



ALBANY POOL COMBINED SEWER OVERFLOW LONG-TERM CONTROL PLAN DEVELOPMENT

Scope of Work and Characterization, Monitoring and Modeling Plan

Combined Sewer Overflow Long Term Control Plan Development



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Introduction

Project Organization

The Albany Pool Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP) is being performed under a two-part project structure. Under Part A of the project, information was gathered and developed to produce Part A deliverables, which include the Public Participation Plan (already submitted and approved), detailed Scope of Work, schedule, task assignments (to various consultant team members, local partners and the various municipal staff) for the development of the LTCP, and the cost allocation for completion of the LTCP under Part B of the project.

A Draft Scope of Work and Characterization, Monitoring and Modeling Plan was submitted to the New York State Department of Environmental Conservation (NYSDEC) on October 18, 2006. Comments were formally received on this submittal in correspondences dated December 20, 2006, and January 23, 2007, (see Appendix B). This revised deliverable summarizes the Scope of Work to be performed under Part B and incorporates revisions detailed in the correspondences developed by the Albany Pool LTCP Team (Team) dated January 18, 2007, and February 14, 2007. All correspondence are included as Appendix B to this document.



Task B.1

SECTION

1

Task B.1 – Public Participation

The Public Participation Plan was developed by the Capital District Regional Planning Commission (CDRPC) and Clough Harbour & Associates, LLP. This document was first delivered to the New York State Department of Environmental Conservation (NYSDEC) in Draft form in April 2006 in advance of the Draft Scope of Work for the Long-Term Control Plan Development as required by the Communities individual State Pollutant Discharge Elimination Systems Permit requirements. NYSDEC review comments were received and a revised Public Participation Plan was resubmitted in June 2006. The NYSDEC formally accepted this plan via email correspondence with the CDRPC on June 26, 2006.

During the review of the Draft Scope of Work for the LTCP and in an effort to reduce overall project costs, individual meetings originally intended to be repeated within each community will be combined. The Public Participation Plan, attached as Appendix A, includes a reduction from four meeting locations (one each for the City of Albany, Troy, Rensselaer, and Watervliet/Cohoes and Green Island) to two meeting locations (one for Troy and Rensselaer and another for Albany/Watervliet/Cohoes and Green Island).



Task B.2

SECTION

2

Task B.2 – Receiving Water Conditions Assessment

CSO LTCP programs for large CSO systems, like that of the Albany Pool, are long-term programs that should be developed and implemented incrementally, with each phase building on the information developed previously. The LTCP program for receiving water assessment carefully considers the integration of this program with the other aspects of the LTCP program, including CSO control alternatives evaluation, facility sizing and design, and post-construction compliance monitoring. The LTCP receiving water assessment also considers the broader regional issues that impact water quality, in particular the pending addition of effluent disinfection at the regional wastewater treatment facilities and other, non-CSO sources of pollution and non-attainment of water quality standards in the study reaches.

During Part A of the LTCP development, the Team focused on finding a reasonable and cost-effective balance between both sampling and modeling, and will tie each aspect of the program to very clearly defined information and LTCP decision support objectives. Initially, the Team will collect and evaluate the receiving water monitoring data and then determine the need and extent of additional data collection and water quality modeling needs. Previous water quality assessments in the tidal reaches of the Hudson River have utilized three-dimensional (3-D) modeling capabilities and a 3-D hydrodynamic model of the Hudson River has been developed. However, similar 3-D modeling capability for the fate and transport of the pollutants of interest in CSO evaluations (particularly bacteria) has not yet been developed.

The project team has carefully considered the advantages and disadvantages of incorporating the existing 3-D hydrodynamic model of the Hudson River into the Part B LTCP project scope. We have determined that developing the capability to perform 3-D modeling of in-stream CSO pollutant conditions may be useful to the Albany Pool's CSO



Program at some point, and may be undertaken in the future. However, a 3-D water quality model is a very sophisticated analytical tool and 3-D modeling of the receiving waterbodies requires additional data collection and model calibration effort to produce a reliable 3-D model. As such, the development of a 3-D model may prove to be more complicated and/or expensive at the planning stage and may divert resources away from other aspects of the program that are more important to address at this stage (e.g. collection system monitoring and modeling, etc.).

The Part B project scope will therefore incorporate more appropriate 1-D, or perhaps 2-D, modeling of in stream pollutant conditions. This modeling can draw upon the available 3-D hydrodynamic model for the purpose of model development and verification, without imposing the need to build, calibrate and apply an actual 3-D water quality model. During the Part B project work, the benefits of expanding this modeling capability into a 3-D water quality model can be more fully explored and if it is determined that it would provide sufficiently useful information, an appropriate work plan will be developed.

The water quality sampling plan is designed to collect data that can be used to determine water quality conditions during dry and wet-weather. The sampling data will be analyzed to understand the significance of lateral distributions in water quality associated with CSO, storm water and tributary discharges, if any, along the east and west sides of the Hudson River in relation to the “sensitive areas”. These data will support the assessment of existing receiving water conditions for the Albany Pool LTCP Project that will focus on reliable predictions of coliform loading from the combined sewer systems, with in-stream impact predictions matched to specific LTCP objectives for beneficial use support. Under Part B of the Albany Pool CSO program, loading predictions will be evaluated using a hydrodynamic and time-variable model to fully support the LTCP decision process. This approach is expected to produce reliable results for evaluating the potential changes in water quality attributable to alternative CSO control technologies.

CSO programs across the United States (U.S.) have consistently identified bacteria as causing the most frequent and pronounced impact on receiving waters, and often the impact of greatest importance to the attainment of beneficial uses as designated in state water quality standards. In light of the State’s goal of making the entire length of the



Hudson River swimmable by 2009, which was cited as justification in the July 15, 2004, announcement of the EPF grant, bacteria impacts will be a principal concern to be addressed in the Albany Pool's LTCP. Currently the treatment plants within the Albany Pool do not provide disinfection prior to discharge; therefore, impacts and potential controls – for both wastewater treatment plants (WWTPs) and CSOs – must be addressed. Control of solid and floatable materials contained in CSO discharges, their impact on current waterbody uses and the goal of making the Hudson River swimmable will be carefully evaluated.

Under Part B, the Team proposes to perform the following Scope of Work to assess the existing receiving waterbody conditions:

Subtask B.2.1 - Characterization of Beneficial Uses

The Albany Pool reach of the Hudson River is an important environmental resource that has many beneficial public uses. A preliminary inventory of actual waterbody designated uses and associated water quality criteria was prepared under Part A. This inventory considered primary and secondary contact recreation, aquatic habitats (especially for migratory or endangered species), and sensitive areas pursuant to state and federal CSO regulatory guidance. Existing beneficial uses identified under Part A include recreational boating, water skiing, and catch and release fishing.

A preliminary evaluation of “Sensitive Areas” was performed under Part A. In accordance with the CSO Control Policy, “sensitive areas include Outstanding National Resource Waters, National Marine Sanctuaries, waters with threatened or endangered species or their designated critical habitat, primary contact recreation waters, public drinking water supplies or their designated protection areas, and shellfish beds.” Our current understanding of the areas consistent with EPA’s CSO policy that will be mapped as potentially sensitive include the proposed new beaches at Henry Hudson Park (Town of Bethlehem, Albany County) and the Schodack Island State Park (Town of Schodack, Rensselaer County). In addition, based upon discussions with the NYSDEC, Shad, Herring and Shortnose Sturgeon are active in this reach of the Hudson River and, Empire State Newsprint noted in a recent environmental impact statement that the area near their property in the City of Rensselaer is a spawning ground for shortnose sturgeon.



Additional investigations will be performed under Part B to verify our initial findings including a follow-up with Empire State Newsprint as required. Final determination of these sensitive areas, with others as necessary, will be documented in the LTCP.

Subtask B.2.2 - Evaluation of Existing Receiving Water Condition Information

Available water quality data will be collected and reviewed under Task B. Malcolm Pirnie recently completed a series of water quality sampling events for NYSDEC to assess the suitability of the Hudson River for swimming and other water-based recreational activities. Between late July and mid-October of 2003, a total of 15 water quality sampling events were conducted at 10 locations along the Hudson River from the Federal Dam at Green Island to the south end of Houghtaling Island near New Baltimore. Water quality indicators including total coliform, fecal coliform, total suspended solids (TSS), temperature, pH, conductivity, turbidity, salinity, and dissolved oxygen were measured. In addition to laboratory analyses and field parameters, river flow data, rainfall data, and tide information was collected. The results of the NYSDEC's 2003 water quality sampling program to assess the suitability of the Hudson River for water-based recreational activities from Waterford to Houghtaling Island, indicated that total and fecal coliform counts exceeded the water quality criteria for a Class C waterbody, thereby limiting its use for swimming and other contact recreational uses. The forthcoming sampling data, which includes sampling at the two proposed beach sites will be used to characterize, to the greatest extent possible, how existing conditions compare to the defined objectives.

Under Part A, a request for data from previous water quality studies was submitted to NYSDEC and the NYSDEC has agreed to share the information they have available. Members of the Team will be in touch with the NYSDEC at the appropriate time to schedule this activity. Under Part B and upon receipt of the requested information, the Team will review the available data and assess its applicability to the Albany Pool LTCP Project.

Proposed Transects

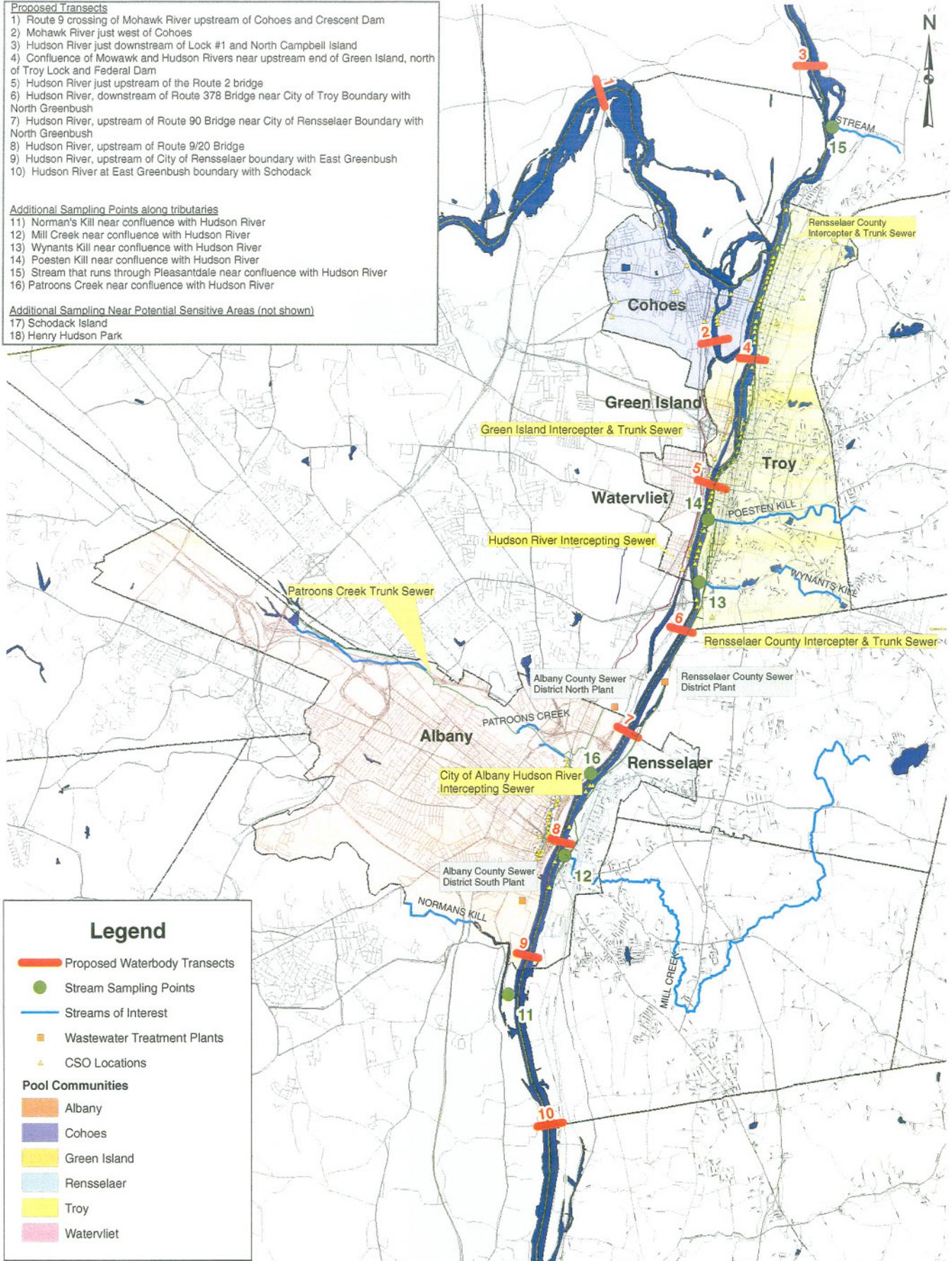
- 1) Route 9 crossing of Mohawk River upstream of Cohoes and Crescent Dam
- 2) Mohawk River just west of Cohoes
- 3) Hudson River just downstream of Lock #1 and North Campbell Island
- 4) Confluence of Mohawk and Hudson Rivers near upstream end of Green Island, north of Troy Lock and Federal Dam
- 5) Hudson River just upstream of the Route 2 bridge
- 6) Hudson River, downstream of Route 378 Bridge near City of Troy Boundary with North Greenbush
- 7) Hudson River, upstream of Route 90 Bridge near City of Rensselaer Boundary with North Greenbush
- 8) Hudson River, upstream of Route 9/20 Bridge
- 9) Hudson River, upstream of City of Rensselaer boundary with East Greenbush
- 10) Hudson River at East Greenbush boundary with Schodack

Additional Sampling Points along tributaries

- 11) Norman's Kill near confluence with Hudson River
- 12) Mill Creek near confluence with Hudson River
- 13) Wynants Kill near confluence with Hudson River
- 14) Poesten Kill near confluence with Hudson River
- 15) Stream that runs through Pleasantdale near confluence with Hudson River
- 16) Patroons Creek near confluence with Hudson River

Additional Sampling Near Potential Sensitive Areas (not shown)

- 17) Schodack Island
- 18) Henry Hudson Park



Legend

- Proposed Waterbody Transects
- Stream Sampling Points
- Streams of Interest
- Wastewater Treatment Plants
- ▲ CSO Locations

Pool Communities

- Albany
- Cohoes
- Green Island
- Rensselaer
- Troy
- Watervliet



**ALBANY CSO POOL
LONG TERM
CONTROL PLAN**

**PROPOSED SAMPLING
LOCATIONS**

MALCOLM PIRNIE, INC.
**FEBRUARY 2007
Figure 1**



Subtask B.2.3 – Receiving Water Monitoring and Sampling

Under Part B, a monitoring and sampling program will be performed to verify and supplement the available receiving water quality data. The plan will consist of dry and wet weather discrete sampling and laboratory analyses of receiving water samples taken at ten transects along the Mohawk and Hudson Rivers, six wastewater treatment plant discharges, six tributaries of these rivers, and two potential new beach sites. Figure 1 provides a map of the proposed locations. Note that an additional river transect has been added on the Mohawk River in the vicinity of Cohoes upstream of the Troy Dam. Grab samples taken at the water surface and near the river bottom will be combined at three laterally-spaced locations along each transect (3 samples per transect) in the Mohawk and Hudson Rivers and single samples will be taken for the tributary streams and potential beach sites during each sampling event and each sampling time step. The wastewater treatment plants that will be included in the sampling plan are the Rensselaer County Sewer District, Albany County Sewer District (both North and South), the East Greenbush WWTP, the Waterford WWTP, and the Watervliet Arsenal. Prior to advancing this work, the Team will evaluate each of the sampling locations and verify accessibility of the sites. The sampling sites will be marked in the field and final locations identified on a map for use in the LTCP Report.

The sampling period will begin in May 2008 and last through September 2008 to cover the river recreational season. The dry weather sampling will be performed five times per month over a three-month period for a total of 15 surveys. For each dry weather event, one analytical sample will be collected at each sampling position for a total of 44 samples per circuit (3 samples at 10 river transects, six tributaries, six treatment plants, and two beach sites). The field measurements that will be performed at each sampling position are: dissolved oxygen, temperature, conductivity and pH. In addition, Secchi depth, which is a measure of water clarity and a NYSDOH criterion for bathing waters, will be measured at the potential beach sites. Laboratory analyses for the samples will be performed for fecal coliform and e-coli.

The wet weather sampling will be performed for up to four storm events during the same period as the dry weather sampling. Ten circuits of sampling will be performed at each of the same locations as the dry weather survey. The goal is to collect samples over a 36- to



48-hour period starting just prior to the commencement of a storm event and finishing after the rain has ended and storm water runoff has subsided. A total of 1760 discrete grab samples (44 samples per circuit x 10 circuits x 4 surveys) will be taken during the receiving water wet weather monitoring period and tested for fecal coliform.

