financial Capability Assessment (FCA) will not be required until a UAA is contemplated. The Authority, as the City's successor, submitted an updated FCA with its five-year LTCP update on November 16, 2017.

Based on these developments, CWA Authority, Inc. understands that IDEM will not be responding to CWA Authority, Inc.'s previous request for revised water quality standards, unless an updated request is made.

4. REPORTS SUBMITTED IN THE PREVIOUS SIX MONTHS (XI. ¶ 36 (d))

Copies (to U.S. EPA only) of all Monthly Monitoring Reports and other reports pertaining to CSOs, SSDs and bypassing that CWA Authority, Inc. submitted to IDEM in accordance with CWA Authority, Inc.'s Current Permits in the previous six months.

Appendix 1, attached, provides copies of the monthly monitoring reports and other reports pertaining to CSOs, SSDs and bypassing submitted to IDEM during the previous six months.

5. SEWER SYSTEM OPERATION AND MAINTENANCE PLAN (XI. ¶ 36 (e))

1) Copies of any plan that CWA Authority, Inc. has developed for its contractor Suez (or Suez's successors[1]) with respect to operation and maintenance of the Sewer System during the prior six-month period (e.g., the "Collection System Maintenance Plan").

The Authority began operations and maintenance of the Wastewater System with its own workforce on the date of the Suez agreement expiration of January 1, 2017 and has continued to implement components contained within the Authority's Capacity, Management, Operations and Maintenance Program.

[1] CWA Authority began operations and maintenance of the Wastewater System with its own workforce on the date of the Suez agreement expiration of January 1, 2017.

2) Any reports that Suez (or its successors) submitted to CWA Authority, Inc regarding its implementation of such plan during the prior six-month period (e.g., the "Collection System Maintenance Report").

As of January 1, 2017, the Authority assumed primary responsibility of the operations and maintenance for the Wastewater System. The Authority will continue to implement the Capacity, Management, Operations and Maintenance Program and maintain systems to document collection system maintenance activities.

3) A statement as to whether CWA Authority, Inc. believes that Suez (or Suez's successors) has complied with any such plan.

As of January 1, 2017, the Authority assumed primary responsibility of the operations and maintenance for the Wastewater System and as such, a statement for Suez's compliance is not applicable.

4) A statement as to whether Suez (or Suez's successors) failure to comply with such plan caused any CSO, Unlisted CSO, SSD or bypass.

As of January 1, 2017, the Authority assumed primary responsibility of the operations and maintenance for the Wastewater System and as such, a statement for Suez's compliance is not applicable.

6. STATUS OF NOTICES TO PROCEED (XI. ¶ 36 (f))

A description of any notices to proceed for any CSO Control Measure or measures specified in Exhibit 3 that CWA Authority, Inc. has revoked in the prior six-month period, and a description of the status of CWA Authority Inc.'s compliance with Section VIII with regard to issuance of a new notice to proceed.

Not applicable.

7. CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Ann W. McIver, Director of Environmental Stewardship,
Citizens Energy Group

04/13/2018
Date

8. APPENDICES

Appendix 1. Copies of reports submitted to IDEM (XI. ¶ 36 (d))

TABLE 1. CONSENT DECREE (CD) REQUIREMENTS FOR CURRENT REPORTING PERIOD (10/01/17 THROUGH 03/31/18)

CD Requirements	Description of Control Measures Description of CD Deadline or Term	Compliance Status	Comments
Exhibit 1 Control Measure 16	**Deep Rock Tunnel Connector, Deep Tunnel Pumping Station and Screening Facilities, and Connection of CSO 008, CSO 117 and CSO 118 to the Deep Rock Tunnel Connector** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system with a minimum peak conveyance and dewatering capacity of 90 MGD CSO flow to Southport.	In Compliance	In response to a Force Majeure notification to the U.S. EPA and IDEM on October 12, 2017, CWA Authority, Inc. (the Authority) received a response letter from the U.S. EPA dated December 7, 2017, which stated the U.S. EPA and IDEM agree that a delay up to three months could not have been prevented based on the force majeure event reported for the Deep Tunnel Pumping Station (Pump Station) as part of Control Measure No. 16. The response letter also stated that the date for completion of Control Measure No. 16 was extended to March 31, 2018. As a follow-up, the Authority submitted a letter dated January 22, 2018 providing a status update and indicated that the Authority was operating the Pump Station and meeting performance criteria for Control Measure No. 16 by maximizing captured CSO from Outfalls 008, 117, and 118 for treatment at the Southport Advanced Wastewater Treatment Plant (AWTP). Achievement of Full Operation was 03/21/18 and submitted under separate cover on 03/21/18.
Exhibit 1 Control Measure 22	**Southport Advanced Wastewater Treatment Plant Improvements - Secondary Treatment System Expansion** When incorporated with the rest of the Southport Improvements, provide secondary and disinfection treatment rate of 250 MGD consistent with applicable disinfection requirements of current NPDES permit. Provide maximum pumping rate of 345 MGD.	In Compliance	Achievement of Full Operation 01/18/16 and submitted with Six-Month Report No. 21 (April 2017).
Exhibit 1 Control Measure 23	**Southport Advanced Wastewater Treatment Plant Improvements -- Wet Weather Disinfection** When incorporated with the rest of the Southport Improvements, provide secondary and disinfection treatment rate of 250 MGD consistent with applicable disinfection requirements of current NPDES permit. Provide maximum pumping rate of 345 MGD.	In Compliance	Achievement of Full Operations on 03/31/15 and submitted with Six-Month Report No. 17 (April 2015).
Exhibit 1 Control Measure 24	**Southport Advanced Wastewater Treatment Plant Improvements -- Primary Clarifier Expansion** When incorporated with the rest of the Southport Improvements, provide peak primary treatment capacity as required to support secondary treatment design, and peak secondary and disinfection treatment capacity of 250 MGD consistent with applicable disinfection requirements of current NPDES permit. Provide maximum pumping rate of 345 MGD	In Compliance	Achievement of Full Operations on 08/01/16 and submitted with Six-Month Report No. 20 (October 2016).

