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Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Subject: South Carolina Electric & Gas Company
Saluda Hydroelectric Project
FERC Project No. 516-459
SCE&G Responses to Scoping Document 1 Comments and SCE&G Comments
to Scoping Document 2

Dear Secretary Bose:

South Carolina Electric & Gas Company (SCE&G), Licensee of the Saluda Hydroelectric Project (FERC Project No. 516-459), hereby files an electronic copy of our response to comments made on Scoping Document 1 by various agencies and stakeholders. In addition, SCE&G also provides two comments to your Scoping Document 2. SCE&G commends the Commission and its staff for a thorough and attentive scoping analysis of the issues involved in this relicensing process.

If you have any questions about this filing, please contact Mr. William Argentieri at (803) 217-9162 or by email at bargentieri@scana.com.

Very truly yours,



James M. Landreth

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Enclosures

c: M. C. Summer/W. R. Argentieri/File
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Corporate Records

SCE&G Responses to Scoping Document 1 Comments

SCE&G Responses to Scoping Document 1 Comments

The following responses are provided by South Carolina Electric & Gas Company (“SCE&G” or “Company”) to the Commission as clarification to comments made on Scoping Document 1 (SD 1) by various agencies and stakeholders.

National Park Service Comments dated May 5, 2009:

Comment/Statement - Page 4 – Cumulative Effects (Section 4.2.1 – Aquatic Resources) first sentence – “We commend the applicant for defining the geographic scope of the area of potential cumulative effects to include the full reach of the Congaree River all the way downstream to the confluence with the Wateree River, including the adjacent lands within CONG.”

Company’s Clarification – SCE&G wishes to clarify that it did not define the geographic scope of the area of potential cumulative effects to include the full reach of the Congaree River all the way downstream to the confluence with the Wateree River, including the adjacent lands within Congaree National Park (CNP). The scope was defined by the Commission Staff. In its response to the scoping document the Company commented that the geographic scope for water quality should be changed to terminate eight miles upstream from the CNP based on the temperature study conducted during the relicensing process. See SCE&G’s Comments filed on February 24, 2009, page 5.

American Whitewater Comments dated May 6, 2009:

Comment/Statement - Page 1, second paragraph - “Studies have included lake levels, river flows,... and South Carolina’s only National Park that requires historic seasonal flows to protect the natural state of the swamp.”

Company’s Clarification – The Company believes the stretching of the potential impacts of Project operations to the Congaree National Park, approximately 25 river-miles downstream of the end of the Saluda Hydroelectric Project Boundary Line as a significant factor to be weighed in the NEPA review would exceed both practical and appropriate regulatory interest limits.

Comment/Statement - Page 2 – Fourth Paragraph, last sentence – “Anything less than 2 feet, which equates to 2 inches of lake level drop, does not truthfully take into consideration invasive aquatic species control, nor does it follow a healthy lake prescription made by biologist and Lake expert Jim Ruaine for sediment, shoreline and fishery maintenance.”

Company’s Clarification – SCE&G wishes to note that American Whitewater Association in its comments conflates issues pertaining to the Low Inflow Protocol (“LIP”) with matters associated with a report prepared by Mr. Jim Ruane addressing the benefits of a winter drawdown. These two topics are not related and should not be evaluated in the same manner. The LIP trigger should be evaluated based on drought conditions or when inflow to the Saluda basin, minus municipal withdrawals is less than the prescribed minimum flow for the lower Saluda River. A winter drawdown, of as much as eight feet from the targeted summer elevation of 356.5’ NAVD 1988 (358.0’ Plant Datum (PD)) was studied by Mr. Ruane, a limnologist and is being proposed as a tool for the control of invasive aquatic plants or the enhancement of water quality or fish population. A drawdown of this magnitude may be implemented during the winter months. The Company is presently evaluating the benefits of such a draw down and how frequently it would occur. It should also be noted that during low inflow periods, which is when the Low Inflow Protocol (LIP) will be implemented, a difference in lake level drop of eight inches to one foot can occur between the one foot and two foot triggers being evaluated as part of the LIP.

Comment/Statement - Page 2 – Last Paragraph, first sentence – “In light of the lake land owners lack of substantial valid scientific data to support anything higher than a 2 foot LIP trigger, refusal to consider the entire resource and single mindedness of interest, we request the FERC’s environmental review fully examine all possible impacts, to all aspects of the resources and properly maintain and protect the river, which has not been done in previous licenses.”

Company’s Clarification – SCE&G directs the Commission Staff to the scientific documentation presented in the Company’s response to the Additional Information Request, filed with the Commission on February 24, 2009, wherein the Company addresses the hydrological balance, frequency of implementation of the LIP (amount of time that flows might be reduced), equitable sharing of the burden of low inflow conditions among upstream and downstream users; how the LIP target flow of 500 CFS, (the minimum discharge capacity of any one of Units 1 – 4 without damaging the turbines), with a minimum flow of 400 CFS is the flow value that achieves the original target of 80 percent weighted usable area (WUA) for the majority of the species in the lower Saluda River as defined by the Instream Flow Committee. Also, the inclusion of the striped bass flows in the minimum flow proposal significantly increases the continuous flow requirement during the target period in April and May compared with the original minimum flow proposal. It is SCE&G’s position that this recent addition to the minimum flow proposal reinforces the value of a one foot trigger in the draft LIP by allowing timely reduction in minimum flows when required to conserve storage during low inflow periods.

