

## **APPENDIX G**

## Appendix G

### Deliverables

Paragraph 3.a. of the Consent Order and Agreement (COA) between Pennsylvania Department of Environmental Protection (DEP) and the City of Philadelphia (City) lists ten "Deliverables" that are required to be submitted by the City within the first four years of the term of the Agreement. Descriptions of the Deliverables are presented below.

#### **Implementation and Adaptive Management Plan:**

The Implementation and Adaptive Management Plan (IAMP) will provide details on how the LTCPU CSO Program will be implemented by the City during the first five years after approval, and it will outline the City's proposal for evaluating progress and making decisions at the five-year marks throughout the term of the Consent Order and Agreement. The IAMP will describe the City's plans for tracking, reporting, and assessing progress of the CSO Program activities. It will include information about the following:

- Adaptive Implementation: The IAMP will include a description of how the City will make decisions about adapting their efforts to address future circumstances. It will outline the decision-making process that the City proposes to be used when Evaluation and Adaptation Plans (EAP) are submitted in the future at the five-year, ten-year, fifteen-year, and twenty-year milestone dates.
- Capital Projects: The IAMP will list those LTCPU capital projects that are already completed or under way, and also the projected number and types of projects proposed to be implemented in the four and a half years leading up to the delivery of the first Evaluation and Adaptation Plan (EAP). It will describe projects including (but not necessarily limited to) those associated with green stormwater infrastructure, sewer separation, and interceptor lining.
- Green Stormwater Infrastructure data system(s): The IAMP will describe the data system(s) that will be used to track Green Stormwater Infrastructure projects, from construction of the project through the lifetime of the project including periodic inspections and maintenance. The Plan should describe reporting formats proposed to be used in the Annual Reports and EAPs.
- Operation and Maintenance: The IAMP will describe the City's plans to ensure that green stormwater infrastructure projects are operating according to design. While a comprehensive Green Infrastructure Maintenance Manual is in development (see below), the IAMP should provide a statement of the status of this issue in the interim. The IAMP will address how the City will provide for compliance with maintenance obligations for those projects where maintenance is the responsibility of others, including private entities.
- Streamlining: The IAMP will contain a detailed report describing the ways in which City codes, ordinances, policies, and interagency procedures have been, or will need to be, modified to optimize the implementation of the LTCPU. It will also address coordination with non-City entities, and any conflicts between State requirements and the implementation goals of the CSO Program. It will include

recommendations for ways to overcome potential legal issues, such as those that could arise from the State Utility Law, ownership and liability concerns, and public/private boundaries issues. This section should supplement the information already provided as part of the Approved LTCPU.

- Sewer System Evaluation Survey (SSES): The IAMP will provide a plan and schedule for the implementation of a program to address wet weather inflow and infiltration (WWII) in the City's separate sewer areas. Within 3 years of the effective date of the CO&A, the City will complete a sanitary sewer evaluation survey (SSES) to better explore the potential for further remedial controls on sanitary sewer infiltration and inflow to reduce CSOs. Within two years thereafter, the City must develop and initiate implementation of a strategy to address any WWII issues identified as having a significant potential to reduce CSO discharges. In developing the scope of work for the SSES PWD will follow the American Society of Civil Engineers (ASCE) and the Water Environment Federation (WEF) Manual of Practice FD-6, "Existing Sewer Evaluation and Rehabilitation."
- Outlying Communities report: The IAMP will provide a description of the City's efforts to address wet weather peaking in the sanitary flows that are received from outlying communities under the terms of contracts (suburban wholesale wastewater customers). This section will describe actions taken to date as well as actions proposed for the future, and will address how the outlying communities themselves may be engaged in the effort to find opportunities and implement corrective action to reduce wet weather peak flows.
- Early Action Area project: The IAMP will include a proposal and schedule for the assessment of the effectiveness of green stormwater infrastructure in reducing combined sewer overflow volumes using early action areas. Early action areas are areas where green stormwater infrastructure will be implemented in a relatively concentrated area, and wet weather flows will be monitored, to demonstrate the impact of green stormwater infrastructure on the CSS flows. The proposal should address the issues of scale and timing for this effort, and should also discuss the identification of candidate areas.

**Green Infrastructure Maintenance Manual development process plan:**

This deliverable will describe the process and schedule for developing the Green Infrastructure Maintenance Manual.

**Comprehensive Monitoring Plan:**

This document will contain a description of the City's plans for performing monitoring of natural and engineered systems that are associated with the CSO Program. It will address the monitoring and assessment of surface waters, ground water, rainfall, CSO discharges, sewer flows, and green infrastructure performance.

In addition to monitoring, the Plan will also address hydrologic and hydraulic modeling. The City uses modeling to support various aspects of the CSO Program. A description will be provided of the methods to be used for performance tracking of the CSO Program in the form of hydrologic/hydraulic modeling with verification using metered data, as discussed in Section 10 of the LTCPU. There will also be a discussion

of how the City will handle future updates or changes to the model itself. If the City should make changes to the model, DEP will wish to have a way to make a meaningful comparison between future modeling results and the information already presented as part of this effort, including information in the September 2009 LTCPU.

**Facility Concept Plans for each of the Water Pollution Control Plants:**

There will be a separate Facility Concept Plan for each of the three Water Pollution Control Plants. Each Plan will describe specific engineering and construction proposed to increase the maximum wet weather flow rate through the facility, and thereby to increase the capture rate of combined sewage. These Plans will provide design and construction performance standards (in terms of "percent complete") for the five-year, ten-year, and fifteen-year milestone periods. These performance standards will become permit requirements by being incorporated into future versions of the NPDES permits. (Note: The Water Pollution Control Plant upgrade projects are expected to be completed at the end of the twenty-year period.)

**Updated Nine Minimum Controls Report:**

To support the LTCPU, the City will update the "Implementation of Nine Minimum Controls" document, which was originally submitted in September, 1995. The updated report should indicate how the City's activities are being carried out currently, and highlight how these activities may have changed as a result of new technology, new practice, or other circumstances.

**Tributary Water Quality Model - Bacteria:**

This report will describe the methods, and provide the results, of a project to model the receiving water quality in the Tacony/Frankford Creek and the Cobbs Creek. The work will include the collection of field data for model development and validation. The model will be used to assess the projected impact of the CSO Program in future years, and to evaluate alternative implementation options.

**Tributary Water Quality Model - Dissolved oxygen:**

This report will describe the methods, and provide the results, of a project to model the receiving water quality in the Tacony/Frankford Creek and the Cobbs Creek. The work will include the collection of field data for model development and validation. The model will be used to assess the projected impact of the CSO Program in future years, and to evaluate alternative implementation options.

**Green Infrastructure Maintenance Manual:**

The Manual will address the operation and maintenance of the full range of types of green stormwater infrastructure projects that have been, and that are proposed to be, implemented by the City as part of the CSO Program. The Manual will be designed to be used by City agencies and anyone else who has responsibility for performing maintenance of green stormwater infrastructure. The Deliverable required by the Consent Order and Agreement should be considered the "first edition" of the Manual, since it is expected that the Manual will need to be updated periodically as the technology of green stormwater infrastructure advances, and as experience is gained with specific

practices. The first edition of the Manual should propose a schedule for the planned preparation of a second edition.

**Tidal waters Water Quality Model - Bacteria:**

This report will describe the methods, and provide the results, of a project to model the receiving water quality in the tidal Delaware River and the tidal Schuylkill River. The work will include the collection of field data for model development and validation. The model will be used to assess the projected impact of the CSO Program in future years, and to evaluate alternative implementation options.

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