Exhibit 1 Control Measure 26	**Southport Advanced Wastewater Treatment Plant Improvements -- Headworks** When incorporated with the rest of the Southport Improvements, provide total peak secondary and disinfection treatment rate of 250 MGD consistent with applicable disinfection requirements of current NPDES permit. Provide peak pumping rate of 345 MGD.	In Compliance	Achievement of Full Operations on 12/01/16 and submitted with Six-Month Report No. 21 (April 2017).
Exhibit 1 Control Measure 31	**Upper Pogues Run Improvements** Provide instantaneous peak flow rate of 40-80 MGD. Provide storage volume of 1 to 3 MG.	In Compliance	Achieved Bid Year on 08/14/17 and submitted with Six-Month Report No. 22 (October 2017).
Five-Year LTCP Update	**Update pursuant to Indiana Code (IC) 13-18-3-2.4** Update the LTCP at least once every five years to review the feasibility of implementing new or additional alternatives to attain water quality standards and to complete an updated financial capability analysis.	In Compliance	On March 5, 2013, IDEM stated that the signing of Amendment 3 to the Consent Decree on November 16, 2012 met the requirement for an initial five-year LTCP update, and that the next five-year update will be on November 16, 2017. On November 16, 2017, the Authority submitted an initial five-year LTCP update. On February 9, 2018, the Authority received acknowledgement of the update from IDEM.

TABLE 2. DESCRIPTION OF WORK COMPLETED DURING CURRENT REPORTING PERIOD (10/01/17 THROUGH 03/31/18)

CD Requirements	Description of Control Measures / Design Criteria	Summary of Work Performed	Statement as to Whether the Work Completed Meets Applicable Design Criteria
Exhibit 1 Control Measure 15	**Fall Creek Tunnel, Collector Pipes and Watershed Projects** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Design continued. FC CCS Phase I consolidation sewer construction continued.	CM criteria to be met by 2025 Achievement of Full Operation (AFO).
Exhibit 1 Control Measure 16	**Deep Rock Tunnel Connector, Deep Tunnel Pumping Station and Screening Facilities, and Connection of CSO 008, CSO 117 and CSO 118 to the Deep Rock Tunnel Connector** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system with a minimum peak conveyance and dewatering capacity of 90 MGD CSO flow to Southport.	Construction completed. See attached AFO certification.	CM criteria met Achievement of Full Operation (AFO).
Exhibit 1 Control Measure 18	**Lower Pogues Run Improvements** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Design continued. Deep tunnel construction continued.	CM criteria to be met by 2021 Achievement of Full Operation (AFO).
Exhibit 1 Control Measure 20	**White River Tunnel (Central Tunnel) and Watershed Projects** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Deep tunnel construction continued.	CM Criteria to be met by 2021 Achievement of Full Operation (AFO).
Exhibit 1 Control Measure 27	**Deleted** Deleted	Control measure was removed as part of CD Amendment 2.	There are no applicable design criteria for this task.
Exhibit 1 Control Measure 28	**Deleted** Deleted	Control measure was removed as part of CD Amendment 2.	There are no applicable design criteria for this task.

TABLE 2. DESCRIPTION OF WORK COMPLETED DURING CURRENT REPORTING PERIOD (10/01/17 THROUGH 03/31/18)

CD Requirements	Description of Control Measures / Design Criteria	Summary of Work Performed	Statement as to Whether the Work Completed Meets Applicable Design Criteria
Exhibit 1 Control Measure 29	**Pleasant Run Deep Tunnel and Overflow Collector Pipe** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Design continued.	CM Criteria to be met by 2025 Achievement of Full Operation (AFO).
Exhibit 1 Control Measure 30	**Eagle Creek Overflow Collector Pipe (CSO Collector Pipe Belmont West Cutoff via the Belmont North Relief Interceptor System)** Provide instantaneous peak flowrate of 38 MGD in the Belmont North Relief Interceptor System. Provide instantaneous peak flowrate of 25 to 50 MGD at the downstream end of the Eagle Creek Overflow Collector Pipe.	Construction completed. See attached AFO certification.	CM Criteria met ahead of 2018 Achievement of Full Operation (AFO) schedule.
Exhibit 1 Control Measure 31	**Upper Pogues Run Improvements** Provide instantaneous peak flow rate of 40-80 MGD. Provide storage volume of 1 to 3 MG.	Design continued. Continued construction of deep storage tank at Brookside Park.	CM Criteria to be met by 2021 Achievement of Full Operation (AFO).
LTCP Section 6	**Financial Capability Assessment** Determine financial capability of the Authority and burden on homeowners.	FCA submitted with five-year LTCP update and accepted on 02/09/18.	There are no applicable design criteria for this task.
LTCP Section 9	**Use Attainability Analysis** Establish wet weather limited use sub-category to Indiana's Water Quality Standard.	In discussions with the Authority, U.S. EPA and IDEM have agreed that as long as the Authority is implementing its CSO Control Measures in compliance with the Consent Decree, as modified, U.S. EPA will not exercise its authority under Paragraph 8(a) of the Consent Decree to require the Authority to develop and implement a revised CSO Control Measures Plan.	There are no applicable design criteria for this task.
CSOOP	**CSOOP Update** Update consistent with the implementation of the LTCP.	The Authority continued to follow the elements of the NMC program discussed in the 2013 CSOOP Update.	There are no applicable design criteria for this task.
CMOM	**CMOM Update** Conduct a full structural review and update every five years.	The Authority continued to follow the elements of the CMOM program submitted on 12/19/2013 and began an update of the CMOM.	There are no applicable design criteria for this task.