The weather conditions will be tracked throughout the monitoring period to identify the appropriate times to mobilize crews for the wet weather events. Due to the variability of weather patterns, there is the potential for sampling crews to be mobilized and then have to head back due to lack of rain. As a result, we have accounted for four false starts, of a duration of 8 hours each, in our budget.

Consistent with the details stated above, that the communities are prepared to collect data for four wet weather events. However, circumstances permitting (i.e., schedule, quality of data collected, budget, etc.), only three wet weather events may be required if the model(s) can be calibrated and verified consistent with EPA CSO Policy. Receiving water monitoring data will be gathered for four wet weather events if the model(s) cannot be verified with three wet weather events before a specified date in 2008. If a model is not verified and approved by the NYSDEC by that date, monitoring data will be gathered for a fourth wet weather event. The specific date will be set in the subsequent detailed submissions.

A database will be maintained with the field measurements and laboratory testing results for each dry and wet weather sampling event. In addition to laboratory analyses and field parameters, river flow data, meteorological data (rainfall, cloud cover and wind speed and direction), and tide information will also be collected and maintained in the project database.

Subtask B.2.4 – Receiving Water Flow Monitoring

In addition to the receiving water quality parameters discussed in under Subtask B.2.3, the receiving water flow and velocity data is instrumental in quantifying the receiving water characteristics. The water quality impact on the receiving water could be influenced by the operational rules of the upstream hydroelectric plants and other hydraulic control structures. This subtask will include a review of the operations of the upstream



hydroelectric plants and hydraulic control facilities under dry and wet weather conditions. In addition, the Team has preliminarily identified United States Geological Service (USGS) stream gaging stations on the Hudson River above Lock 1 near Waterford (01335754), above Lock 1 at Waterford (01335755), at Green Island (0135800), on the Patroon Creek at Northern Boulevard at Albany (01359133) and on the Mohawk River at Cohoes (01357500). Under this task, the Team will review the available data sets so that real time stream flow data can be ascertained concurrent with the dry and wet weather sampling events performed under Subtask B.2.3. The most promising real time data set is the Green Island site located on right bank at Green Island, just upstream from Troy lock and dam, and 0.5 mi downstream from Mohawk River. This site was active beginning in 1946 and remained so until an inflatable rubber dam was installed on the spillway during August 1991. Since that time, flow data has been estimated based on water-discharge data from gages 01335754 (Waterford) and 01357500 (Cohoes) or recorded only for days when the inflatable rubber dam was considered to have been collapsed.

Preliminary discussions between the City of Albany and the Green Island Power Authority (GIPA) have indicated that (GIPA) would be interested in assisting with the development of accurate stream flow data at this location during the wet and dry weather sampling events. This will be beneficial since this gage is most representative of the flows in the receiving waters of the Albany Pool. We will review the available USGS data and work with GIPA, as necessary, to develop a receiving water flow monitoring program that will provide us with data for calibration of the receiving water model.

Subtask B.2.5 - LTCP Assessment of CSO Impacts on Existing Water Quality Conditions

Upon completion of the dry and wet weather monitoring, the flow monitoring and water quality data will be evaluated to identify CSO and non-CSO impacts to the receiving water bodies. The data will be reviewed for trends during and following wet weather events. Figures and tables will be developed to illustrate the changes in water quality parameters tested during the monitoring period. Dry weather and wet weather baseline conditions will also be summarized for use in preliminarily evaluating water quality in comparison to NYSDEC water quality standards and New York State Department of Health (NYSDOH) criteria for bathing use.



The Team will perform water quality modeling of the Hudson River to simulate bacteria conditions under both existing conditions and under selected planning scenarios. This will be performed using an appropriate model that can account for variations in water quality exhibited by the river sampling data. The selection of the model for the LTCP will be described in a technical memo that explains the rationale as supported by the sampling data.

We find that it is best to be as open as possible with the regulators when developing the modeling approach and building the model to ensure that all the concerned parties trust the results obtained from the model for system characterization and control plan analysis. The Team will engage the regulatory community in developing the LTCP modeling approach to minimize the chance of surprises during the regulatory review process, and to maximize the potential for regulatory acceptance. There will be two meetings with NYSDEC on the receiving water quality modeling: 1) following the model selection, and 2) following the model calibration and verification. The model will first be calibrated to dry weather conditions using dry weather survey data. Two or three of the wet weather surveys will be modeled in the calibration process as model parameters are adjusted within suitable ranges to obtain favorable comparisons between model results and sampling data. The remaining wet-weather survey will be modeled as verification by not adjusting the model parameters further and comparing the model results to the sampling data. The effects of all the CSO discharges will be shown by modeling a hypothetical condition which has no pollutant loading from the CSOs. The effect of the WWTP discharges will also be shown by another model projection. A technical memo on the model calibration and verification will be prepared for review and comment by the communities and NYSDEC. The calibrated and verified model will be used in conjunction with Task B.7 Develop and Evaluate CSO Control Technologies.

Assumptions/In-kind Services by Communities

We have assumed that each of the communities and sewer districts will provide assistance in identifying safe locations for accessing each of the proposed sampling locations. As part of their in-kind services, each of the communities will assist with providing staff and equipment for the sampling crews during dry and wet weather conditions. It must be understood that weather conditions will control the timing and schedule of the water



quality and sampling work. As a result, staffing selections for in-kind contributions must take into consideration the need for flexibility to accommodate quick response times to wet weather events and overtime costs for working in excess of an 8-hour shift, evenings, weekends, or holidays.

The Team will work closely with the Albany Pool communities to review the costs and benefits of the various available tools and approaches; to develop a practical, affordable, and appropriate approach to receiving water condition assessment in support of the LTCP program. The Team will also support CDRPC and the communities in obtaining approval of the recommended approach by NYSDEC and other interested parties.



Task B.3

SECTION

3

Task B.3 – Combined Sewer System Mapping, Database and Digitizing

A standard pre-requisite task for combined sewer system (CSS) modeling is the development of digital system mapping and an associated attribute database. The geographic information system (GIS) layer for the CSS, once completed under Part B, will have significant additional long-term benefits beyond the LTCP project for system operation and maintenance, planning and design support, and asset management.

Based upon our review of available plans and mapping of each community's sewer systems under Part A, we have identified six categories of sewer systems that exist within the project limits. Each of the sewer service areas or subareas were found to fall under the following categories:

1. Typical combined sewer system that is regulated prior to entering the interceptor sewer. Excessive wet weather flow is diverted to a CSO outfall.
2. Separate sanitary sewers connected directly to the interceptor sewer.
3. Unregulated combined sewer connections to the interceptor sewer.
4. Separate sanitary sewer connections to combined trunk or collector sewers.
5. Separate storm sewers or streams connected to a combined trunk sewer.
6. Separate storm sewers or streams connected to a CSO outfall downstream of a regulator.
7. Separate storm sewers that discharge directly to a receiving water body not tributary to the interceptor sewer.



Subtask B.3.1 – Sewer System Data

The Team will continue to review construction and as-built plans supplied by each of the Albany Pool communities under Part A and make requests for additional information as necessitated by our review. Interceptors, pump stations, WWTPs, regulators, outfalls and trunk sewers will be digitized into a GIS. The Team will meet with each community's staff to identify critical data needs, existence of cross connections, drainage/flooding problems, bottlenecks in the system, etc., that may affect how data are used and modeling is developed.

A key element of the mapping task is to verify that all facilities are on the same datum. A level run will be performed to tie each community's sewer system to USGS NAVD88 datum. Four USGS points will also be picked up as part of this survey. The survey will include all manholes along each interceptor sewer and will provide benchmarks in the vicinity of each regulator. Regulator manholes and at least one manhole upstream along the trunk sewer and one manhole downstream along the outfall will also be surveyed. Benchmarks will also be set at the four combined sewer pump stations along the Rensselaer County Interceptor and at the headworks for each of the WWTPs. Survey data will be compiled and entered into the GIS mapping for use in developing the combined sewer system models.

Subtask B.3.2 – Regulator/Diversion Structure Data

Each regulator or diversion chamber will be inspected, photographed, and field surveyed. Field crews will enter each regulator to verify elevations, dimensions and configurations of weirs, orifices, and the chamber. Conditions of the structure will also be noted along with pipe sizes and materials of incoming and exiting sewers. The field data will be collected and entered into the GIS mapping prepared in subtask B.3.1.

Subtask B.3.3 – Special Structure Data

Information will be collected on each of the Rensselaer County Sewer District (RCSD) combined sewage pump stations located along the interceptor sewer, the RCSD WWTP headworks and the Albany County Sewer District (ACSD) North and South WWTP headworks. Field crews will visit each of these facilities to verify as-built and construction plans. Where appropriate, information will be collected on siphons, storage



chambers or other structures that could potentially impact the hydraulics of the CSS. The field data will be entered into the GIS mapping.

Subtask B.3.4 – Combined Sewershed Data

The Team will identify streams, separate storm sewers and other significant contributors of storm water to each community's CSS. Limits of the combined sewersheds will be delineated and mapped based upon the GIS mapping and field data collected in the subtasks above. This mapping, along with available property class codes for each tax parcel will allow the Department and the Albany Pool communities to determine the relative locations of other nondomestic users. In addition, Albany County and Rensselaer County both maintain an electronic data base of all tax parcels and their associated property class codes. The integration of the CSO sewer shed boundaries and the available property class code information would allow the NYSDEC or the communities to, at a later date, map potential nondomestic sewage contributors to each CSO. However, the mapping of selected nondomestic properties will not be included in the revised Plan. The mapping in the revised Plan will be limited to locations of each Significant Industrial User within each CSO sewer shed.

Subtask B.3.5 – Separate Sewershed Data

The Team will delineate the separate sewersheds tributary to interceptor sewers or combined trunk sewers within the municipal boundaries of each of the Albany Pool communities. Separate sewersheds associated with separate sewers from neighboring communities outside of the Albany Pool, which are tributary to the ACSD and RCSD WWTPs will not be delineated under the scope of this project. Boundaries of each separate sewershed within the six communities and their individual characteristics will be entered into the GIS for use in the CSS modeling scope.

Similar to the discussion above, the integration of the separate sewershed boundaries and the available property class code information would allow the NYSDEC or the communities to, at a later date, map potential nondomestic sewage contributors within each separated area.

**Assumptions/In-kind Services by Communities**

During the performance of the field work identified above, we have assumed that each of the Albany Pool communities, the ACSD and the RCSD will provide staff to assist field crews in locating and accessing conveyance and treatment system infrastructure. Each community will also provide traffic control and/or special equipment where necessary to access structures located in roadways or hard to access locations. Staff will also provide assistance in identifying inflow sources such as streams, storm sewers, and contributing sources of sewage and storm water from neighboring communities conveyed to the ACSD and RCSD interceptors by City-owned infrastructure. Each community will also provide staff to review the accuracy of CSS mapping and provide comments prior to performance of the modeling tasks.



Task B.4

SECTION

4

Task B.4 – Combined Sewer System Monitoring

The CSS monitoring program was developed for the purpose of supporting the CSS model calibration process. The key to an efficient and cost-effective CSS monitoring program is targeting the specific model parameters and calibration objectives for which the monitoring data will be collected. Once implemented, the Team has identified a number of potential partners within the local community who may be able to cost-effectively support the execution of this task. The use of radar-based precipitation estimates, together with local gage data, has significantly improved rainfall data accuracy and produced excellent sewer model calibration results in recent studies by the Team in other cities. We have evaluated the feasibility of this technology for the Albany Pool LTCP Project and confirmed that it is both feasible and cost-effective, and we have therefore added a specialty subconsultant to provide radar-rainfall data.

Subtask B.4.1 – Precipitation Data Collection and Analysis

Four tipping bucket rain gages, such as a Hach Sigma Model 2149 or equivalent, will be installed at the WWTPs or other easily accessible public facilities such as fire stations or public works yards. The rain gages will be operated coincident with the detailed flow and level metering program. The gages will be placed atop flat-roofed buildings or similar locations that are level and away from objects that obstruct wind. Data from the rain gages will be downloaded weekly in conjunction with flow meter downloads and maintenance. Data will be digitally recorded at 5 minute intervals at 0.01-inch resolution. Rainfall data from the project gages will be compared with available data for Albany International Airport. If any verifiable bias is observed in the project data, the rain gages will be recalibrated and the data adjusted, if necessary.



The rainfall data will be used as input to the rainfall-runoff model of the Albany Pool sewer systems. The models will be calibrated with this to mimic the observed flow rates in the sewer system based on the measured rainfall.

In addition to rain gages, the Team will integrate the radar-rainfall data available from the KENX radar installation at the National Weather Service (NWS) Albany site into the data collection plan. Our specialty subconsultant (Vieux & Associates of Norman, OK), will provide these radar-rainfall datasets for use in the model calibration. Like the water quality sampling plan, the selection of precipitation data sources will be done in consideration of the stated program objectives, with an eye on long-term cost minimization.

Subtask B.4.2 – Sewer Network Monitoring

Flow meters will be deployed at up to 25 locations for a period of 12 weeks between April/May and June/July. Most flow meters will be located immediately upgradient of CSO regulators to capture the unregulated flow from each principal sewershed. One or more flow meters will be located in or near each WWTP to characterize the total flow captured by the collection system and at least one flow meter will be located in each community. Flow meters will be also installed at the connection points for storm and or sanitary sewer discharges from the tributary communities to establish the boundary conditions for the Albany pool communities system. Area-velocity flow meters such as the American Sigma 910 or 950 series meters will be used with pressure transducers. The flow meters will measure depth and velocity in the sewer. At some locations, it may be practical to deploy an additional probe downgradient of the regulator structure in either the overflow or connector pipe.

The Team will work with the flow metering subcontractor to select appropriate sites for metering. The metering contractor will prepare site descriptions for each installation, detailing the pipe geometry and any sediment or other impediments to flow observed in the area. The metering contractor will be responsible for computing flow rates based on metering data and pipe geometry.



The intent of the metering program will be to capture a minimum of three storms which produce CSOs. The metering program duration may be adjusted to meet this objective. Meters may be moved to alternate locations during the study to better evaluate the City's combined sewer system.

Data will be recorded at 5-minute intervals. Data will be collected and analyzed weekly to ensure proper operation of the metering equipment. Spot measurements will be performed during site visits to verify meter accuracy. The flow metering subcontractor will be responsible for data quality control. Additional quality control will be provided by the Team. Flow metering data will be reviewed by the Team on a bi-weekly basis to ensure proper connectivity and flow balance.

The flow metering data will be used to perform calibration of the collection system model. The volume and frequency of combined sewer overflow will be computed by the model. The metering program's primary goal will be to characterize flows within the collection system and assess the hydraulics of the interceptor sewers. Runoff contributing to the CSS and discharges out of the collection system to CSOs will be computed by the model.

The flow metering contractor will be responsible for identifying specific metering locations in the Team Recommended Areas that can be accessed as needed. Where potential traffic control or construction issues exist, the Team will contact City staff to assist the flow metering subcontractor with accessing the metering sites.

Should there be insufficient rainfall during the metering period, we have provided a budgetary cost to extend the monitoring period an additional 12 weeks. The costs for extending the monitoring period are identified separately in our project budget. The period of additional sewer system metering may be shortened, depending on the weather conditions and the suitability of the data collected from the storm events that occur during the metering period.



Subtask B.4.3 – CSO Outfall Monitoring and Sampling

CSO sampling will be performed to characterize pollutant loads to the receiving waters and establish baseline pollutant contributions to the Mohawk and Hudson Rivers. CSO samples will be collected at up to 18 CSO outfalls within the Albany Pool Project limits using automatic samplers. CSO samples will be collected at the overflow point upstream of the selected CSO outfalls, where possible, or otherwise at a manhole on the overflow pipe. Level-only monitors will be installed at or near sampling points to measure weir-flow depths for flow-estimation purposes, excepting any outfalls that may be monitored using full depth/velocity meters as defined above under Subtask B.4.2. A least one CSO sampler will be located in each community.

Water quality constituents that will be analyzed in a NYS certified laboratory are grouped into two categories:

Primary constituents: fecal coliform, e-coli, TSS

Secondary constituents: BOD5, total phosphorus, ammonia, nitrate

Samples will be analyzed for primary and secondary parameters relevant to each City and Sewer District's SPDES permit and Hudson and Mohawk River water quality. Primary pollutant parameters will include fecal coliform, e-coli, and total suspended solids. Secondary pollutant parameters include biochemical oxygen demand (BOD), total phosphorus, ammonia and nitrate. Field measurements will be performed for dissolved oxygen, pH, temperature, and conductivity. Some parameters will require analysis of composite flows; others will require discrete samples collected during the first flush of CSO and at intervals during the event. Discrete samples will be taken at 15 time intervals for 18 CSOs for three storm events. Composite samples will be collected at each of the 18 CSOs in the first, third and fifth hour of CSO discharge for three storm events.

