South Carolina Surface Water Quantity Models
Monthly Summary

Invoice Date:	January 4, 2016
For Services Between:	December 6, 2015 and January 2, 2016
Invoice No.:	16

Summary of Work Completed During Invoice Period

Project Management and Related Tasks

- Continued internal project coordination and management tasks, including:
  - Weekly project team meetings
  - Monthly project meeting by teleconference

Data Collection

- Data collection in the Broad, Pee Dee, Catawba, Santee, and Salkehatchie River basins is substantially complete; however additional follow-up calls are being made as the data is analyzed and incorporated and used for unimpaired flow (UIF) development and model development. Data collection in the Saluda and Edisto is complete.

Data Analysis and Modeling

Saluda

- CDM Smith prepared and submitted responses to comments which focused primarily on calibration periods, storage targets, and minimum releases. The calibration model was updated and new monthly and daily calibration results workbooks were prepared.
- The baseline model was updated with revised Lake Murray (gross) storage targets. Additionally, registration limits were included for all agricultural users.
- The Saluda River Basin Modeling Report was updated to address comments received from DNR and the TAC. The updated report was distributed to DNR, DHEC, and the TAC.

Edisto

- Alternative UIFs for tributaries to the North and South Fork Edisto continued to be evaluated in order to improve the model simulated peak flows, eliminate the seasonality observed at select gages, and improve the models ability to more accurately reproduce low flows.

Broad

- CDM Smith responded to comments from DNR on the Broad River Basin UIF Methodology Memorandum.
- CDM Smith continued working on development of UIFs on the three major tributaries to the Broad – the Enoree, Tyger and Pacolet Rivers.

Pee Dee

- Work continued on the Pee Dee basin UIF Methodology Memorandum.
- Development of UIF workbooks continued.

Catawba

- Work continued on the Catawba Basin UIF Methodology Memorandum. Because an existing dataset is being used for mainstem UIFs, the methodology used to develop the entire UIF dataset will be slightly different than in other basins.

Santee

- Hindcasting and gap filling of operational records continued.

Savannah

- No work was completed.

Salkehatchie

- No work was completed.

Stakeholder Involvement

- No work was completed.

Summary of Upcoming Work

Over the next month, the project team will:

- Submit the final Edisto UIF dataset and Results Memorandum.
- Finalize the Edisto calibration and baseline models.
- Complete a Draft of the Broad UIF dataset. Once the final Broad dataset is complete, the Saluda Basin UIF dataset will be completed to the confluence of the Wateree River.
- Continue development of the draft Pee Dee UIF dataset.
- Finish development of the draft Santee and Salkehatchie Model Frameworks.
- Continue data collection in the Savannah Basin, focusing on obtaining the existing, and most recently updated inflow (UIF) dataset and model.

Issues Impacting Scope, Schedule, or Project Cost

Additional discussions were held between CDM Smith and DNR regarding how reservoir operating rules are incorporated in SWAM. DNR indicated the preference for additional flexibility in SWAM to allow the user to evaluate more complex alternative management rules. It was noted that when more complex rules (such as the Lake Murray Striped Basin release rules) were included in SWAM as “prescribed rules", user-initiated adjustments to test variations of the rule were not easily performed. CDM Smith prepared and submitted a summary of proposed model enhancements that will allow for increased flexibility with regard to reservoir operating rules. This additional work may result in a minor increase in scope and project cost.

Schedule adjustments were made to reflect the project progress and more accurately account for future deliverables. It is currently anticipated that due to delays in completion of the pilot model, the project schedule will need to be extended approximately six months, to the end of 2016. An updated schedule will be prepared in early 2016.

During the project kickoff meeting, and based on DNR and DHEC review of the draft Modeling Plan, several potential out-of-scope model enhancements were identified. These include:

- A “Current Situation Analysis” for quasi-real time operational support. This functionality would provide a probabilistic analysis of current conditions at any future point in time and how conditions are likely to change within 6 or 12 months based on projected use and management patterns.
- The ability to use near-term hydrologic flow forecasts (for example, 60-day streamflow forecasts from NOAA) for month-to-month operational planning.
- Use of HEC DSSVue and DSS files for results display and analysis.

CDM Smith has presented a scope for implementing these enhancements to DNR and DHEC, and will prepare cost prior to completion of the pilot (Saluda) model. The decision on whether to implement one or more of these enhancements will likely be made once the pilot model is completed.