CWA AUTHORITY, INC.
2700 S. Belmont Ave. | Indianapolis, IN | 46221

CERTIFICATION OF ACHIEVEMENT OF FULL OPERATION

Project No(s): CS-38-010C, LD-38-003

Project Name(s): Deep Rock Tunnel Connector, Southport AWTP Levee, Deep Rock Tunnel Connector Pump Station

Consent Decree CSO Control Measure Number[1] 16

Name[1]: Deep Rock Tunnel Connector, Deep Tunnel Pumping Station and Screening Facilities, and Connection of CSO 008, CSO 117 and CSO 118 to the Deep Rock Tunnel Connector

Critical Milestone Date[1]: Achievement of Full Operation 12/31/2017

Actual Milestone Achievement Date: 03/21/2018[2]

CWA Authority, Inc. hereby certifies that the above-noted project(s) has/have met the Critical Milestone requirement(s) specified in the Consent Decree (Section IV.4.(a)) relative to the Achievement of Full Operation for this/these project(s).

Footnote [1] From Table 7-5 of the Long Term Control Plan, As Amended per CD Amendment 2.
Footnote [2] Per letter from EPA dated December 7, 2017 in response to a letter from Citizens Energy Group for notice of force majeure dated October 12, 2017, EPA agreed to a revised Achievement of Full Operation date of March 31, 2018.

Achievement of Full Operation Milestone Certification on Behalf of CWA Authority, Inc:

John Trypus, Director, Underground Engineering & Construction

3/21/18

Date

CWA AUTHORITY, INC.
2700 S. Belmont Ave. | Indianapolis, IN | 46221

CERTIFICATION OF ACHIEVEMENT OF FULL OPERATION

Project No(s): 92ST00232, 92IN00124

Project Name(s): CSO 033 Sewer Separation Improvements; Eagle Creek CSO Abatement; Eagle Creek Line AA

Consent Decree CSO Control Measure Number[1] 30

Name[1]: Eagle Creek Overflow Collector Pipe (CSO Collector Pipe Belmont West Cutoff via the Belmont North Relief Interceptor System)

Critical Milestone Date[1]: Achievement of Full Operation 12/31/2018

Actual Milestone Achievement Date: 03/21/2018

CWA Authority, Inc. hereby certifies that the above-noted project(s) has/have met the Critical Milestone requirement(s) specified in the Consent Decree (Section IV.4.(a)) relative to the Achievement of Full Operation for this/these project(s).

Footnote [1] From Table 7-5 of the Long Term Control Plan, As Amended per CD Amendment 2.

Achievement of Full Operation Milestone Certification on Behalf of CWA Authority, Inc:

John Trypus, Director, Underground Engineering & Construction

3/21/18

Date

TABLE 3. DESCRIPTION OF WORK PROJECTED TO BE PERFORMED DURING THE NEXT REPORTING PERIOD (04/01/18 THROUGH 09/30/18)

CD Requirements	Description of Control Measures / Design Criteria	Work Projected to be Performed
Exhibit 1 Control Measure 15	**Fall Creek Tunnel, Collector Pipes and Watershed Projects** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Continue construction.
Exhibit 1 Control Measure 18	**Lower Pogues Run Improvements** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Continue construction.
Exhibit 1 Control Measure 20	**White River Tunnel (Central Tunnel) and Watershed Projects** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Continue construction.
Exhibit 1 Control Measure 27	**Deleted** Deleted	No additional work will be performed on this Control Measure.
Exhibit 1 Control Measure 28	**Deleted** Deleted	No additional work will be performed on this Control Measure.