The CSO sampling team will be mobilized during three to five storms between spring and fall in 2008 in order to collect CSO data from three storms consistent with the events measured within the receiving waters and the six treatment plants. For quality control purposes, duplicate samples will be collected at one monitoring station and one set of field blanks will be analyzed for each monitoring date. Water quality testing will be performed by a certified water quality testing facility according to United States



Environmental Protection Agency (USEPA) procedures. Our budget is based upon a total of samples collected and sent for laboratory analysis.

The Team will work with personnel from each City to arrange adequate access to sewer manholes and provide traffic control where necessary. Opportunities for the City to assist with various sewer system monitoring tasks will also be evaluated to help perform this work as cost-effectively as possible.

Deliverables

The Team will prepare and submit a report describing the selection of design storms. The report will present annual statistics of precipitation totals and number of storm events. The report will also discuss design rainfall depths as analyzed and as reported in the Cornell and National Weather Service rainfall atlases.

Assumptions/In-kind Services by Communities

We have assumed that each of the Albany Pool communities will collect block-test or chalk data from regulators starting in the Spring of 2007 to obtain low-cost, CSO monitoring data. The block testing program will continue concurrently with the flow metering program and extend for two to three months after its conclusion. Blocks should be checked weekly and after each rainstorm. It is recommended that each community continue these activities as long-term programs after the project, since this type of “low-tech” data collection can be performed very cost-effectively and provides very useful information about CSO activation and maximum water surfaces in the CSS.

During the performance of the field work identified above, we have assumed that each of the Albany Pool communities, the ACSD, and the RCSD, will provide staff to assist field crews in locating and accessing conveyance and treatment system infrastructure. Each community will also provide traffic control and/or special equipment where necessary to access structures located in roadways or hard to access locations.



Task B.5

SECTION

5

Task B.5 – Combined Sewer System Modeling

The combined sewer system modeling effort will produce a tool under Part B of the project that can be used to both characterize CSO discharges and to evaluate various CSO control alternatives. Upon implementation of the LTCP, the model can also serve as a reliable simulation tool for the communities and the sewer districts to predict the impacts to hydraulics and pollutant loads that may result from future development, improvements to the sewer system, changes in maintenance and operational procedures, or other future conditions.

Subtask B.5.1 – Model Development

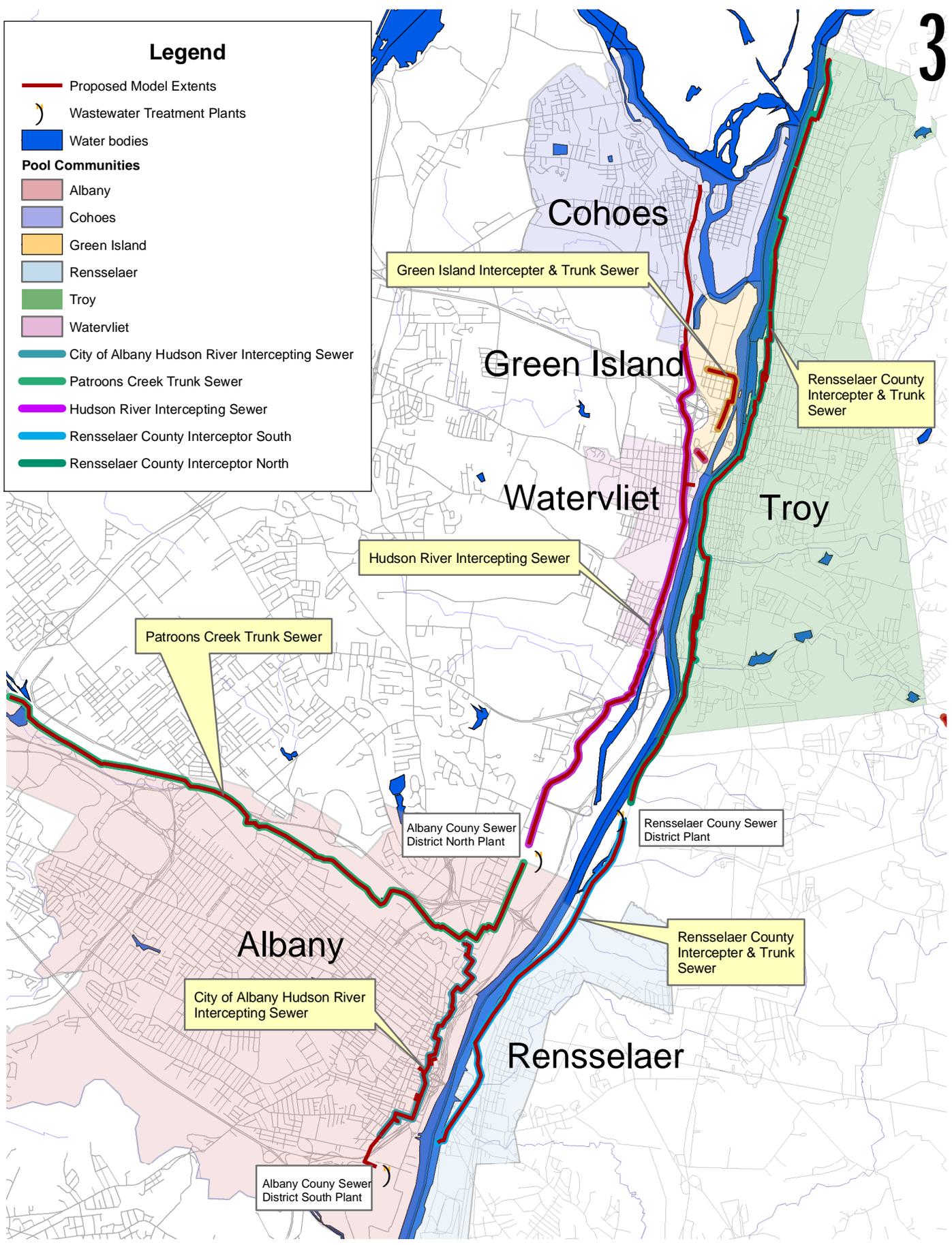
A USEPA Storm Water Management Model (SWMM) engine based model of the collection system will be developed for the sewers tributary to each WWTP to facilitate analysis of CSO statistics and aid system improvement planning. The CSS model(s) will include all known inflows and will utilize the GIS mapping prepared under Task B.3 and consist of all CSOs, all regulators and all RCSD and ACSD interceptor sewers. The limits of the combined sewer system (CSS) model are identified on Figure 2.

Unless the specific conditions merit greater detail, one pipe segment of combined sewer upstream of the regulator will be modeled. The model will simulate flow only, not water quality. SWMM has the capability of simulating water quality, should that capability be needed at a later date. The quality of overflow to the receiving waters will be characterized using concentration data obtained from the monitoring program and flow quantities computed by the model.

For calibration of the metering program data, rainfall data from the project gages will be used. For long-term simulations, precipitation data from Albany International Airport will be used.

Legend

- Proposed Model Extents
-) Wastewater Treatment Plants
- Water bodies
- Pool Communities**
- Albany
- Cohoes
- Green Island
- Rensselaer
- Troy
- Watervliet
- City of Albany Hudson River Intercepting Sewer
- Patroons Creek Trunk Sewer
- Hudson River Intercepting Sewer
- Rensselaer County Interceptor South
- Rensselaer County Interceptor North





Storm water runoff will be modeled using SWMM's runoff block. Where separate sewer systems exist, area-scaling factors will be estimated and applied to each catchment to represent the portion of the surface runoff that enters the combined sewer system.

Sanitary flows will be modeled using diurnally-varied hydrographs for each catchment. Sanitary flows will be interpreted from the flow-metering data, and will be apportioned into individual drainage catchments proportional to their service area or other information such as land use or population. Infiltration into the collection system will be modeled as either a constant inflow or, if seasonally variable, as a varied rate based upon available historical data. Existing flow data will be utilized to the greatest extent possible.

Pipe hydraulics will be simulated using SWMM's dynamic wave solution (referred to as Extran in earlier SWMM versions), which can account for channel storage, backwater, form losses, flow reversal, and pressurized flow. The hydraulics of all principal control structures, including gates, weirs, and pumps, will be directly modeled. The Team understands that there are no significant flow impediments within the collection system such as sediment accumulations, partially collapsed pipes, etc. We will reconfirm this assessment during model development. Each model will terminate at or near the entrance to the WWTP, depending on where a hydraulic boundary condition can be established.

Baseline conditions will be adjusted to represent the selected planning horizon. For example, sanitary flow will be adjusted based on 20-year population projections and other planned changes. The model set-up will consider the potential for capture and detention of storm water for any large contributors to the CSS, such as large impervious surfaces to reduce peak flows. A baseline CSO and percent capture analysis will be performed using SWMM's STATISTICS module.



Subtask B.5.2 – Model Calibration

Calibration is the process of adjusting model parameters so that the results match known values to the greatest extent possible. The model will be calibrated based on the flow metering data obtained during this study and any additional pertinent information. The model will be calibrated for dry weather flow, wet weather flow and a multi-month continuous simulation. The model will also be checked for valid operation during any extreme events that may be observed during the monitoring period. At the outset of the modeling task and after completion of the flow monitoring data QA/QC, the team will work with the Albany pool communities and DEC as appropriate, to develop mutually acceptable calibration guidelines, within generally acceptable industry standards (such as the UK Wastewater Planning Users Group (WAPUG) Code of Practice) and accounting for the quality of the flow monitoring data.

Dry Weather. Two three-day periods of dry weather flow will be analyzed in detail to examine diurnal flow patterns and hydraulic grade lines in the sewer system. The model will be judged against the following calibration parameters:

- Timing of peaks and troughs.
- Peak flow rates.
- Peak velocity.
- Volume.

Wet Weather. The model will be calibrated using data from collected for up to three storms during the metering period with the available reliable flow monitoring data. Flows and depths estimated by the model will be compared to observed values. The following parameters will be used to assess the calibration:

- Timing of the peaks and troughs.
- Peak flow rates at each significant peak.
- Volume of the flow.



- Depth of surcharge.
- Unsurcharged depth at key points such as combined sewer overflows.

Multi-month analysis. The model shall be run continuously for two months to assess its long-term system performance. The selected period should ideally include, but not be limited to, metering conducted specifically for this project. The validity of the model results will be judged against the following criteria:

- CSO activation frequency, duration, and volume as compared with available metering and block testing data.
- Flow volumes at all available flow meters.
- Timing of peaks and troughs during wet weather events and dry weather flow.

Annual. The model shall be run for one year to ensure that the model adequately simulates phenomena such as infiltration that have significant seasonal variation.

- Modeled daily flow volumes shall be compared with available metering data from the WWTP and pump stations to assess representation of seasonal variation in flow.
- Sensitivity of the CSO statistics to snowmelt will be tested with the models. If snow processes are simulated, the simulated snow pack for a period of five years shall be compared with data from Albany International Airport.

Block testing data collected by the communities will be used to check and calibrate the overflow frequency predicted by the model against these data. “Stress-testing” of the model will be performed to ensure that it produces sensible results for storms larger than those occurring during the calibration period.

Subtask B.5.3 – Model Definition of Existing System Performance

The calibrated model will be used to develop CSO statistics for the Albany Pool collection systems. The calibrated model will be adjusted to represent expected baseline conditions, incorporating any system improvements that are already being implemented, as well as any expected near-term changes in wastewater generation.



The model will be run for a five-year period. Statistics will be developed to identify average annual CSO volume, duration, and frequency at each outfall. Additionally, the one-month, three-month, six-month, one-year, two-year, and five-year overflow volumes and peak overflow rates will be computed. The one-month through one-year statistics will be extracted directly from the model output statistics. For example, the one-year peak CSO discharge rate would be the fifth largest simulated discharge rate occurring in the five-year simulation, and the six-month discharge would be the 10th largest discharge rate. The two- and five-year CSO statistics will be computed by fitting the computed peak discharges and volumes to statistical distribution functions to adjust for the limited number of large storms that would be used to characterize the extreme flows. This approach may be preferable to using a single design storm as it inherently accounts for the likelihood that the same storm may not produce both the “n”-year peak discharge and the “n”-year CSO volume.

CSO pollutant loads to the receiving waters will be estimated by multiplying the CSO volumes for the selected return periods and the average annual volume by event mean concentrations computed from the water quality monitoring program data. Opportunities to link CSS and WWTP hydraulic models will be identified for the purposes of optimizing overall system performance during wet weather. The linked models may enable operations staff at the WWTP to understand how plant operations can affect CSO discharges, and also understand how changes in the CSS (e.g., planned increases in wet-weather flow capture for CSO reduction) can affect plant influent flow conditions.

As part of our water quality assessment, we will select one or more actual storms from the Albany NWS station historical record to use in estimating pollutant loadings to the receiving waters. We often recommend using historic events for such analyses, both for the comparative ease of explaining results to general audiences, and for the more realistic predicted overflow volumes as compared with Soil Conservation Service (SCS)-type design storms. We will use the model to assess the performance of the CSS, such as identify capacity-limited portions of the system, and potential storage locations. As the final step in this assessment we will use the estimated pollutant loadings as input to the water quality model and characterize receiving water impacts for the selected event(s).



Included in the preliminary analytical sampling plan (see Task B.4.3) for the CSO is total suspended solids (TSS). Annual suspended solids loadings from each CSO location (including those in the vicinity of the channelized areas of the Hudson and Mohawk rivers) will be estimated based on the model-predicted CSO volumes and event mean TSS concentrations in CSO discharges. This information will be used in conjunction with visual observations of the receiving stream conditions at the CSO outfalls during sampling events to qualitatively evaluate the effects of suspended solids discharges from CSOs to the channelized areas.

Subtask B.5.4 – Meetings with NYSDEC to Support Modeling Approach

The Team will engage the regulatory community in developing the LTCP modeling approach to minimize the chance of surprises during the regulatory review process, and to maximize the potential for regulatory acceptance. Four meetings, of a duration of four hours each, are planned with NYSDEC and other interested regulatory agencies to review the deliverables prepared under this task.

Deliverables

The Team will prepare and submit memoranda to the Community Advisory Panel and NYSDEC at the following stages of the model development:

- Task B.5 Workplan
- Modeling approach and precipitation data selection
- Model development
- Data review and model calibration
- Combined Sewer System Characterization (baseline conditions)

Each memorandum will be discussed with the NYSDEC in order to help the project move forward without controversy. The memoranda will be prepared so that they can be incorporated as sections into the LTCP report.



Assumptions/In-kind Services by Communities

We have assumed that each of the Albany Pool communities will attend two meetings with NYSDEC to review the model development, calibration and execution procedures.



Task B.6

SECTION

6

Task B.6 – WWTP Wet Weather Capacity Study

The Team will combine our understanding of the three local WWTPs serving the Albany Pool CSS, our experience with leading computer simulation and other analysis tools, and knowledge of the regulatory requirements and permit compliance strategies and, working closely with the WWTP operating agencies and their staff, produce a wet-weather WWTP strategy that enables the maximum use of these facilities for CSO control.

Both regulatory requirements (the DEC BMP (Best Management Practices) requirements and federal CSO Policy’s Nine Minimum Controls) and prudent use of existing resources dictate that the existing plant capacity be used to the greatest extent practical to treat wet weather flows and minimize CSO discharges. In order to accomplish this, the Project Team will develop and perform wet weather capacity studies of the three WWTPs which serve the Albany Pool communities – Albany North, Albany South, and Rensselaer WWTPs. The purpose of the studies will be to identify cost-effective alternatives to increase the WWTP’s ability to handle sustained wet weather flows while complying with the effluent limits specified in the plant’s SPDES permits.

Subtask B.6.1 - Existing Capacity Review

The initial activities will include establishing theoretical and demonstrated capacities for each WWTP. Three years worth of Discharge Monitoring Reports and other operating data from each WWTP will be analyzed. The assessment of the existing facilities will begin with a summary of the existing wastewater flows, loads, and permit limits. An evaluation of the existing WWTP processes will then be performed. This evaluation will involve a review of the operating conditions of each major “wet-stream” process against standard design criteria to estimate theoretical capacities. The results of this analysis will



be compared against historical operating data to establish trends in changes of process unit performance under increased flows during wet weather events.

Subtask B.6.2 – Future Flow and Load Projections

The Team will assess past population growth trends and potential planned developments within the sewer areas tributary to the WWTPs to develop reasonable projections of future year population and wastewater flows. Service areas populations and wastewater flows for the five-, 10- and 20-year planning periods will be developed for aiding in the dynamic modeling and potential evaluation of conveying additional flow to the WWTP. For this task, The Team will rely on information provided by the CDRPC and each of the County's planning departments.