TABLE 3. DESCRIPTION OF WORK PROJECTED TO BE PERFORMED DURING THE NEXT REPORTING PERIOD (04/01/18 THROUGH 09/30/18)

CD Requirements	Description of Control Measures / Design Criteria	Work Projected to be Performed
Exhibit 1 Control Measure 29	**Pleasant Run Deep Tunnel and Overflow Collector Pipe** Provide a total effective storage volume of 250 MG in the Fall Creek, White River, Pogues Run, Pleasant Run and DRTC tunnel system.	Continue design. Begin construction for a portion of consolidation sewer (PR02 DV-1).
Exhibit 1 Control Measure 31	**Upper Pogues Run Improvements** Provide instantaneous peak flow rate of 40-80 MGD. Provide storage volume of 1 to 3 MG.	Complete design and continue construction.
LTCP Section 6	**Financial Capability Assessment** Determine financial capability of City and burden on homeowners.	An FCA update will be evaluated through implementation and in conjunction with the next five-year LTCP update.
LTCP Section 9	**Use Attainability Analysis** Establish wet weather limited use sub-category to Indiana's Water Quality Standard.	In discussions with the Authority, U.S. EPA and IDEM have agreed that as long as the Authority is implementing its CSO Control Measures in compliance with the Consent Decree, as modified, U.S. EPA will not exercise its authority under Paragraph 8(a) of the Consent Decree to require the Authority to develop and implement a revised CSO Control Measures Plan.
CSOOP	**CSOOP Update** Update consistent with the implementation of the LTCP.	The Authority will continue to follow the elements of the NMC program discussed in the 2013 CSOOP Update and begin a 2018 update.
CMOM	**CMOM Update** Conduct a full structural review and update every five years.	The Authority will continue to follow the elements of the 2013 CMOM Update. The Authority will continue a 2018 update of the CMOM as Consent Decree implementation continues.

List of Appendices

Appendix 1: Copies of Reports Submitted to IDEM Pertaining to CSOs, SSDs and Bypassing

September 2017 CSO Public Notification report

September 2017 MRO and DMR report

October 2017 CSO Public Notification report

October 2017 MRO and DMR report

November 2017 CSO Public Notification report

November 2017 MRO and DMR report

December 2017 CSO Public Notification report

December 2017 MRO and DMR report

January 2018 CSO Public Notification report

January 2018MRO and DMR report

February 2018CSO Public Notification report

February 2018MRO and DMR report

October 2017 through March 2018 Bypass/Overflow Incident Reports

ATTACHMENT MCJ-3

TEST YEAR CAPITAL INVESTMENTS (6/1/2017-5/31/2018)	
Name	Capital Expenditures
WW Treatment Plants	$ 13,408,443
Federal Consent Decree	$ 137,119,384
STEP Projects	$ 3,031,695
Collection Systems	$ 30,253,138
WW Fleet & Facilities	$ 714,548
Miscellaneous	$ 1,105,878
Subtotal - CWA Authority	$ 185,633,086
Subtotal - SS Allocations	$ 2,257,110
Grand Total	$ 187,890,196

**As of 8-23-2018*

Attachment MCJ-4
Capital Investment Requirements Period

Capital Investments Requirements Period
(August 2019 - July 2022)

Name	Dollars ($) 2019-2020	Dollars ($) 2020-2021	Dollars ($) 2021-2022	3- Year Average
WW Treatment Plants	$ 11,516,637	$ 16,747,559	$ 13,242,166	$ 13,835,454
Environmental	$ 140,000	$ 181,667	$ 385,833	$ 235,833
Federal Consent Decree	$ 160,241,648	$ 159,762,254	$ 136,583,333	$ 152,195,745
STEP Projects	$ 6,175,172	$ 6,221,740	$ 6,583,930	$ 6,326,947
Collection Systems	$ 18,158,990	$ 19,620,712	$ 17,008,667	$ 18,262,790
WW Fleet & Facilities	$ 2,139,150	$ 2,099,667	$ 2,145,333	$ 2,128,050
WW Technology Projects	$ 223,000	$ 1,348,000	$ 73,000	$ 548,000
Subtotal - CWA	$ 198,594,597	$ 205,981,598	$ 176,022,262	$ 193,532,819
Subtotal - SS Allocations	$ 4,172,906	$ 2,131,570	$ 2,477,066	$ 2,927,181
Total	$ 202,767,504	$ 208,113,168	$ 178,499,329	$ 196,460,000

**As of 8-23-2018*

Attachment MCJ-5 Capital Requirements
(August 2018 - July 2019)

Capital Investments Requirements Period -1
August 2018- July 2019

Name	Dollars ($) 2018-2019
WW Treatment Plants	$ 14,826,043
Environmental	$ 116,667
Federal Consent Decree	$ 157,332,165
STEP Projects	$ 5,689,031
Collection Systems	$ 23,699,104
WW Fleet & Facilities	$ 3,531,593
WW Technology Projects	$ 984,227
Subtotal - CWA	$ 206,178,830
Subtotal - SS Allocations	$ 4,923,480
Total	$ 211,102,310