Subtask B.6.3 - Dynamic WWTP Process Modeling

The use of computerized simulation models for evaluating WWTPs is becoming more prevalent. For this task, a dynamic model (flow variation) will be developed for each WWTP under various scenarios of current and future flows and loadings. The objective of the model development will be to examine how various wet weather variations in flow and organic loading would affect the treatment processes and effluent quality.

The Team employs both the GPS-X™ model by Hydromantis, Inc., and the BioWin model by EnviroSim Associates, Ltd., two state-of-the-art dynamic models. Both models are modular, multi-purpose computer programs designed specifically for dynamic modeling and simulation of municipal and industrial wastewater treatment facilities. It is recommended that one simulation package be utilized for all of the modeling work, as the Team has found the programs (BioWin, GPS-X, and Plan-it STOAT) can show substantial variation in projected plant performance.

Individual treatment processes are modeled based on a compilation of equations that have been demonstrated to successfully simulate the particular physical/chemical and/or biological treatment process. Each model has numerous process and hydraulic units that are readily modified for any type of WWTP. Most important, the models have the ability to predict how treatment performance changes as influent and ambient conditions change. The approach for the development of each dynamic model is as follows:



- Define objectives
- Assemble available plant information; request additional plant information as needed
- Calibration
- Set up plant configuration in simulator, specifying:
 - Process sizes.
 - Connectivity of unit processes, including recycle stream flow rates.
 - Select process models for each process.
 - Wastewater temperature and influent loads.
 - Influent wastewater fractions (e.g., degradable soluble, inert soluble, degradable particulate Chemical Oxygen Demand).
 - Stoichiometric and kinetic parameters.

At this time, there is no available data on either the influent wastewater fractions or the stoichiometric and kinetic parameters. Therefore, it is assumed that the models will be used for planning level purposes to support the preparation of the LTCP and not design of potential future improvements.

Upon completion of the calibration, five model simulations would be performed including:

- Dry weather flow analysis.
- Wet weather flow analysis.

A sensitivity analysis would finally be conducted for each model simulation. The sensitivity analysis requires adjusting the most sensitive parameters (e.g., dissolved oxygen). As a result of these evaluations, the Team will determine the existing maximum wet weather capacity for the major WWTP wet stream processes.

For the wet weather flow analysis, the dynamic modeling can be used to evaluate the blending of primary effluent with the activated sludge process to determine the following:



- The excess primary treatment that may be available versus the activated sludge system.
- The appropriate proportions for blending primary effluent with the activated sludge system and still achieve all permit limits.
- The determination of the maximum sustained flow and loading that the activated sludge system can manage without exceeding the permit limits whether during or following a wet weather event.

Deliverables for this task include a draft and final technical memorandum to present the process model development and calibration for each WWTP as well as to document the existing WWTP process capacity. Upon receiving comments from the Albany Pool communities, three copies of the final memorandum will be submitted for each WWTP. The evaluation of the WWTP capacity increase alternatives will be summarized in the report described under subtask B.7.6.

Subtask B.6.4 – Survey and WWTP Hydraulic Modeling

The objective of the evaluation will be to determine how much wastewater is able to pass through the various structures and processes without sacrificing flow control or overflowing tanks and chambers.

For each WWTP, record drawings will be reviewed to determine locations of critical water surface elevations, weirs, piping and structures to be surveyed. A licensed surveyor will then perform the work at each of the WWTPs. We have assumed a crew of two people for:

- 16 hours per WWTP to survey critical water surface elevations during dry and wet weather.
- 16 hours per WWTP to survey critical weirs, piping, and structures.

Upon completion of the surveying work, a hydraulic evaluation will be performed to determine the capacity through each of the three WWTPs and identify any deficiencies in the piping, channels, weirs and other hydraulic structures in the plant. The evaluation will utilize hydraulic modeling software capable of accounting for equal flow distribution among process units. The models will be developed based on the plant record drawings and calibrated based on the field data surveyed. The calibrated model will then be



utilized to determine the hydraulic capacity and to evaluate the hydraulics of potential treatment alternatives.

Deliverables for this task include a draft and final technical memorandum for each WWTP to document the model development and calibration results and to document the existing WWTP hydraulic capacity. In addition, the deliverables will report the existing design capacity of each WWTP, as defined in section 11.26 of the *Recommended Standards for Wastewater Facilities*, 2004, as well as peak design flows for the primary and secondary treatment units. Upon receiving comments from the Albany Pool communities, three copies of the final memorandum will be submitted for each WWTP.

Subtask B.6.5 – Wet Weather WWTP Capacity Alternative Brainstorming and Evaluation

In order to capture the institutional knowledge of the WWTP staff we will conduct a brainstorming session with the WWTP management to discuss future evaluation steps, as well as potential alternatives to increase the plant wet weather capacity. The alternatives development will be supported by the dynamic process modeling and hydraulic modeling and will generally consider the following treatment objectives:

- Providing primary treatment and disinfection to all plant influent flows.
- Maximizing secondary system capacity.
- Minimizing secondary system bypasses (SSBs) by providing additional on-site storage or enhanced primary treatment (chemically enhanced primary clarification and high rate treatment processes).
- Alternatives will then be screened based on regulatory, operational, and functional criteria. The final selection of the recommended alternatives will then be made based on the economic evaluations consisting of estimating capital and annual operating costs.

The recommended cost-effective improvements for increasing the WWTP's wet weather capacity will then be documented in the WWTP wet weather capacity report for each WWTP (under task B.6.6) and included in the overall CSO control alternatives for the system-wide evaluations under Task 9.



Additionally, the new NYSDEC Regulations Subpart 750-2 require development of the Flow Management Plan for the facilities which have reached or exceeded 95 percent of their design capacity on an average annual basis. Therefore, maximizing wet weather peak flows at the plant should be balanced with the potential to trigger the WWTP Flow Management Plan requirements under the new NYSDEC regulations. To address this issue, we will use the continuous annual SWMM model simulations to estimate the annual average WWTP flows for three alternatives per WWTP and will then determine the optimal maximum wet weather flows that should be conveyed to the plants. Potential impacts to the solids treatment processes will be discussed if additional flow and load is directed to the WWTP. Additional process and hydraulic modeling may be required as a result of the options generated at the brainstorming session.

Assumptions/In-kind Services by Communities

During the performance of this work identified above, we have assumed that RCSD will provide staff to convert WWTP data prior to November 2005 from hard copy to electronic format and that both ACSD and RCSD will provide additional sampling, analysis and possibly flow metering to support development of the dynamic models.

In addition, we have assumed that each of the Albany Pool communities Planning Departments will provide data related to the future flow projections within the service areas tributary to the WWTPs. Also included under this task is that ACSD and the RCSD will provide staff (two staff per sewer district) to support the Team in the collection of surveyed water surface elevations and to attend a one day wet weather WWTP capacity brainstorming sessions for their respective plant.



Task B.7

SECTION

7

Task B.7 – Develop and Evaluate CSO Control Alternatives

The Team will work closely with the CDRPC and the Community Advisory Panel to develop an LTCP that meets the region’s water quality objectives, applies the best technical solutions, is practical and implementable, comprises publicly acceptable facilities, is affordable to the communities, and achieves regulatory compliance. Keys to satisfying this challenging set of objectives are setting realistic and appropriate CSO control targets, understanding both the universe of viable technical solutions and the local environment into which those solutions must “fit”, finding an affordable means and schedule for program funding of the necessary improvements, and negotiating acceptable conditions with NYSDEC and USEPA.

Subtask B.7.1 – Define CSO Control Objectives

Up to three meetings will be held to review the water quality and CSS monitoring data in conjunction with the receiving water quality requirements in order to identify pollutants of concern for capture and treatment. Sensitive areas and beneficial uses will be reviewed and taken into consideration in establishing the CSO control objectives of the project.

Subtask B.7.2 – Develop Regulatory Compliance Strategy

The Team will develop the CSO control strategy consistent with the USEPA’s national CSO policy and NYSDEC’s water quality regulations. As indicated in the USEPA’s national policy, both the demonstration and the presumption approaches will be evaluated in developing the LTCP compliance strategy for the Albany Pool communities. The policy will initially include the evaluation of relatively low cost minimum technology controls BMPs and the Nine Minimum Controls (NMC)), for effectiveness in meeting established water quality objectives. The LTCP calls for more costly CSO facilities only to the extent required to provide the additional controls needed to meet the water quality



objectives. One of the early tasks will include an assessment of the effectiveness of previously installed BMPs and the potential effectiveness of implementing the NMCs in meeting the Upper Hudson River water quality objectives.

Once NMC effectiveness is fully characterized, the Team will carefully evaluate the various long-term CSO control options in light of the Upper Hudson River objectives and work with the Community Advisory Panel to select the most appropriate approach to ensure that the Albany Pool communities achieve regulatory compliance for CSO control and comply with SPDES permit requirements. The selected approach must recognize that the Albany Pool communities' CSO discharges are but one of many sources of pollutants contributing to beneficial use impacts in the Upper Hudson River, and thus a comprehensive watershed approach to addressing these impacts is necessary to successfully address them.

The following key activities will be included in evaluating CSO controls:

- Evaluate how the two basic long-term CSO control approaches (demonstration versus presumption) can each be applied to the specific objectives for the Upper Hudson River estuary, and the cost/benefit implications of each.
- Evaluate the pollutant sources from both CSO and non-CSO sources for the identified water quality parameters of concern.
- Evaluate the BMP programs currently in place within the Albany Pool region and assess the potential for additional BMP controls to further reduce CSO impacts, potentially off-setting more costly structural CSO controls under the LTCP.
- If a demonstration approach is to be considered, collectively evaluate the water quality impacts on the receiving stream from sources other than CSO (e.g., the combined effects of upstream urban sources, storm water, agricultural runoff, and other point and non-point source pollution). Evaluate the possible elimination of selected CSO outfalls. Characterize potential benefits and develop conceptual cost estimates to separate (elimination of CSOs) versus storage/treatment/removal of extraneous flows (reduction of CSOs).
- Develop final strategy for addressing CSOs. The alternatives under consideration, either alone or in combination, will include all three basic approaches to CSO control: storage, high-rate treatment, and separation. Wet-weather flow management at the WWTP will also be addressed as part of this alternative



evaluation, as the excess capacity of the WWTP facilities (above dry-weather flow) is required to support the storage alternative.

Subtask B.7.3 – Identify and Screen Viable Control Technologies

The Team will identify available technologies and approaches to develop a set of viable options for meeting the Albany Pool goals for the CSO LTCP. We will work closely with the Community Advisory Panel to confirm the application of these technologies within the Albany Pool CSO communities and to get their feedback from the practical operations point of view. The CSS Analysis and Planning Teams will then complete the alternative screening for both the East and West systems (addressing the CSS areas on each side of the Hudson River within the Albany Pool area) and use a subset of alternatives for more detailed evaluations for each system. The viable alternatives will then be used to develop the cost estimates and subsequent “knee-of-the-curve” assessments.

The CSS Analysis and Planning Teams will analyze site-specific conditions, and then develop five control alternatives capable of meeting either the Presumption or Demonstration Approaches defined under EPA’s LTCP requirements. Operation and maintenance of the alternatives will be one of the criteria considered carefully in the analysis.

Five compliance alternatives will be developed that may include one or a combination of the following classifications of controls:

- Minimum technology based controls and innovative, low-cost approaches to achieve initial or localized CSO impact reductions (e.g., the use of real-time controls of selected portions of the sewer system, diversion or retention of storm flows tributary to the CSS, consolidation of outfalls, etc.).
- High-rate CSO treatment facilities (ballasted flocculation, vortex separation, continuous deflective separation or existing swirl concentrator in series with other technology).
- Storage (in-line and off-line), sedimentation basins or overflow retention facilities.



- Increased pumping and treatment capacity at the plant.
- Partial sewer collection system separation.

The Team will evaluate the various five CSO control alternatives using the following criteria:

- **Engineering Feasibility** – Suitability of the site, accessibility, availability of power and other necessary utilities, soil and groundwater conditions and other key factors will be identified and assessed based on their impacts to construction and maintenance of the facilities.
- **Cost-effectiveness** – Ability to achieve the greatest potential benefits at the lowest reasonable cost.
- **Public Acceptance** – Ability to integrate facilities, operations, and their impacts into the community in a way that is acceptable to residential and business property owners, especially those who are in close proximity and may be directly impacted.
- **CSO Control Goals** – Ability to control solids and floatables, capture first flush discharges, meet state and federal requirements, and minimize impacts on water quality.
- **Regulatory Requirements** – Ability to meet both water quality-based and technology-based requirements under Clean Water Act and SPDES permits.

Subtask B.7.4 – Evaluate CSO Control Facility Requirements

Best Management Practices (or BMPs) are not only a regulatory requirement, but they offer a means to maximize the use of the existing wastewater collection and treatment infrastructure in controlling CSO impacts. The Team will assist the Albany Pool communities in reviewing their current BMP programs and assess the potential for increasing or modifying those BMPs to achieve additional CSO impact reductions. We will utilize the CSS models developed under Task B.5 to evaluate the effectiveness of each community's current BMPs and to make recommendations for implementing those BMPs (e.g. regulator adjustment and modifications, etc.), with a careful eye toward reducing CSS flows, improving efficiency of existing operations, and maximizing CSO pollutant capture and elimination.



Upon maximizing the use of BMPs, we will identify locations for implementation of those technologies that were determined to be viable for this project. We will use the CSS model to estimate the size of the CSO control facilities and establish the level of water quality improvements associated with each technology or combination of technologies. We will utilize the model to assess variations of technologies and approaches with the goal of developing two recommended alternatives for further evaluation.

In developing the two recommended alternatives, we will also evaluate non-financial factors such as environmental issues and impacts, technical issues, public acceptance concerns, regulatory requirements, and implementation issues that may affect the selection of the CSO controls and sites. Each of the prospective alternatives will be ranked considering cost/performance and non-financial factors. A summary table will be prepared for presentation and discussion with the CDRPC and the communities to receive their feedback and insight on the ranking and any issues that may potentially impact the CSO abatement approaches or sites under consideration.

Subtask B.7.5 – Develop CSO Control Planning Cost Estimating Guidelines

The Team will develop procedures for preparing planning estimates for the costs of each of the CSO control technologies or approaches identified as viable under Subtask B.7.3 above. Cost data from completed projects of varying sizes will be used to develop cost curves for each of the viable technologies. The cost data will be reviewed and adjusted accordingly, to eliminate special project costs associated with amenities or other features not directly associated with the implementation of the selected technology. Engineering News Record Cost Indices will be utilized to adjust costs to current conditions. Upon selection of the two recommended alternatives, additional details relating to site specific conditions and other factors will be taken into consideration in updating the costs of the recommended plan. Operations and maintenance costs will also be developed to assist in identifying the most cost-effective CSO abatement approach.



Subtask B.7.6 – Assess CSO Control Effectiveness

Planning level cost estimates will be prepared for the two recommended alternatives developed under Subtask B.7.4 above. These alternatives will be further analyzed using the knee-of-the curve approach to optimize each recommendation. The CSS models will be used to refine the facility sizing to receive the best cost-effective solution for the Albany Pool. We will utilize the model to compare the frequency and volume of treated CSO returned to the receiving water versus the cost of constructing the proposed facilities. This analysis will help us identify the least costly alternative that will satisfy the water quality requirements of the Hudson and Mohawk Rivers. We will also evaluate the integrated plan, taking into consideration the CSO abatement plans for each side of the river, confirming their ability to mutually satisfy receiving water quality requirements and pollutant discharge parameters.

Deliverables

The Team will prepare and submit a letter report supporting and summarizing the evaluations performed to identify the recommended plan. A draft will be released to the CDRPC and Albany Pool communities for review and comment, prior to finalizing the document.

Assumptions/In-kind Services by Communities

We have assumed that each of the Albany Pool communities will attend meetings to review the Regulatory compliance Strategy, assist with the evaluation of existing BMPs, review the draft letter report outlining the recommended plan and attend a meeting to provide comments on the report.



Task B.8

SECTION

8

Task B.8 – Funding, Financial Impact and Affordability Evaluation

Financing CSO controls fairly and without placing an excessive burden on the citizens and industries presents one of the greatest challenges facing CSO communities throughout the United States. In many communities, including those of the Albany Pool, the requirements contained in the LTCP can represent the single most costly public works project ever undertaken or likely to be undertaken by the current generation. While the USEPA has provided communities with grants for wastewater projects in the past, no dedicated grant program for CSO controls currently exists.

Subtask B.8.1 – Identify Available Funding Sources

The Team has worked very successfully with many municipalities across the country and in New York State in recent years to secure grant funding assistance under a variety of different state and federal programs for CSO related projects. We fully recognize the Albany Pool's economic position and understand that the proposed CSO LTCP program will not be able to move forward without securing substantial funding assistance from federal and state sources. As part of this task, we will assist each of the communities in identifying and applying for available state and federal funding for this project.

Subtask B.8.2 – Determine Financial Impacts and Program Affordability

The implementation and scheduling of CSO-related projects is directly related to a community's ability to reasonably afford proposed CSO control projects. As established in USEPA's draft CSO financial capability guidebook, the Team will perform a two-phase process to assess financial capability and affordability.

**Phase I Analysis**

The Team will assess the incremental impacts of the recommended CSO abatement program based on the implementation priority developed by the technical/engineering staff. It will also incorporate the estimated capital and operating costs associated with the projects comprising the recommended program. The purpose of this evaluation is to determine whether the total rate (base plus CSO increment) exceeds financial capability thresholds for the residents of the Albany Pool CSO communities. If the total rate is near or below one percent of median household income, the analysis is typically considered complete. However, we anticipate that a Phase II analysis will be required given the financial and economic difficulties facing the Albany Pool communities.

Phase II Analysis

If a Phase II analysis is necessary, we propose to assess the Albany Pool's financial capability to undertake the recommended abatement program following USEPA's guidance as well as incorporate other relevant information. The purpose of this evaluation is two-fold: to identify how the long-term economic trend may affect the communities' ability to proceed and to assess whether the communities will have the financial capacity to borrow the required capital. If a community is experiencing economic difficulties, indicated by falling employment, declining water rates, etc., current economic indicators are not likely to be accurate barometers of its future ability to afford a project. In examining future affordability it will be necessary to adjust for this. In a similar vein, if a community has a very low bond rating presently or a falling rating, it may be unlikely to borrow the amounts necessary to construct the facility. The factors that will be examined include:

- Personal income
- Employment
- Demographic mix
- Bond rating
- Total community debt
- Projected community debt

In general, if the communities projected long-term sewer use rates result in a household bill exceeding one percent of median household income and there are indications of financial and economic stress, the community may seek an extended schedule to



accommodate its situation. The key to this process is determining what the long-term rates will be taking into account the need to maintain, renovate, and upgrade the existing sanitary sewer treatment and collection system, as well as the full-cost of the CSO abatement program.

In this analysis the Team will complete an affordability analysis consistent with the USEPA's guidance that estimates the impact on households and businesses and develops an appropriate implementation schedule.

Sewer Rate Model Development

To determine the impact of the proposed CSO abatement program on retail customers served by the Albany Pool CSS facilities, we will develop a Community Sewer Rate/Cost Allocation Forecasting Model which will forecast sewer revenue requirements and rates at the retail level for a period of 20 to 30 years. The model will be structured to facilitate evaluation of the impact of the proposed abatement program under a variety of economic assumptions and cost allocation scenarios. The model will be developed as a spreadsheet model and will follow standard industry cost of service procedures.

The USEPA affordability process requires assessing the impact of the proposed program on retail customers; therefore, it is necessary to model the impacts at that level. The model will incorporate and project information on sewer cost structure from affected retail and wholesale customers, including current operating costs, current debt service, pay-out of current debt service, anticipated capital improvements in addition to CSO improvements, repair and replacement needs, customer profiles, and sales. The model will also incorporate information on median household income and projected growth in median household income. To ensure that the level of future sewer rates are not underestimated, it will be necessary to develop allowances for capital improvements and facility repair and replacement that extend beyond the capital planning period of the communities.

The Team will prepare an implementation schedule that takes into account the communities' ability to afford the projects. This schedule will generally follow the priority laid out in the facility plan, but will seek to balance project borrowing schedules



and associated costs with the Albany Pool's anticipated financial and technical capacity. This implementation schedule will also take into account any extenuating financial and economic circumstances identified in the previous task.

The Team will hold one meeting with each of the communities to review our findings and discuss our recommendations for the implementation schedule. A meeting will also be held with NYSDEC to present our findings prior to issuing the final report.

Deliverables

The Team will prepare and submit a letter report outlining our findings and identifying the recommended schedules for implementing the LTCP based upon the financial needs and limitations established in the Affordability Evaluation.

Assumptions/In-kind Services by Communities

We have assumed that each of the Albany Pool communities and the sewer districts will provide sewer rate data and information on future projects and maintenance needs of their system, as requested for use in this analysis.



Task B.9

SECTION

9

Task B.9 – Implementation Schedule

Subtask B.9.1 – Develop Sequence and Phasing of CSO Facilities

Upon establishing the recommended plan, the Team will develop a preliminary sequencing and phasing plan based upon technical requirements of the project. The plan will provide estimated durations for the continued planning, design, and construction of each of the CSO abatement facilities and associated projects that make up the recommended plan. The plan will take into consideration any needs to upgrade infrastructure to accommodate the proposed facilities and will coordinate the timing of projects to coincide with other major infrastructure projects proposed for the region, as identified by the communities and sewer districts. The sequencing and phasing plan will establish the basis for the implementation schedule, which will be refined based upon the financial impact and affordability evaluations.

Subtask B.9.2 - Define Facility Planning and Design Requirements

The Team will identify any additional planning or preliminary design requirements necessary to support the recommendations provided in the LTCP. Upon completion of the water quality and CSS monitoring and modeling efforts, we will identify any further efforts that we believe are necessary to document existing baseline conditions or support our recommendations. These additional tasks may include performance of 3-D modeling to further substantiate the water quality monitoring and CSS modeling efforts. Planning evaluations of proposed treatment sites or sewer routes may also be recommended for environmental or structural limitations that might impact the financial viability of constructing a facility at the proposed location. The Team will prepare a letter report with its recommendations for additional evaluations and a meeting will be held with the communities and sewer districts to present the recommendations and receive feedback. Those planning and design requirements supported by the communities will be included in the sequence and phasing plan and ultimately in the implementation schedule.



Subtask B.9.3 – Define Post-Construction Monitoring Requirements

The Team will identify and recommend post-construction monitoring requirements that we believe are suitable for supporting the performance of the recommended LTCP. A monitoring plan will be developed to establish the monitoring requirements for submission to NYSDEC. The plan will provide recommendations for the monitoring and documentation requirements for each of the proposed facilities. The plan will also identify the parties responsible for performing the monitoring program, documenting the results, maintaining performance records, and preparing submissions to NYSDEC upon activation of the facilities. A meeting will be held with each of the communities to discuss our recommendations and prepare a letter report to NYSDEC outlining the proposed post-construction monitoring plan.

Subtask B.9.4 – Finalize Implementation Schedule

The Team will prepare a final recommended LTCP implementation schedule for submission to CDRPC, the communities, sewer districts, and ultimately to NYSDEC for review and approval.

Deliverables

The Team will prepare and submit a letter report for submission to CDRPC, the communities and sewer districts outlining implementation schedule for the facilities recommended in the LTCP. The report will also include our recommendations for any additional planning and design tasks to be performed to support the LTCP. A separate letter report will be prepared identifying the responsibilities for post-construction monitoring.

Assumptions/In-kind Services by Communities

We have assumed that each of the Albany Pool communities will provide us with planning information for private and public projects proposed in the vicinity of each of the CSO abatement facilities recommended in the LTCP to allow us to consider the necessary coordination efforts and potential impacts to the implementation schedule.



Task B.10

SECTION

10

Task B.10 – Prepare Draft and Final LTCP Reports

The Team will develop the draft and final CSO LTCP, a comprehensive document, by compiling the information generated from the results/conclusions of the various project tasks described above. The recommended plan will address the following:

- Environmental benefits.
- Cost-effectiveness.
- Affordability.
- Constructability and operability.
- The recommended plan will include an implementation schedule, which will be determined based on the following:
 - Relative magnitude of adverse impacts on water quality standards and designated uses.
 - Financial capability.
 - Relative cost/performance of the individual projects.
 - Priorities developed through public participation.
 - Previous efforts to control CSOs.

Sufficient time in the implementation schedule to conduct more detailed facilities planning and design activities, construct the projects in an orderly manner, accurately assess the effectiveness of each project, and ease the financial burden on the rate payers.

Subtask B.10.1 – Prepare Draft Report

A draft copy of the LTCP will be prepared and distributed to the CDRPC and each of the member communities for their review and comments. Upon receipt of comments, the Team will schedule a meeting to discuss any proposed revisions prior to editing and finalizing the draft report. Following the meeting, we will finalize the draft LTCP and



distribute the document to the CDRPC, each community, NYSDEC, and to libraries and other select public offices or agencies to provide the public with access to the documents during the review and comment periods.

A public hearing will be scheduled and conducted to receive comments from the public on the final draft of the Albany Pool LTCP. Representatives of the Team will attend the public meeting and present the recommendations outlined in the LTCP.

Subtask B.10.2 – Prepare Final Report

At the conclusion of the public comment period, the Team will assist CDRPC in preparing responses to comments received from the public and NYSDEC. As we plan to maintain coordination and receive comments from NYSDEC throughout the project, it is anticipated that edits required to finalize the report will be limited and have been budgeted accordingly. Should the level of effort appear to exceed our proposed budget, we will advise the CDRPC accordingly.

Representatives from the Team will attend one meeting with the CDRPC and each of the communities to summarize how comments will be addressed. Upon making the agreed revisions, we will submit the Final CSO LTCP on behalf of the CDRPC and the Albany Pool communities to NYSDEC for their approval.

Deliverables

We will prepare and distribute copies of the report to the CDRPC, each community, RCSD, ACSD, NYCDEC and each of the consulting firms on the Team. The following number of copies of the Draft, Final Draft and Final LTCP reports will be distributed:

- Draft LTCP Reports – 20 copies
- Final Draft LTCP Report – 40 copies
- Final LTCP Report – 40 copies

Assumptions/In-kind Services by Communities

We have assumed that each of the Albany Pool communities will assist with distribution and provide sources for public access to review the Final Draft of the LTCP during the document review and comment periods.



Part B Project Schedule

SECTION

11

Project Schedule

Figure 3 illustrates an updated project schedule for performance of each of the tasks described herein. The Scope of Work presented in this document essentially make up the Combined Sewer System Characterization, Monitoring and Modeling Plan (CSSCMMP) referenced in each community's SPDES Permit. The CSSCMMP must be approved by NYSDEC prior to proceeding. The project schedule assumes that the CSSCMMP will be approved by NYSDEC, and the project scope and budget will be finalized with contracts executed for performance of the work by April 1, 2007.

The updated schedule includes submittal dates for more detailed plans for Tasks B.2 (Receiving Waters Condition Assessment), Task B.4 (Combined Sewer System Monitoring) and Task B.5 (Combined Sewer System Modeling). In an effort to maintain the aggressive project schedule proposed, the schedule indicates that these Task Plans will be submitted for NYSDEC review at least 60 days prior to their implementation. The schedule further indicates a 30 day NYSDEC review period. Conformance with this review period will allow a window of opportunity to address the specific comments received and coordinate the changes within the project team. These additional, more detailed, Plans will address the list of NYSDEC questions that were attached to the December 20, 2006, correspondence (see Appendix B for referenced correspondence). No plans will be implemented without NYSDEC approval.

Consistent with our draft project schedule, and in order to facilitate more cost effective receiving waters, CSO and CSS monitoring programs, detailed planning for these activities will begin in the spring of 2007 following the CSS Mapping and Digitizing and following the initial development of the CSS models. Actual sampling and flow monitoring is scheduled for the spring of 2008. This progression will allow for the development of more streamlined and focused sampling activities and minimize the



associated equipment, analytical and labor costs. Completion of the remainder of the project elements on schedule requires that the CSS monitoring, CSO sampling, and wet weather receiving water sampling are completed by July 1, 2008. Based on the historical precipitation data for the Albany pool area, we have assumed that four satisfactory wet weather events will be captured by that time. Should unfavorable weather conditions or other unforeseen events prevent us from capturing satisfactory wet weather data, we will promptly advise NYSDEC on necessary schedule changes.

Although the updated schedule outlines specific activities to be performed during the calendar years 2007, 2008, and 2009, CSO LTCP programs for large CSO systems, like that of the Albany Pool, are long-term programs that should be developed and implemented incrementally, with each phase building on the information developed previously. As such we have included three Project Stops within the schedule at specific milestones. At these junctures, the remaining scope activities will be reexamined based on findings of the preceding activities and the cost (and schedule) of the program relative to initial project estimates.



Work Not Included in the Scope

SECTION
12

Work Not Included in the Scope

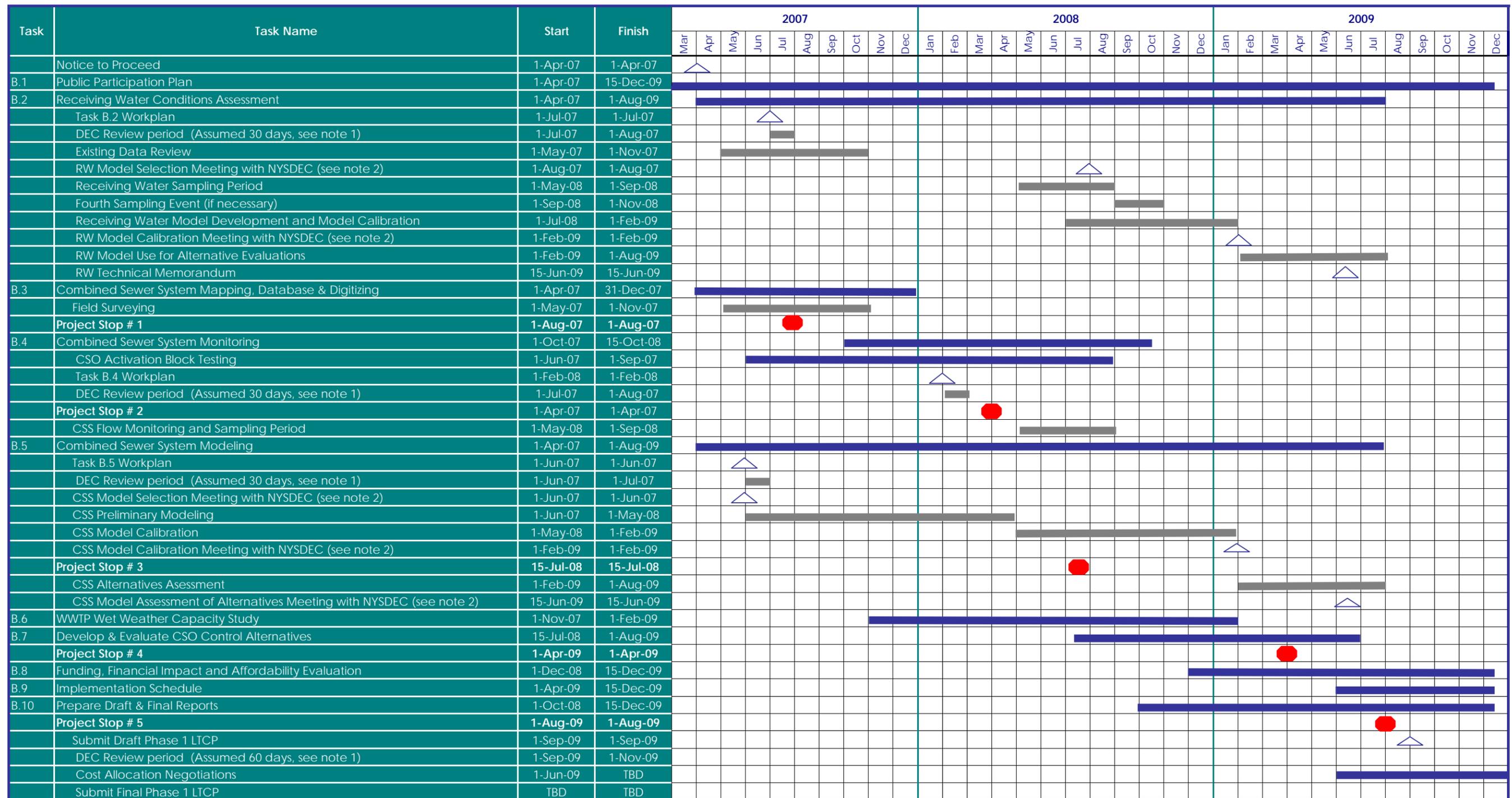
For the purposes of clarifying the project scope, we have identified the following work that is not included in the project scope:

- At this time, we do not believe that a 3-D Water Quality Model for the Hudson River is necessary for support of the LTCP. During performance of the monitoring and modeling efforts, should the data and findings indicate a need to consider additional support, we will notify the CDRPC, communities, and the NYSDEC accordingly.
- The project scope is limited to providing recommendations for additional planning and/or preliminary design that may be necessary to support the LTCP. No design services have been included.
- The scope makes certain assumptions relating to the provision of in-kind services to be provided by each of the Albany Pool communities and the sewer districts. Should conditions change such that a community is no longer able to provide the services outlined herein, we will assist the CDRPC in identifying alternative means of performing those services and the associated costs. For example, the budget does not take into consideration the source and associated costs for use of boats to access sampling locations. The cost will be developed based upon feedback from the communities on the availability of municipally owned watercraft.
- The Scope of Work is limited to investigations within the collection systems for the six Albany Pool communities only. These include the City of Albany, the City of Troy, the City of Rensselaer, the City of Cohoes, the City of Watervliet, and the Village of Green Island. No services have been included to investigate the detailed characteristics of other municipal flows tributary to the interceptor sewer or tributary to any of the communities identified above.