**As of 8-23-2018*

a) Project Name	b) Project Number	c) Project Description	d) Project Need	e) Alternatives Considered	f) Estimated Project Start Date	g) Estimated Project Completion Date	h) Total Project Cost Class
Budget book name	*Budget book number*	*Budget book CBAType*			*Year only*	*Year only*	
AWT Solids Replace Switchgear	92BE02089	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2018	2020	Class 3 (-20% to +30%)
Bel-AWT Screw Bearing Replmnt	92BE02091	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2018	2019	Class 1 (-10% to +15%)
Bel-AWT PDPS Discharge Mod.	92BE02092	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2018	2022	Class 1 (-10% to +15%)
Bel-AWT Filter Valves Relpmnt	92BE02095	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2018	2021	Class 2 (-15% to +20%)
Bel-AWT Air Blowers Imprvmnt	92BE02097	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2020	2021	Class 3 (-20% to +30%)
Bel-AWT Centrifuges Imprvmnt	92BE02098	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2020	2021	Class 3 (-20% to +30%)
Bel-AWT Aerated Grit Imprvmnt	92BE02099	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2019	2020	Class 2 (-15% to +20%)
Bel-AWT Misc. HVAC Imprvmnt	92BE02101	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2020	2022	Class 3 (-20% to +30%)
BE-AWT Filters Rehabilitation	92BE02627	1230- WW Treatment Plants	Plant Rehabilitation	New Technology	2019	2023	Class 3 (-20% to +30%)
BE-AWT ControlRoom Relocation	92BE02630	1230- WW Treatment Plants	Plant Rehabilitation	New Technology	2018	2019	Class 2 (-15% to +20%)
MHI Main Stack Rehabilitation	92BE02833	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2018	2019	Class 2 (-15% to +20%)
Sludge Blending Improvements	92BE03065	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2018	2019	Class 1 (-10% to +15%)
Primary Clarifiers Rehab Ph2	92BE03089	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2018	2021	Class 1 (-10% to +15%)
ONS Wall Tie Replacement	92BE03109	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2019	2021	Class 2 (-15% to +20%)
Feeder Relay Replacement	92BE03115	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2019	2019	Class 2 (-15% to +20%)
Cake Pump 1-4 Replacement	92BE03167	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2019	2021	Class 2 (-15% to +20%)
PAC Replacement	92BE03168	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2019	2020	Class 2 (-15% to +20%)
Centrate Monitoring System	92BE03295	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2019	2019	Class 2 (-15% to +20%)
LS 505 Generator	92LS03156	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2018	2019	Class 1 (-10% to +15%)
GBT HVAC Controls Upgrade	92MF02901	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)
Interplant Fiber Optic Comm	92MT01601	1230- WW Treatment Plants	Plant Rehabilitation	New Technology	2016	2021	Class 2 (-15% to +20%)
Sludge Line Replacement	92MW00357	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2013	2026	Class 1 (-10% to +15%)
AWT Solids Mgmt Improvements	92MW02632	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2021	2023	Class 4 (-30% to +50%)
Sp-AWT Facilities Rehab Ph-2	92SO02060	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2018	2020	Class 1 (-10% to +15%)
Sp-AWT Replace RSPS Valves	92SO02062	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2016	2019	Class 1 (-10% to +15%)
SP-AWT Potable Water Upgrade	92SO02094	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	2021	2022	Class 4 (-30% to +50%)
SP-AWT Filter Valves Relpmnt	92SO02096	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2020	2024	Class 3 (-20% to +30%)
STS Valve Replacement	92SO03336	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2018	2019	Class 1 (-10% to +15%)
EnergyEfficientOptimize	92SY01492	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	2015	2020	Class 1 (-10% to +15%)
Belmont AWT UV Bulbs and Ballast Replacement	AB92BB	1230- WW Treatment Plants	Plant Rehabilitation	Replacement In-Kind	ONGOING	ONGOING	Class 1 (-10% to +15%)
AWT Plant MCI	AB92MF	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
Energy Electrical Upgrades	AB92MP	1230- WW Treatment Plants	Plant Rehabilitation	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
Continuous River Monitoring	AB92CR	1231- Environmental	Environmental	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
LRF - Misc. Environmental Capital Expenditures	AB92EN	1231- Environmental	Environmental	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
Lab Equip Replacement-CWA	AB92LR	1231- Environmental	Environmental	Replacement In-Kind	ONGOING	ONGOING	Class 1 (-10% to +15%)
Upper Pogues Run	92IN00129	1232- Federal Consent Decree	Consent Decree	New Technology	2012	2019	Class 2 (-15% to +20%)
CSO 033 Separation	92ST00232	1232- Federal Consent Decree	Consent Decree	New Technology	2012	2021	Class 1 (-10% to +15%)
Lower Pogues Run Tunnel	92TU00125	1232- Federal Consent Decree	Consent Decree	New Technology	2012	2020	Class 2 (-15% to +20%)
White River Tunnel System	92TU00126	1232- Federal Consent Decree	Consent Decree	New Technology	2012	2021	Class 2 (-15% to +20%)
Fall Creek Tunnel System	92TU00128	1232- Federal Consent Decree	Consent Decree	New Technology	2013	2024	Class 3 (-20% to +30%)
Pleasant Run Deep Tunnel	92TU00534	1232- Federal Consent Decree	Consent Decree	New Technology	2013	2024	Class 1 (-10% to +15%)
Rockville Rd - High School Rd STEP	92SP00555	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2013	2019	Class 4 (-30% to +50%)
Thompson Rd - Meridian St STEP	92SP01652	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2017	2020	Class 4 (-30% to +50%)
72nd St - Westfield Blvd STEP	92SP02111	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2016	2021	Class 4 (-30% to +50%)
71st St - Tuxedo Ave STEP	92SP02175	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2019	2023	Class 4 (-30% to +50%)
79th St - Keystone Ave STEP	92SP02176	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2019	2020	Class 4 (-30% to +50%)
42nd St - German Church STEP	92SP02177	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2019	2020	Class 4 (-30% to +50%)
77th St - Dean Rd STEP	92SP02178	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2019	2021	Class 4 (-30% to +50%)
21st St - Post Rd STEP	92SP02179	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2020	2021	Class 4 (-30% to +50%)
58th St - Stone Hill Dr STEP	92SP02180	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2020	2021	Class 4 (-30% to +50%)
46th St - Ritter Ave STEP	92SP03230	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2018	2019	Class 4 (-30% to +50%)
STEP (Septic Tank Elimination Program) Projects	AB92SP	1233- STEP Projects	Septic Tank Elimination Program	Convert to Collection System	2019	2023	Class 2 (-15% to +20%)
Bridgeport Storage Tank	92IN03213	1234- Collection Systems	Collection Systems Rehabilitation	New Technology	2019	2020	Class 5 (-50% to +100%)
Lift Station 522 Replacement	92LS01969	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2016	2019	Class 1 (-10% to +15%)
LS 520 Replacement	92LS02595	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)
LS 518 Replacement	92LS02671	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)

LS 503 Replacement	92LS02672	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2021	Class 4 (-30% to +50%)
LS 516 Replacement	92LS02673	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)
LS 511 Replacement	92LS02675	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)
LS 418 Replacement	92LS02676	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)
LS 101 Capacity Upgrade	92LS02679	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 5 (-50% to +100%)
LS 517 Replacement	92LS02680	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2020	Class 4 (-30% to +50%)
LS 412 Replacement	92LS02682	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2020	Class 4 (-30% to +50%)
LS 113 Replacement	92LS02684	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2019	Class 4 (-30% to +50%)
LS 419 Replacement	92LS02685	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2019	Class 4 (-30% to +50%)
LS 421 Replacement	92LS02686	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2020	Class 4 (-30% to +50%)
LS 563 Replacement	92LS02687	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2020	Class 4 (-30% to +50%)
LS 104 Replacement	92LS02957	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 4 (-30% to +50%)
LS 547 Generator	92LS03157	1234- Collection Systems	Collection Systems Rehabilitation	New Technology	2018	2019	Class 2 (-15% to +20%)
LS 422 Replacement	92LS03199	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2020	Class 4 (-30% to +50%)
LS 545 Replacement	92LS03201	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2019	2021	Class 4 (-30% to +50%)
LS 509 Replacement	92LS03203	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2019	2021	Class 4 (-30% to +50%)
LS 204 Replacement	92LS03204	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2019	2021	Class 4 (-30% to +50%)
LS 308 Replacement	92LS03205	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2019	2021	Class 4 (-30% to +50%)
LS 500 Replacement	92LS03207	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2019	2021	Class 4 (-30% to +50%)
LS 401 Replacement	92LS03208	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2019	2021	Class 4 (-30% to +50%)
Osceola Ct Sewer Replacement	92MD03155	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2019	Class 3 (-20% to +30%)
Summerfield Dr FM Dis. Rehab	92RR02607	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2018	2019	Class 1 (-10% to +15%)
N College Ave-W South St LDSR	92RR02609	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)
W Merrill St-S East St LDSR	92RR02678	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	2017	2019	Class 1 (-10% to +15%)
E 30th St LDSR	92RR02688	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2019	2020	Class 3 (-20% to +30%)
EPRPSD-Michigan-E 19 St LDSR	92RR02690	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2019	2020	Class 3 (-20% to +30%)
Pennsylvania St-Ohio St LDSR	92RR02691	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2020	2021	Class 3 (-20% to +30%)
Fall Creek - 17	92RR02863	1234- Collection Systems	Collection Systems Rehabiliattion	Rehabilitate	2020	2020	Class 5 (-50% to +100%)
LeGrande Ave-Naomi St LDSR	92RR02864	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2020	2021	Class 3 (-20% to +30%)
Sanders St-CSO 149 LDSR	92RR02865	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2020	2020	Class 3 (-20% to +30%)
Hague Rd FM Dis. Rehab	92RR02866	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2020	2020	Class 3 (-20% to +30%)
Prospect St Phase II LDSR	92RR03161	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2018	2019	Class 3 (-20% to +30%)
State Ave LDSR (cross bore)	92RR03200	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2019	2020	Class 3 (-20% to +30%)
20th and Broadway LDSR	92RR03202	1234- Collection Systems	Collection Systems Rehabiliattion	Rehabilitate	2020	2021	Class 3 (-20% to +30%)
CSO 103 SDSR	92RR03209	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	2019	2020	Class 3 (-20% to +30%)
Burbank Rd SDSR	92RR03210	1234- Collection Systems	Collection Systems Rehabiliattion	Rehabilitate	2020	2021	Class 3 (-20% to +30%)
Brooks St SDSR (cross bore)	92RR03211	1234- Collection Systems	Collection Systems Rehabiliattion	Rehabilitate	2020	2021	Class 3 (-20% to +30%)
Misc Interceptor Expansions & Improvements	AB92IN	1234- Collection Systems	Collection Systems Expansion	Expansion	ONGOING	ONGOING	Class 1 (-10% to +15%)
Lift Station Rehab Design	AB92LS	1234- Collection Systems	Collection Systems Rehabiliattion	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
Collection System MCI	AB92MD	1234- Collection Systems	Collection Systems Rehabiliattion	New Technology	ONGOING	ONGOING	Class 1 (-10% to +15%)
Manhole Rehabilitation	AB92MH	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
PI-Sanitary Sewer Relocations	AB92PI	1234- Collection Systems	Collection Systems Rehabilitation	Replacement In-Kind	ONGOING	ONGOING	Class 1 (-10% to +15%)
Misc Large Diameter SS&CS Rehab	AB92RRL	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
Misc Sm Diam SS & CS Rehab	AB92RRS	1234- Collection Systems	Collection Systems Rehabilitation	Rehabilitate	ONGOING	ONGOING	Class 1 (-10% to +15%)
2019 WW Fleet Purchases	92FL03341	1246- WW Fleet & Facilities	Misc	New Technology	2018	2019	Class 1 (-10% to +15%)
AB Misc Facilities	AB92FA	1246- WW Fleet & Facilities	Misc	New Technology	ONGOING	ONGOING	Class 1 (-10% to +15%)
Wastewater Fleet Replacement	AB92FL	1246- WW Fleet & Facilities	Misc	New Technology	ONGOING	ONGOING	Class 1 (-10% to +15%)
WW Safety & Security	AB92SE	1246- WW Fleet & Facilities	Misc	New Technology	ONGOING	ONGOING	Class 1 (-10% to +15%)
SCADA Upgrade	92LS03212	1247- WW Technology Projects	Misc	New Technology	2018	2021	Class 1 (-10% to +15%)
WAM Program - WW	92SF01733	1247- WW Technology Projects	Misc	New Technology	2021	2021	Class 4 (-30% to +50%)
AMTS Data Collection Equipment	AB92AM	1247- WW Technology Projects	Misc	New Technology	ONGOING	ONGOING	Class 1 (-10% to +15%)
Misc WW Technology Projects	AB92MT	1247- WW Technology Projects	Misc	New Technology	ONGOING	ONGOING	Class 1 (-10% to +15%)