- The Scope of Work for each task described herein is subject to change pending completion of previous tasks. Should issues be identified that could effect the cost to perform the services or impact the schedule we will notify the CDRPC, communities, and the NYSDEC accordingly.

Capital District Regional Planning Commission CSO LTCP - Albany Pool Communities



Legend:

- Major Activity
- ▲ Milestones
- Project Stops
- Subtask

Figure 3: Project Schedule

Note 1: Schedule subject to change if review comments are not received within anticipated timeframe or if comments require significant modification to project plan
 Note 2: All NYSDEC meeting dates are subject to change depending on project progress and availability of key staff.

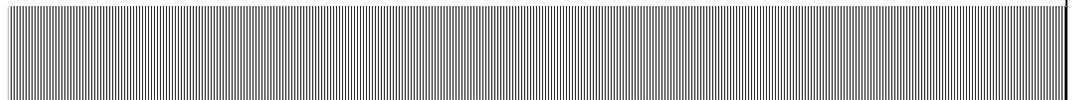


Capital District Regional Planning Commission

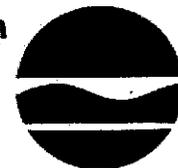
APPENDIX

A

Public Participation Plan



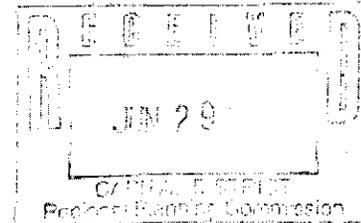
New York State Department of Environmental Conservation
Office of Environmental Quality, Region 4
1150 North Westcott Road, Schenectady, New York 12306-2014
Phone: (518) 357-2045 • FAX: (518) 357-2398
Website: www.dec.state.ny.us



Denise M. Sheehan
Commissioner

June 26, 2006

Mr. Leif Engstrom
Capital District Regional Planning Commission
One Park Place
Suite 102
Albany, NY 12205



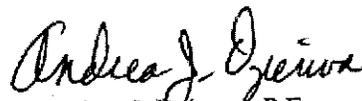
Re: Approval of Public Participation Plan,
Albany Pool CSO Long Term Control
Plan

Dear Mr. Engstrom:

The Department has reviewed the revised Public Participation Plan for the Albany Pool CSO project dated June 16, 2006. This document addresses the comments presented in our May 11, 2006 letter and approval is hereby granted.

Should you have any questions, please contact me at 357-2377.

Sincerely,


Andrea J. Dzierwa, P.E.
Environmental Engineer II
Region 4

AJD/vaa-pppapproval6-06

cc: Cheryle Weber—NYSDEC, Albany
Alan Fuchs—NYSDEC, Albany
Neil Bonesteel—City of Troy
Sean Ward—Village of Green Island
Mayor John McDonald—City of Cohoes
Marybeth Pettit—City of Rensselaer
William Simcoe—City of Albany
Nick Ostapkovich—City of Watervliet

Public Participation Plan for the Albany Pool Combined Sewer Overflow Long Term Control Plan

**Albany Water Board, City of Cohoes, Village of
Green Island, City of Rensselaer, City of Troy,
City of Watervliet**



**Capital District Regional Planning Commission
One Park Place, Suite 102, Albany, New York 12205
Phone # 518 / 453-0850 Fax # 518 / 453-0856
Web Site: <http://cdrpc.org> E-Mail: cdrpc@cdrpc.org**

Public Participation Plan

Program Objectives:

- Provide the Albany Pool municipal officials with public input on CSOs.
- Establish early communication with the public; including key stakeholders and interested organizations.
- Encourage dialogue between NYSDEC and the general public.
- Solicit concerns from the public, stakeholders, and interested parties during the development of the LTCP.
- Make the technical aspects of the project clear.
- Build awareness of the issues associated with CSOs and involve the public throughout the process.

Target Public:

- The Albany Pool communities' ratepayers/taxpayers and residents.
- The elected and appointed leadership of each Albany Pool community.
- The leadership, ratepayers and residents of communities contributing flows to the Albany Pool CSS.
- Riverfront business operators.
- Environmental groups and recreational users associated with the Hudson River.

Committees:

- Technical Committee (TC): The TC is responsible for steering the direction of the development of the LTCP; and will make recommendations to legislature and chief officials for adoption.
 - Composed of six (6) members, one (1) appointed by each municipality/water board party to the CSO LTCP contract with CDRPC. The initial appointees are as follows and may be changed at will by each municipality/water board:
 - William Simcoe (Albany Water Board)
 - Mayor John McDonald (City of Cohoes)
 - Sean Ward (Village of Green Island)
 - Marybeth Pettit (City of Rensselaer)
 - Neil Bonesteel (City of Troy)
 - Nicholas Ostapkovich (City of Watervliet)
 - Ad-Hoc members include one (1) advisory member appointed by each sewer district along with representative(s) of the DEC. The current Ad-Hoc members are:
 - Cheryle Webber (DEC Central Office)
 - Andrea Dzierwa (DEC Region 4)
 - Gerald Moscinski (Rensselaer County Sewer District)
 - Rich Lyons (Albany County Sewer District)
 - Technical committee will meet as needed to make timely decisions and ensure steady progress towards the completion of the LTCP.
 - In addition, representatives from the local municipalities/water board may meet independently.

- Citizen Advisory Committee (CAC): The purpose of the CAC is to advise the TC regarding issues important to the public and assist with the public outreach process.
 - Entities represented may include citizens of the Albany Pool Communities, representatives of Hudson River recreational and environmental organizations, State and County agencies, and adjoining municipalities.
 - At the request of the TC, the Citizen Advisory Committee will meet at selected times during the course of the development of the LTCP.
 - Each of the Albany Pool communities will designate organization(s) and/or resident(s) to represent the Albany Pool citizens. The following outside organizations and municipalities will be asked for their interest in being represented on the CAC:
 - Institute of Ecosystem Studies
 - Hudson River Sloop Clearwater
 - The Nature Conservancy
 - Riverkeeper, Inc.
 - Scenic Hudson, Inc.
 - Albany Rowing Center
 - NY B.A.S.S. Chapter Federation
 - Trout Unlimited
 - Albany County Water Quality Coordinating Committee
 - Rensselaer County Water Quality Coordinating Committee
 - Town of Bethlehem
 - Town of Brunswick
 - Village of Castleton-on-Hudson
 - Town of Coeymans
 - Town of Colonie
 - Town of East Greenbush
 - Town of Guilderland
 - Village of Menands
 - Town of North Greenbush
 - Town of Poestenkill
 - Village of Ravena
 - Town of Sand Lake
 - Town of Schaghticoke
 - Town of Schodack
 - Village of Waterford

Meeting Forums:

General Public Meetings/Hearings:

- General public meetings/hearings will focus on the mitigation of CSOs and the development of the LTCP.
- CDRPC will facilitate the public participation process.
- Meetings will be held in four rounds as outlined on the next page.
- Up to two public meetings in each county per round are envisioned.
- Meetings will be held on separate nights to allow the presentations to be made by the most appropriate staff and consultants.

- The meetings will be held in Municipal facilities, university/college facilities, community church facilities, or other community facilities deemed appropriate.
- The public will be notified of the meetings by notification through the CAC, press releases to the local newspapers, radio, and TV stations, and through advertisements taken out in newspapers.

Municipal Leadership Meetings:

- Present the project to municipal elected officials and the Albany Water Board as required to elicit their input and for action by each community to accept the LTCP for submission to NYSDEC.
 - Provide status reports, answer questions, and address specific issues and concerns.

Proposed Public and Municipal Leadership Meeting/Hearing Topics:

Round 1 Meetings - This round is scheduled for December of 2006 or January of 2007. The anticipated location and date information for Round 1 will be included in the LTCP Scope of Work that will be submitted to DEC this summer (2006). The Round 1 meeting staff will also be designated in the Scope of Work.

- Provide an overview of CSOs, the regulatory requirements, and the LTCP development process.
- Explanation of the Scope of Work, with emphasis on the following:
 - Scope of monitoring and assessment programs for system characterization
 - Watershed approach to CSO control planning
 - Identification of watersheds in the CSO area
 - Identification and quantification of point and non-point source
- Provide an overview of the Public Participation Process.

Round 2 Meetings - Upon completion of the CSS Characterization.

- Provide an overview of the CSS characterization findings, including the following:
 - Water quality of the Hudson River upstream of the Albany Pool
 - Quantification of CSO flows and loads, and impacts of the CSOs on the receiving waters
 - Quantification of point sources of pollution - flows and loads
 - Water quality of natural watercourses within the Albany Pool – flow and loads
 - Water quality of the Hudson River downstream of the Albany Pool
 - Results of CSS and receiving waters monitoring programs
 - Development and calibration of the CSS and receiving waters model.
 - Explain the next steps in the LTCP development process.

Round 3 Meetings/Hearings - During the Evaluation of Mitigation Alternatives.

- Review key decision-making factors, such as the following:
 - Water quality goals
 - CSO control goals
 - Types of control alternatives available
 - The process of evaluating and comparing various alternatives
- Discuss the financial impacts on the communities.

- Explain and compare alternatives, including the impacts and consequences.

Round 4 Meetings/Hearings - Upon completion of the Draft LTCP.

- Present the proposed LTCP.
- Present summary of the CSO evaluation process.
- Present the financial impacts associated with the LTCP.
- Provide an implementation schedule.

Distribution of Educational Materials and Program Information to the Public:

- **Website Outline:** The purpose of the website is to serve as a tool for the distribution of program related materials. The site will be linked to the CDRPC Water Quality webpage. Potential uses of the website are as follows:
 - Provide educational materials and links regarding CSOs, and the LTCP process.
 - Provide an email address for additional public comment in conjunction with the public meetings/hearings.
 - Contain the official documents delivered to DEC.
 - Provide public presentation materials.
- Distribution of informational materials through mailings.
- Potential utilization of Public Surveys
- On behalf of the Technical Committee, CDRPC will coordinate matters involving the press.

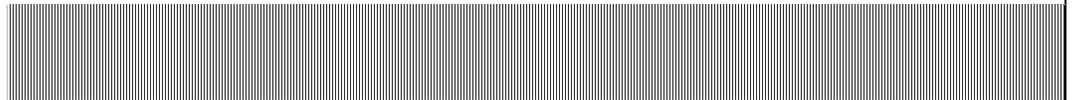


Capital District Regional Planning Commission

APPENDIX

B

Correspondence with NYSDEC



Final signed letter

New York State Department of Environmental Conservation

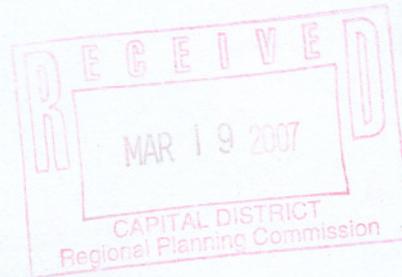
Division of Water

Bureau of Water Permits, 4th Floor

625 Broadway, Albany, New York 12233-3505

Phone: (518) 402-8111 • FAX: (518) 402-9029

Website: www.dec.state.ny.us



VIA E-MAIL AND REGULAR MAIL

March 16, 2007

Rocco Ferraro
Executive Director
Capital District Regional Planning Commission
Park Place
Albany, New York 12205

Re: Albany Pool Combined Sewer Overflow Long-Term Control Plan Development;
Scope of Work/Characterization, Monitoring and Modeling Plan for the Cities of Albany,
Rensselaer, Troy, Watervliet, and Cohoes, and the Village of Green Island. SPDES numbers:
NY0025747, NY0026026, NY0099309, NY0030899, NY0031046, and NY0033031, respectively.

Dear Mr. Ferraro;

The Department has reviewed the *Scope of Work and Combined Sewer System Monitoring and Modeling Plan*, February 2007 (Scope and Plan) and the revised pages transmitted by letter dated March 12, 2007 that were submitted in response to Department comments - dated December 20, 2006 as well as informal comments made by phone and e-mail.

The Scope and Plan were submitted to satisfy the Task 2, Part A requirement of the water quality improvement project for, "a scope of work, budget and schedule for the development of the CSO LTCP (Part B)" as well as a requirement of the above State Pollutant Discharge Elimination System (SPDES) permits to submit a combined sewer overflow (CSO) Characterization, Monitoring and Modeling Plan (CMMP) in accordance with the SPDES permits long-term control plan (LTCP) requirements, Section II.C.

The Scope and Plan does not contain the detailed information regarding the specific elements of the monitoring and modeling plan, as required in Section II.C. of the LTCP requirements in the SPDES permits. The Scope and Plan notes that these elements will be submitted to the Department for review and approval in future detailed reports, before implementation of the pertinent aspects of the CMMP, and provides a schedule for those submissions. The detailed reports shall provide answers to the questions submitted in the enclosure to the Department's December 20, 2006 comment letter.

The Scope and Plan is hereby approved contingent upon receipt of the approvable detailed reports.

The submission of the detailed reports continues to be a part of the SPDES permit requirement to submit an approvable CSO Characterization and Monitoring Plan and is, therefore, an enforceable permit requirement.

The detailed reports and submittal dates are noted below:

<u>Title in Scope and Plan</u>	<u>SPDES permit requirement</u>	<u>Due Date</u>
Task B.2 Workplan Receiving Water Conditions Assessment	Receiving Water Conditions Assessment; Section I.B. of CSO LTCP requirements	July 1, 2007
Task B.4 Workplan	Combined Sewer System Monitoring; Section I.B. of CSO LTCP requirements	February 1, 2008
Task B.5 Workplan	Combined Sewer System Modeling; Section I.B. of CSO LTCP requirements	June 1, 2007

The Department looks forward to working with you and the Albany Pool communities and consultants during the long-term control plan process. As always, please feel free to call me, at (518) 402-8115, or Andrea Dzierwa, at (518) 357-2377, if you have any questions or concerns.

Sincerely,

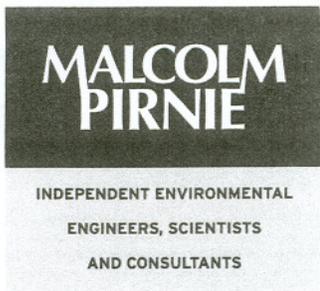


Cheryle Webber, P.E.
Environmental Engineer 2

cc:

William Simcoe, P.E., Albany
Sean Ward, Green Island
Mayor John McDonald, III, Cohoes
Mary Beth Petitt, Rensselaer
Neil Bonesteel, P.E., Troy
Nick Ostopkavich, Watervliet
Leif Engstrom, CDRPC
Jim Olander, EPA

Andrea Dzierwa
BWCP
Alan Fuchs
Fred Sievers
Shayne Mitchell
Phil O'Brien
Chandler Rowell
Derek Thorsland
Chuck St. Lucia



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March 12, 2007

Andrea J. Dzierwa, P.E.
New York State Department of Environmental Conservation
Region IV
1150 North Westcott Road
Schenectady, NY12306

Re: Final Resolution of Issues
Scope of Work and Combined Sewer System Monitoring and Modeling Plan
SPDES Permit No. NY-002 5747 (City of Albany)
SPDES Permit No. NY-002 6026 (City of Rensselaer)
SPDES Permit No. NY-009 9309 (City of Troy)
SPDES Permit No. NY-003 0899 (City of Watervliet)
SPDES Permit No. NY-003 1046 (City of Cohoes)
SPDES Permit No. NY-003 3031 (Village of Green Island)

Dear Andrea:

The Capital District Regional Planning Commission (CDRPC), the Albany Pool Communities (SPDES Permit holders referenced above), and the consultant team submitted to your attention a revised Scope of Work and Characterization, Monitoring, and Modeling Plan (Plan) on February 20, 2007.

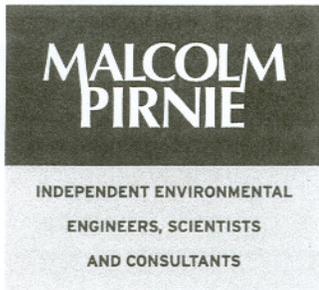
Based on our recent conversations regarding the above-referenced project, please find attached modified pages 4-4, 6-5, 6-6, 7-6, Figure 1, and Figure 3. These modifications address the following minor issues:

Page 4-4: Primary sampling constituents modified to include fecal coliform, e-coli, and TSS only. Total coliform and enterococci are not included.