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Attachment MCJ - 7

Combined Sewer Overflow Consent Decree Dashboard

(updated 10/23/17)

Attachment MCJ - 7

DIG INDY
Cleaner Waters. Better Neighborhoods.

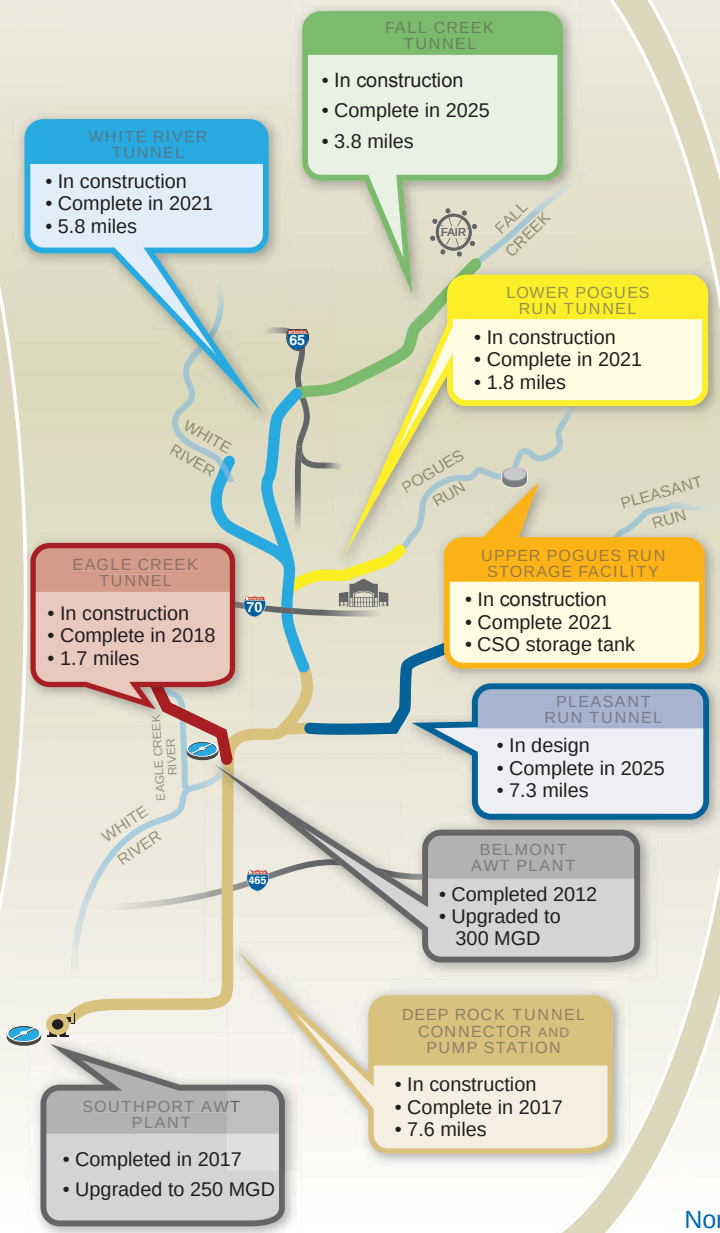
$ Consent Decree Budget

(2016 Dollars)

STRATEGIES FOR SUCCESS

Consent Decree currently $400M under budget

Primary Consent Decree Projects



10 Thousand REES

To help keep Indy's Waterways Clean!

Citizens Energy Group, in partnership with Keep Indianapolis Beautiful and the City of Indianapolis

Total trees planted by December 2017:

760

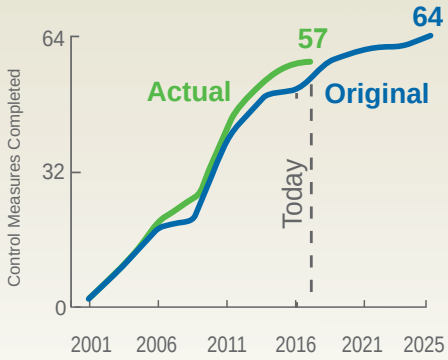
= 100 trees planted through 2017

= 100 trees planned through 2024

This initiative offers a unique and cost-effective solution to reduce sewage overflows. One mature tree can store up to 100 gallons of water.

Trees also provide community benefits such as: traffic calming, improved air/soil quality, and increased property values.

Combined Sewer Overflow Control Measures



Control Measures are associated with projects and specific design and performance criteria in the Consent Decree. Citizens is currently ahead of schedule on final Control Measure completion.

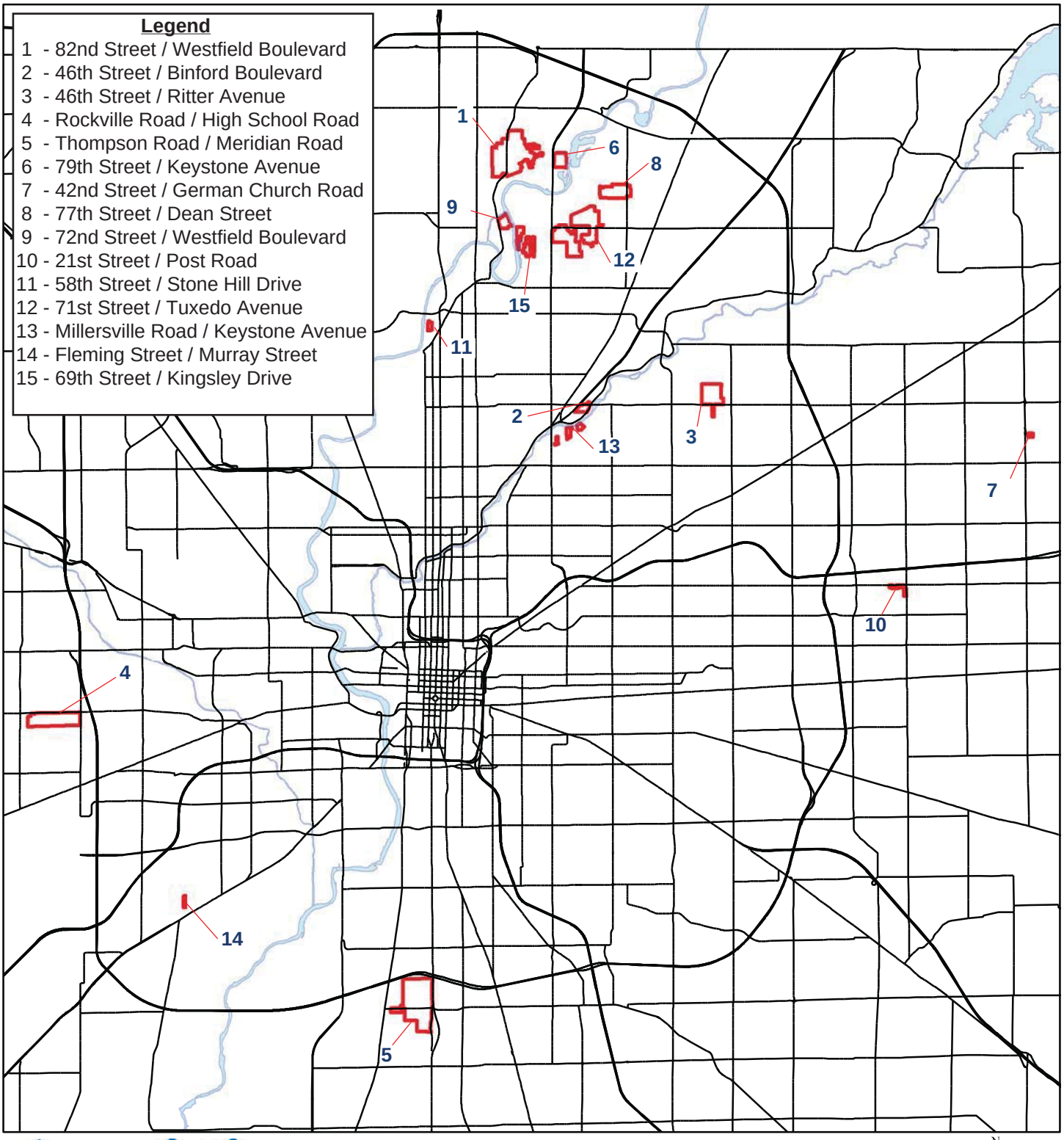
Quick Links

Follow these links to learn more about Consent Decree projects and programs.

DigIndy Tunnel System Construction Timeline

Attachment MCJ - 8

Status Update
Citizens Energy Group - CWA Authority
2018 - 2022 Septic Tank Elimination Program (STEP) Projects



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Legend

STEP

N
W
E
S