Page 6-5: The revised page indicates that the wet weather capacity study will report the existing design capacity of each WWTP, as defined in section 11.26 of the *Recommended Standards for Wastewater Facilities*, 2004.

Page 6-6: Modified based on the revision of Page 6-5.

Page 7-6: Modified "Deliverables" section to remove a typographical error.



Andrea Dzierwa, P.E.
NYSDEC, Region IV
March 12, 2007
Page 2 of 2

Figure 1: Figure is modified to reflect a new transect location for Transect 2 near the confluence of the Mohawk and Hudson Rivers in Cohoes.

Figure 3: Schedule modified to reflect correspondence between the identified start and finish dates and the adjacent bar chart.

Thank you for your continued support as we strive to come to resolution on the many issues related to this project. Once final approval of the Plan is obtained, we anticipate commencing Part B activities following completion of the Contract negotiations between the CDRPC and the communities and the consultant team.

Very truly yours,

MALCOLM PIRNIE, INC.

Gregory J. Daviero Ph.D., P.E.
Associate

caw

Attachments

F:\PROJECT\0241002\DOCALTCP Scope\Final SCOPE and CMMR Resolution.doc

- c:
- C. Webber, NYSDEC (w/attachments)
 - F. Sievers, NYSDEC
 - R. Ferraro, CDRPC (w/attachments)
 - L. Engstrom, CDRPC (w/attachments)
 - D. Loewenstein, Malcolm Pirnie-ALB (w/attachments)
 - J. Kleyman, Malcolm Pirnie-BUF (w/attachments)
 - D. Durfee, CDM – ALB (w/attachments)
 - E. Burgess, CDM – CIN (w/o attachments)
 - R. Rudolph, CHA (w/o attachments)
 - M. Miller, CHA (w/attachments)
 - B. Simcoe, City of Albany (w/o attachments)
 - Mayor John McDonald, City of Cohoes (w/o attachments)
 - N. Ostapovich, City of Watervliet (w/o attachments)
 - S. Ward, Village of Green Island (w/o attachments)
 - N. Bonesteel, City of Troy (w/o attachments)
 - M. Pettit, City of Rensselaer (w/o attachments)

February 19, 2007

Andrea J. Dzierwa, P.E.
New York State Department of Environmental Conservation
Region IV
1150 North Westcott Road
Schenectady, NY12306

Re: Final Scope of Work and Combined Sewer System Monitoring and Modeling Plan
SPDES Permit No. NY-002 5747 (City of Albany)
SPDES Permit No. NY-002 6026 (City of Rensselaer)
SPDES Permit No. NY-009 9309 (City of Troy)
SPDES Permit No. NY-003 0899 (City of Watervliet)
SPDES Permit No. NY-003 1046 (City of Cohoes)
SPDES Permit No. NY-003 3031 (Village of Green Island)

Dear Andrea:

Enclosed please find for your approval three (3) copies of the Scope of Work and Characterization, Monitoring and Modeling Plan (Plan) submitted on behalf of the above referenced SPDES Permit holders. This document incorporated the revisions outlined in correspondences exchanged since our original submittal in October 2006. We trust that you will find the revised Plan consistent with our communications and with the Environmental Protection Agency's (EPA) Combined Sewer Overflow (CSO) Policy.

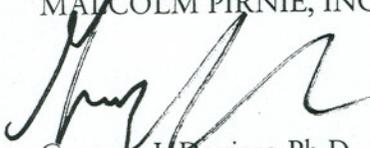
The Capital District Regional Planning Commission (CDRPC), the Albany Pool Communities (SPDES Permit holders referenced above), and the consultant team (Team) are in the midst of contract negotiations to complete the Part B work. Once the various contracts are executed, the work defined in the enclosed Plan will begin immediately.

Although there was limited opportunity to incorporate Minority and Women Owned Business Enterprises (M/WBE) into the Part A work, the Team recognizes that there are certain M/WBE goals associated with the funding for this project. The work performed to complete Part A represents approximately 5% of the anticipated Part B costs and, as such, there remains ample opportunity to meet the specified goals. Under Part B, the Team will begin to solicit proposals from qualified M/WBE firms for components of the work where they are uniquely qualified and cost effective.

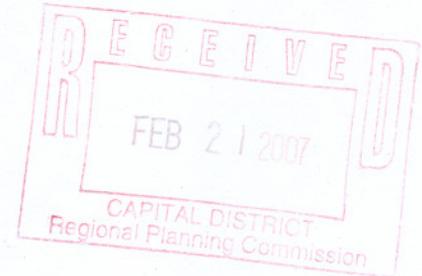
Andrea J. Dzierwa, P.E.
NYSDEC, Region IV
February 19, 2007
Page 2 of 2

Very truly yours,

MALCOLM PIRNIE, INC.



Gregory J. Daviero Ph.D., P.E.
Associate



dms

Enclosures

F:\PROJECT\0241002\DOCLTCP Scope\Dzierwa.doc

- c:
- C. Webber, NYSDEC
 - F. Sievers, NYS DEC
 - R. Ferraro, CDRPC**
 - L. Engstrom, CDRPC
 - D. Loewenstein, Malcolm Pirnie-ALB
 - J. Kleyman, Malcolm Pirnie-BUF
 - D. Durfee, CDM - ALB
 - B. Albright, CDM - SYR
 - E. Burgess, CDM - CIN
 - R. Rudolph, CHA
 - M. Miller, CHA
 - B. Simcoe, City of Albany
 - Mayor John McDonald, City of Cohoes
 - N. Ostapkovich, City of Watervliet
 - S. Ward, Village of Green Island
 - N. Bonesteel, City of Troy
 - M. Pettit, City of Rensselaer

GTD



INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

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43 British American Boulevard
Latham, NY 12110-1402
518-782-2100 518-782-0500 FAX

February 14, 2007

Andrea J. Dzierwa, P.E.
New York State Department of Environmental Conservation
Region IV
1150 North Westcott Road
Schenectady, NY12306

Re: Resolution of Issues

-
- Scope of Work and Combined Sewer System Monitoring and Modeling Plan
 - SPDES Permit No. NY-002 5747 (City of Albany)
 - SPDES Permit No. NY-002 6026 (City of Rensselaer)
 - SPDES Permit No. NY-009 9309 (City of Troy)
 - SPDES Permit No. NY-003 0899 (City of Watervliet)
 - SPDES Permit No. NY-003 1046 (City of Cohoes)
 - SPDES Permit No. NY-003 3031 (Village of Green Island)

Dear Andrea:

The Capital District Regional Planning Commission (CDRPC), the Albany Pool Communities (SPDES Permit holders referenced above), and the consultant team have received follow-up correspondence from Cheryle Webber of the New York State Department of Environmental Conservation's (NYSDEC) Central Office dated January 23, 2007 (attached). This latest correspondence identified some minor concerns regarding the initial responses to the NYSDEC comments. The initial responses were provided in our January 18, 2007 correspondence which is also attached for reference. The purpose of this correspondence is to offer final clarification on the concerns expressed in the January 23, 2007 letter before development of the revised Scope of Work and Characterization, Monitoring, and Modeling Plan (Plan).

For clarity we have restated the specific comments in the sequence in which they were received.

The January 23, 2007 letter stated "In Response 2, you suggest mapping significant industrial users on a map of the combined sewer systems in each community and identifying property class codes on the map. This is acceptable as long as the property class codes will allow the Department and the Albany Pool communities to determine the relative locations of other nondomestic users as well."

Follow-up on Response 2 – Mapping of each sewer shed tributary to each Combined Sewer Overflow (CSO) will be produced during the development of the Long-Term Control Plan (LTCP) using Geographic Information Systems (GIS). Albany County and Rensselaer County both maintain an electronic data base of all tax parcels and their associated property class codes. The integration of the CSO sewer shed boundaries and the available property class code information would allow the NYSDEC or the communities to, at a later date, map potential nondomestic sewage contributors to each CSO. However, the mapping of selected nondomestic properties will not be included in the revised Plan. The mapping in the revised Plan will be limited to locations of each Significant Industrial User within each CSO sewer shed.

The January 23, 2007 letter stated “In Response 3, you propose indicating in the revised document that shad, herring and shortnose sturgeon (an endangered species) are active in this reach of the Hudson River but that no known spawning areas for endangered species has been identified. It has just come to my attention that the Empire State Newsprint, or Besicorp, project noted in its environmental impact statement that the area near their property in the City of Rensselaer is a spawning ground for shortnose sturgeon. The Department suggests that you contact Mr. Bob Hlavaty of Besicorp to confirm this information. His phone number is (845) 336-7700, extension 107.”

Follow-up on Response 3 – Thank you for this new information. Additional investigations will be performed under Part B to verify our initial findings and a final determination of sensitive areas will be documented in the LTCP. We will follow-up with Mr. Hlavaty as required and will include this area, with others as necessary, in the final mapping of sensitive areas.

The January 23, 2007 letter stated “In Response 5, you propose a shoreline monitoring site on the Mohawk River, where grab samples will be taken of the river water. However, all other water quality samples are proposed to be taken at three transects across the river and at different depths. Please explain why a grab sample taken on shore would provide sufficient information, comparable to the Hudson River samples, on the water quality of the Mohawk River and how the grab samples would be incorporated into the water quality model.

Follow-up on Response 5 – The consultant team may have misunderstood the intent of your initial request. The revised Plan will include an additional Mohawk River transect upstream of its confluence of the Hudson River near Cohoes. We believe that the inclusion of this transect (the fourth upstream of the Troy Dam) requires an additional river sampling team in order to safely secure the river samples and to ensure their delivery to a suitable laboratory within the allowable holding time. The communities would like the NYSDEC to understand that this represents an additional

labor, equipment, and analytical cost of approximately \$87,000 and an estimated additional in-kind cost of \$22,000.

The January 23, 2007 letter stated "In Response 7, you requested that, in order to maintain the proposed schedule, written Department comments be received within 30 days of submission of the three additional detailed submissions. The Department agrees to make every effort to provide written comments within 30 days of receipt of those submissions but may request additional review time, if necessary, in writing. However, plans may not be implemented without Department approval and the overall project completion date of September 1, 2009 cannot be extended. The Department suggests developing the additional detailed submissions, which are required portions of the approvable characterization, monitoring and modeling plan, as soon as possible to avoid delays. Please explain which of the detailed submissions will contain the quality assurance/quality control plans."

Follow-up on Response 7 - The updated schedule will include submittal dates for more detailed plans for Tasks B.2 (Receiving Waters Condition Assessment), Task B.4 (Combined Sewer System Monitoring) and Task B.5 (Combined Sewer System Modeling). These dates will consider the complexities of the required planning efforts and will be based on an aggressive schedule driven by the overall project completion date of September 1, 2009. No Task Plans will be implemented without NYSDEC approval.

Each activity within the LTCP Scope of Work will include some component of quality assurance and quality control (QA/QC). However, detailed QA/QC activities will be developed specifically to support the tasks requiring flow monitoring, sampling and analytical work. These detailed QA/QC plans will be included in the B.2 (Receiving Waters Condition Assessment) and B.4 (Combined Sewer System Monitoring) Task Plans.

It has come to my attention that the NYSDEC has reconsidered its position with respect to the number of wet weather sampling events. It is our recommendation that the revised Plan indicate that the communities are prepared to collect data for four wet weather events. However, circumstances permitting (i.e., schedule, quality of data collected, budget, etc.), only three wet weather events may be required if the models can be calibrated and verified consistent with EPA CSO Policy. The schedule for calibration and verification will not prevent a fourth wet weather sampling event in 2008 if it is needed.

The consultant team will at this time begin revising the Plan to reflect the content of this and our other recent correspondences. Please notify us at your earliest convenience with any other outstanding issues. We anticipate delivering the revised Plan by February 20, 2007.

MALCOLM PIRNIE

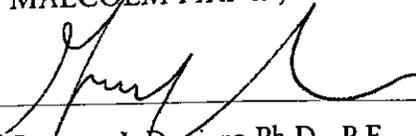
INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

Andrea Dzierwa, P.E.
NYSDEC, Region IV
February 14, 2007
Page 4 of 4

With respect to your offer to share water quality data, we anticipate commencing with this activity following final approval of the Plan and completion of the Contract negotiations between the CDRPC and the communities and the consultant team. We will be in touch with you at the appropriate time to schedule this activity.

Very truly yours,

MALCOLM PIRNIE, INC.



Gregory J. Daviero Ph.D., P.E.
Associate

caw

Attachments

F:\PROJECT\0241002\FILE\LTCF Scope\Second Followup to NYSDEC-Final.doc

c: C. Webber, NYSDEC
F. Sievers, NYSDEC
R. Ferraro, CDRPC
L. Engstrom, CDRPC
D. Loewenstein, Malcolm Pirnie-ALB
J. Kleyman, Malcolm Pirnie-BUF
D. Durfee, CDM - ALB
E. Burgess, CDM - CIN
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B. Simcoe, City of Albany
Mayor John McDonald, City of Cohoes
N. Ostapkovich, City of Watervliet
S. Ward, Village of Green Island
N. Bonesteel, City of Troy
M. Pettit, City of Rensselaer

New York State Department of Environmental Conservation
Division of Water
Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402-8111 • FAX: (518) 402-9029
Website: www.dec.state.ny.us



VIA E-MAIL AND MAIL

January 23, 2007

Gregory Daviero, Ph.D., P.E.
Associate
Malcolm Pirnie, Inc.
43 British American Boulevard
Latham, New York 12110-1402

Re: Albany Pool; Preliminary Response to NYSDEC Comments on CSO CMMMP
SPDES Permit No. NY0025747 (City of Albany)
SPDES Permit No. NY0026026 (City of Rensselaer)
SPDES Permit No. NY0099309 (City of Troy)
SPDES Permit No. NY0030899 (City of Watervliet)
SPDES Permit No. NY0031046 (City of Cohoes)
SPDES Permit No. NY0033031 (Village of Green Island)

Dear Mr. Daviero:

Thank you for your quick response to the Department's comment letter on the Combined Sewer Overflow Scope of Work and Characterization, Monitoring and Modeling Plan (Scope and Plan). We have reviewed your responses and find them generally acceptable. However, we would like to make the following comments for your use in finalizing the Scope and Plan:

In Response 2, you suggest mapping significant industrial users on a map of the combined sewer systems in each community and identifying property class codes on the map. This is acceptable as long as the property class codes will allow the Department and the Albany Pool communities to determine the relative locations of other nondomestic users as well.

In Response 3, you propose indicating in the revised document that shad, herring and shortnose sturgeon (an endangered species) are active in this reach of the Hudson River but that no known spawning areas for endangered species has been identified. It has just come to my attention that the Empire State Newsprint, or Besicorp, project noted in its environmental impact statement that the area near their property in the City of Rensselaer is a spawning ground for shortnose sturgeon. The Department suggests that you contact Mr. Bob Hlavaty of Besicorp to confirm this information. His phone number is (845) 336-7700, extension 107.

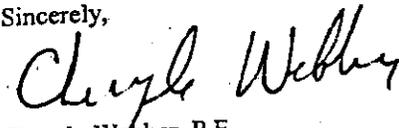
In Response 5, you propose a shoreline monitoring site on the Mohawk River, where grab samples will be taken of the river water. However, all other water quality samples are proposed to be taken at three transects across the river and at different depths. Please explain why a grab sample taken on shore would provide sufficient information, comparable to the Hudson River samples, on the water quality of the Mohawk River and how the grab samples would be incorporated into the water quality model.

In Response 7, you requested that, in order to maintain the proposed schedule, written Department comments be received within 30 days of submission of the three additional detailed submissions. The Department agrees to make every effort to provide written comments within 30 days of receipt of those submissions but may request additional review time, if necessary, in writing. However, plans may not be implemented without Department approval and the overall project completion date of September 1, 2009 can not be extended. The Department suggests developing the additional detailed submissions, which are required portions of the approvable characterization, monitoring and modeling plan, as soon as possible to avoid delays. Please explain which of the detailed submissions will contain the quality assurance/quality control plans.

The Department would also like to remind you that we offered to share Department data on water quality in the Hudson River and are waiting to hear from you regarding possible dates for a meeting. Please contact me at your earliest convenience.

As always, the Department is committed to working through the long-term control plan process with the Albany Pool communities and their consultants and is available to discuss any questions or concerns that may arise. Please feel free to contact me, at (518) 402-8115, or Andrea Dzierwa, at (518) 357-2377.

Sincerely,



Cheryle Webber, P.E.
Environmental Engineer 2

c: Andrea Dzierwa, NYSDEC
Derek Thorsland, NYSDEC
Fred Sievers, NYSDEC
Shayne Mitchell, NYSDEC
Alan Fuchs, NYSDEC
Rocco Ferraro, CDRPC
Leif Engstrom, CDRPC
Neil Bonesteel, Troy
Bill Simcoe, Albany
Mayor John McDonald, Cohoes
Nick Ostopkavich, Watervliet
Sean Ward, Green Island
Mary Beth Pettit, Rensselaer

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL
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www.pirnie.com

January 18, 2007

Ms. Andrea J. Dzierwa, P.E.
New York State Department of Environmental Conservation
Region IV
1150 North Westcott Road
Schenectady, NY12306

Re: Preliminary Response to NYS DEC Comments
SPDES Permit No. NY-002 5747 (City of Albany)
SPDES Permit No. NY-002 6026 (City of Rensselaer)
SPDES Permit No. NY-009 9309 (City of Troy)
SPDES Permit No. NY-003 0899 (City of Watervliet)
SPDES Permit No. NY-003 1046 (City of Cohoes)
SPDES Permit No. NY-003 3031 (Village of Green Island)

Dear Andrea:

The Capital District Regional Planning Commission (CDRPC), the Albany Pool Communities (SPDES Permit holders referenced above), and the consultant team have received a correspondence from Cheryle Webber of the New York State Department of Environmental Conservation's (NYSDEC) Central Office dated December 20, 2006 (attached). This correspondence indicates that the Scope of Work and Combined Sewer System Monitoring and Modeling Plan (Plan), dated October 2006, has been reviewed and would be approvable pending development and inclusion of a schedule for certain, more detailed submissions. In particular, the review letter indicated nine elements that needed to be addressed before the document could be approved.

Preliminary responses to these comments have been prepared for your consideration. For clarity we have numbered and restated the specific comments in the sequence in which they were received. Our intent is to come to a consensus on these technical issues prior to performing revisions to the document.

The following items directly address your comments.

Comment 1 - The title of the document should be corrected to read, "Scope of Work and Characterization, Monitoring and Modeling Plan";

Response 1 - The title will be changed as requested.

Comment 2 - Impacts of nondomestic and industrial users must be evaluated by mapping their locations on the CSS and evaluating possible toxic discharges;

Response 2 - Consistent with the recommendations in the Environmental Protection Agency's Guidance for Long Term Control Plans (EPA 832-B-95-002, September 1995), the revised Plan will indicate that mapping will be developed and provided for each CSO location demonstrating the contributing sewer shed area and the locations of each Significant Industrial User. Property Class Codes (i.e., land use) within the sewer shed will also be shown. In addition, tabular summaries for each CSO will be developed indicating potential contaminants of concern based on the communities' pretreatment programs and SIU permits. This information, along with information developed under Task B.2 (Receiving Water Condition Assessment), will be used for determining if sampling of the CSO discharges and/or receiving waters for additional pollutants of concern will be necessary under future LTCP phases. No additional collection system sampling or receiving water sampling will be included in the current phase.

Comment 3 - Sensitive areas must be identified in the Scope and Plan;

Response 3 - The revised Plan will indicate that the Albany Pool reach of the Hudson River is an important environmental resource that has many beneficial public uses. In addition, the revised document will indicate that Shad, Herring and Shortnose Sturgeon are active in this reach of the Hudson River but that no known spawning areas for endangered species have been identified that would be considered to be critical habitat areas consistent with EPA's CSO policy. Our current understanding of the areas consistent with EPA's CSO policy that will be mapped as potentially sensitive include the proposed new beaches at Henry Hudson Park (Town of Bethlehem, Albany County) and the Schodack Island State Park (Town of Schodack, Rensselaer County). Additional investigations will be performed under Task B to verify our initial findings and a final determination of sensitive areas will be documented in the LTCP.

Comment 4 - Receiving water monitoring data must be gathered for four wet weather events rather than three and ambient sampling must be extended past three months if necessary to do so;

Response 4 - Although we believe that three events would be sufficient, the revised Plan will indicate that receiving water monitoring data will be gathered for four wet weather events. The sampling period will be extended, if necessary to accommodate the additional sampling event. The communities would like the NYSDEC to understand that this represents an additional cost of approximately \$70,000.

Comment 5 - Ambient sampling of the Mohawk River near Cohoes must be included in the plan;

Response 5 - The revised plan will indicate that an additional sampling point (a shoreline grab sample, not a river transect) will be added on the Mohawk River upstream of its confluence of the Hudson River near Cohoes. No additional costs are anticipated for this sampling point since the NYSDEC has correctly indicated that it is not necessary to sample the Watervliet Arsenal Treatment Plant.

Comment 6 - The effects of suspended solids discharges, as well as other parameters, must be evaluated in channelized areas of the Hudson and Mohawk rivers;

Response 6 - Annual suspended solids loadings from each CSO location (including those in the vicinity of the channelized areas of the Hudson and Mohawk rivers) will be estimated based on the model-predicted CSO volumes and event mean TSS concentrations in CSO discharges. This information will be used in conjunction with visual observations of the receiving stream conditions at the CSO outfalls during sampling events to qualitatively evaluate the effects of suspended solids discharges from CSOs to the channelized areas.

Comment 7 - The schedule of implementation must be revised to include the additional detailed submissions. These submissions must be transmitted to the Department at least 60 days prior to implementation so that the Department has time to review the submission and provide comments, if necessary, before approval of the submission;

Response 7 - An updated, more detailed schedule will be included in the revised Plan. The updated schedule will include submittal dates for more detailed plans for Tasks B.2 (Receiving Waters Condition Assessment), Task B.4 (Combined Sewer System Monitoring) and Task B.5 (Combined Sewer System Modeling). These additional more detailed Plans will address the list of NYSDEC questions that were attached to the December 20, 2006, correspondence. In an effort to maintain the aggressive project schedule proposed we are prepared to submit these Task Plans to you at least 60 days prior to their implementation. In order to maintain the proposed schedule we would respectfully request that all NYSDEC comments be provided in writing within 30 days of the submittal. This will allow a window of opportunity to address the specific comments and coordinate the changes within the project team. If no comments are received within 30 days the Task Plans will be implemented as proposed. Any comments that are received after the 30 day period that alter the scope outlined in the detailed plans may require an extension of the overall project schedule.

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

Ms. Andrea Dzierwa
NYSDEC, Region IV
January 18, 2007
Page 4 of 5

Comment 8 - The submittal date for the LTCP must be revised to mirror the September 1, 2009 date in the SPDES permits;

Response 8 - Consistent with the above referenced SPDES Permits, the updated schedule will be modified to reflect a Draft Long Term Control Plan submittal date of September 1, 2009.

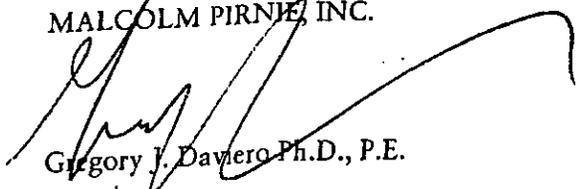
Comment 9 - The WWTP wet weather capacity study must also identify each WWTP's existing design capacity, as defined in section 11.26 of the *Recommended Standards for Wastewater Facilities, 2004*, as well as peak design flows for the primary and secondary treatment units.

Response 9 - The updated Plan will indicate that the wet weather capacity study will report the existing design capacity of each WWTP, as defined in section 11.26 of the *Recommended Standards for Wastewater Facilities, 2004*, as well as peak design flows for the primary and secondary treatment units.

The CDRPC, the Albany Pool Communities, and the consultant team respectfully request a written response to this correspondence by January 24, 2006. This timeline will facilitate our ability to submit a revised Plan by February 20, 2007.

Very truly yours,

MALCOLM PIRNIE, INC.


Gregory J. Daviero Ph.D., P.E.
Associate

de

Attachments

F:\PROJECT\0241002\DOCLTCP Scope\Response to NYSDEC Comments.doc

c: C. Webber, NYSDEC
F. Sievers, NYS DEC
R. Ferraro, CDRPC
L. Engstrom, CDRPC
D. Loewenstein, Malcolm Pirnie-ALB
J. Kleyman, Malcolm Pirnie-BUF
D. Durfee, CDM - ALB
E. Burgess, CDM - CIN
R. Rudolph, CHA

**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

Ms. Andrea Dzierwa
NYSDEC, Region IV
January 18, 2007
Page 5 of 5

M. Miller, CHA
B. Simcoe, City of Albany
Mayor John McDonald, City of Cohoes
N. Ostapkovich, City of Watervliet
S. Ward, Village of Green Island
N. Bonesteel, City of Troy
M. Pettit, City of Rensselaer

New York State Department of Environmental Conservation

Division of Water

Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505

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VIA E-MAIL AND REGULAR MAIL

December 20, 2006

Rocco Ferraro
Executive Director
Capital District Regional Planning Commission
Park Place
Albany, New York 12205

Re: Albany Pool Combined Sewer Overflow Long-Term Control Plan Development; Scope of Work/Characterization, Monitoring and Modeling Plan for the Cities of Albany, Rensselaer, Troy, Watervliet, and Cohoes, and the Village of Green Island. SPDES numbers: NY0025747, NY0026026, NY0099309, NY0030899, NY0031046, and NY0033031, respectively.

Dear Mr. Ferraro;

The Department has reviewed the *Scope of Work and Combined Sewer System Monitoring and Modeling Plan*, October 2006 (Scope and Plan) that you submitted in accordance with the work plan for the Hudson River Estuary Phase 1 Long-Term Control Plan for Combined Sewer Overflows project and as an agent for the above municipalities in accordance with the long-term control plan (LTCP) requirements of their State Pollutant Discharge Elimination System (SPDES) permits. Unfortunately, the Scope and Plan is not approvable in its current form.

The Scope of Work is meant to satisfy the scheduled submission of Task 2, Part A of the water quality improvement project of, "a scope of work, budget and schedule for the development of the CSO LTCP (Part B)." The Combined Sewer System Monitoring and Modeling Plan is meant to satisfy the SPDES permit requirement to submit a Characterization, Monitoring and Modeling Plan (CMMP) in accordance with the SPDES permits long-term control plan requirements, section II.C. The SPDES permits state that, "The Plan will be the scope of work developed to support the "Part B - Phase I Long Term CSO Control Plan" for the Albany Pool CSO LTCP Program coordinated by the Capital District Regional Planning Commission."

The Department met with you, the communities and their consultants on December 12, 2006 to discuss questions that were raised during our review of the submission. The Department has an overall concern that the Scope and Plan does not contain detailed information regarding the specific elements of the monitoring and modeling plan and that the ambient monitoring has been postponed till summer 2008.

At the meeting, consultants provided further information regarding their proposed schedule for the CSS monitoring and modeling, building the receiving water model, and then calibrating and validating the water quality model with the ambient monitoring data. In addition, the communities expressed their continued commitment to meeting the final deadline for submission of the Phase 1 LTCP regardless of the extended ambient water sampling date. This has eased the Department's concerns regarding the timing of the ambient monitoring. However, the Department must review the details of the Scope and Plan to ensure it will provide the information necessary for purposes of the LTCP.

We agreed that a schedule for further submissions containing the necessary detail could be included in a revised Scope and Plan. The revised Scope and Plan could then be approved contingent upon receipt of those approvable submissions so that the communities could move forward with necessary contracts. Upon the conditional approval of the revised Scope and Plan, the future submissions and due dates would be incorporated into the SPDES permits and be enforceable thereunder. Each submission must be an approvable document. I have attached a list of questions the Department had regarding the details of the Scope and Plan for your use in developing the content and schedule of follow-up submissions.

The Department also noted some elements of the Scope and Plan which were missing or needed modification before the document could be approved. These are listed below:

- The title of the document should be corrected to read, "Scope of Work and Characterization, Monitoring and Modeling Plan";

- Impacts of non-domestic and industrial users must be evaluated by mapping their locations on the CSS and evaluating possible toxic discharges;

- Sensitive areas must be identified in the Scope and Plan;

- Receiving water monitoring data must be gathered for four wet weather events rather than three and ambient sampling must be extended past three months if necessary to do so;

- Ambient sampling of the Mohawk River near Cohoes must be included in the plan;

- The effects of suspended solids discharges, as well as other parameters, must be evaluated in channelized areas of the Hudson and Mohawk rivers;

- The schedule of implementation must be revised to include the additional detailed submissions.

- These submissions must be transmitted to the Department at least 60 days prior to implementation so that the Department has time to review the submission and provide comments, if necessary, before approval of the submission;

- The submittal date for the LTCP must be revised to mirror the September 1, 2009 date in the SPDES permits; and

- The WWTP wet weather capacity study must also identify each WWTP's existing design capacity, as defined in section 11.26 of the *Recommended Standards for Wastewater Facilities*, 2004, as well as peak design flows for the primary and secondary treatment units.

Please revise the Scope and Plan as noted and resubmit the document by February 20, 2007.

As discussed at our meeting, the Department would like to have another small meeting to share information and discuss the existing water quality information for the Hudson River. Please contact me at (518) 402-8115 at your earliest convenience to schedule a time that is convenient.

Sincerely,

Cheryle Webber, P.E.

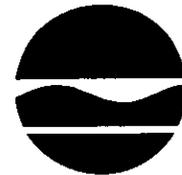
Environmental Engineer 2

Enclosure

cc (w. enc.)

William Simcoe, P.E., Albany
Sean Ward, Green Island
Mayor John McDonald, III, Cohoes
Mary Beth Petitt, Rensselaer
Neil Bonesteel, P.E., Troy
Nick Ostopkavich, Watervliet
Leif Engstrom, CDRPC

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List of NYSDEC questions regarding the details of the Scope and Plan December 20, 2006

The Department is requesting detailed information on the topics below. The permittee may propose to submit the information in a different format, but must address the questions below. Each submission shall be submitted for review and approval by the Department.

1. QA/QC and Health and Safety Plan

2. CSS sampling:

- What is the rationale for monitoring phosphorous, TKN and ammonia sampling of the CSS? Why not oil and grease?
- How are pathogen samples going to be handled considering the 6-hour holding time and the large number of samples? Who will be doing the analyses and how will they handle 900 samples during wet weather events that may occur nights and weekends? Describe how samples will be handled and transported.
- Why take *e. coli* samples only in the CSS, but not in the receiving water?
- How has it been determined that 18 CSOs are representative? Which CSOs will be monitored?
- How was it determined that 25 CSS monitoring locations are adequate to represent flow in all locations? Which locations will be monitored?

3. CSS modeling:

- Which model will be used?
- How would the radar work for determining local rainfall?
- Will the CSS model have the resolution necessary for predicting pathogen loading to the receiving water?
- How will variability of loadings from upstream communities be considered in the model?
- What do you mean when you say infiltration will be modeled either as a constant inflow or as a varied rate based on historical data?
- What do you mean when you say the model's baseline conditions will be adjusted based on a 20-year population projection and "other planned changes"?

Page 5-4 states that the CSS hydraulic model will be run for a period of 5 years to develop an average annual CSO volume. However, EPA requires long-term rainfall data be used for CSS hydraulic models, e.g. 38 years. See EPA's LTCP Policy which states, "... continuous simulation models, using historical rainfall data, may be the best way to model sewer systems, CSOs, and their impacts." Why only 5 years?
Will you develop the total number of overflow events in an average year?

4. River sampling:

- Please explain what you mean by sampling time step and how it relates to a sampling event.
- You state that your goal is to sample the water body 36 to 48 hours prior to a storm event. Please explain how you will do this, how you will define a storm event in terms of rainfall amount and/or intensity, and how much of the study area needs to receive rainfall to qualify as a storm event. What is the contingency plan if the goal of sampling is not met?
- How will people be mobilized to do the sampling of wet weather events?
- How are pathogen samples going to be handled considering the 6-hour holding time and the large number of samples? Who will be doing the analyses and how will they handle 900 samples during wet weather events that may occur nights and weekends? Describe how samples will be handled and transported.
- Please explain what you mean on page 2-5 regarding the river sampling. Why combine samples taken at depth when at least one run can be used to determine if the river is mixed vertically? Maybe temperature or salinity can be used for this determination? Are field measurements also at 3 depths? If the river is well mixed there may be no need for depth sampling. What do you mean when you say the "bottom"?
- Why not have a transect below the Henry Hudson Park?

5. River modeling:

- How will floatables be measured?
- How will the affect of TSS loads on channels in Cohoes and Green Island be evaluated?
- How will tidal effects be taken into account in the receiving water model?
- Which hydraulic model will be used?
- How will pollutant loads will be calculated.
- How will the sources of water quality problems, e.g., floatables, be identified?
- How will water quality data be used to determine compliance with water quality standards for coliforms, solids, and floatables and *e. coli* standards for beaches?

6. Alternatives analysis and model output:

- How will data be managed, i.e., what are the procedures for validating, tracking and reporting sampling results? How will the output of the models be presented?
- Will the model be able to assess source controls, in-system controls, and BMP alternatives?
- Are you planning to estimate and document the accuracy and reliability of model predictions? Will a sensitivity analysis be performed on the model?
- Are you planning to assess the East and West systems separately when evaluating treatment alternatives?

Will each "alternative" include a range of treatment facilities in different locations or just one facility at one location?