Trout Unlimited Comments dated May 8, 2009:

Comment/Statement – First Comment – “The basic premise of a reserve generation operation in an urban environment needs to be fully studied and evaluated by FERC. Unannounced flows of over 18,000 cfs released with simultaneous generations through all 5 generators to produce over 200 megawatts in 15 minutes is inherently unsafe. No ramping of those flows has been proposed, and the intrusive warning system will not allow for adequate time for safe river exit, especially with only two new river sites proposed. The key issues are unscheduled flows and flows of such high volume in such short periods of time in an urban setting with few viable access (exit) areas.”

Company’s Clarification – Flows serving SCE&G’s generation reserve obligations are not unannounced. Through the relicensing process SCE&G has implemented a ring-down phone system which notifies subscribers when Saluda Hydro is starting to generate. Also, sirens and strobe lights have already been installed and additional ones are planned for installation to provide adequate coverage of the river when water is released. A generation facility that is primarily used to fulfill reserve obligations (required by NERC/SERC to provide reserve generation within 15 minutes of being called upon) will lose its functionality if it is required to ramp. The Recreation Plan does address the issue of more access points as part of the new license.

Comment/Statement – Second Comment – “The current and planned use of air injection is inadequate for meeting state dissolved oxygen standards year round; and, the timetable for making needed venting improvements is much too drawn out, especially for a problem known for over 20 years. Unless the license prohibits generations during the months of lethal dissolved oxygen levels at the intakes in the lake, oxygen injection should be required as has proved the only dependable solution around the country; and, implementation should be immediate.”

Company's Clarification – To state that something is inadequate appears to be an argumentative and pejorative comment and not a statement of fact. Based on the enclosed 2008 operating report developed pursuant to the requirements of Article 31 of the currently effective license for Project No. 516, Saluda Hydro met the State water quality guideline for dissolved oxygen 99.65% of the time in 2008 (see Page 13). New runners are expected to improve aeration over the original turbines installed in the 1920s which should increase this percentage.

Comment/Statement – Third Comment – “No consideration is given to the dissolved oxygen needs for successful trout reproduction. The current, much lobbied for standards are for adult trout only, not fry or fingerlings; and, there is no adaptive plan proposed that will require higher dissolved oxygen than the state standards if coldwater fish (trout) cannot reproduce and thrive in this artificially created coldwater fishery. Also, habitat improvements to the tailrace should be required to mitigate for habitat degradation from the scouring of the high releases.”

Company's Clarification – The lower Saluda River has a trout put-grow-and-take designation by the South Carolina Department of Health and Environmental Control. They did not designate the lower Saluda River as a trout reproduction area. SCE&G does not have control over the designation and should not be held accountable to meet a goal (trout reproduction) not established by the State environmental regulators. In an effort to work with Trout Unlimited, the Company has proposed a Trout Evaluation and Monitoring Program for the Lower Saluda River which will help to provide useful information to the regulatory agencies in an effort to help them manage this resource.

Comment/Statement – Fourth Comment – “The LIP trigger of 2 feet as supported by the SC DNR should be required, especially with a 4' range for the guide curve which should adequately protect the lake fisheries. Also, the LIP is proposed with a 400 cfs absolute minimum level (with a 'target' level of 500 cfs due to 'unsure' flows measurements). The 400 cfs level is too low based on the IFIM which resulted in a 700 cfs 'normal' flow minimum. The 500' 'target' flow should be the absolute minimum, especially if the LIP trigger is less than 2 feet.

Company's Clarification – The IFIM Study to which Trout Unlimited refers showed that the minimum flow of 400 CFS is the flow value that achieves the original target of 80 percent weighted usable area (WUA) for the majority of the species in the lower Saluda River as defined by the Instream Flow Committee. Seven Hundred CFS will provide close to 100% of the WUA for a majority of the species.

Comment/Statement – Fifth Comment – “The concept of Recreational Flows is not supported by Trout Unlimited. Flows should be based solely on water quality and fisheries, not recreational concerns. The Rec Flow schedule proposed to date only guarantees 51 days a year of known releases for recreation planning, but leaves the other 314 days a year for the unsafe and unscheduled reserve operation generations.”

Company's Clarification – Fifth Comment stands in complete contradiction to TU's opening sentence in which the organization supports the comments and recommendations submitted by Bill Marshall, DNR Rivers Program Manager, on behalf of the Lower Saluda Scenic River Advisory Council (LSSRAC). On Page 4 of Bill Marshall's letter, the LSSRAC supports the recreational flows and believes them to be beneficial to recreational users and the local tourism economy associated with paddle sports and fishing. There appears to be an inconsistency as to what TU actually supports and to what it objects.

Comment/Statement – Sixth Comment – “Over .4 mile of tailrace has been closed below the dam, ostensibly for security reasons, instead of a more sensible 100-200'. There is no justification for that taking of public waterway as the SC DNR has vehemently objected to, especially with the lack of similar protective measures of the intake towers, spillway, and dam itself which is crossed by thousands of vehicles a day. The issue was ruled out of the discussions with the stakeholders and no provisions have been offered for mitigation for such a major loss, such as construction of a river trail which would also provide for the needed safe river access which the Recreation Plan fails to do for safety reasons. The barricade should be relocated to immediately below the dam; and, if not, serious mitigation, such as a river trail should be required.”

Company's Clarification –On October 3, 2008, Trout Unlimited requested that the Commission investigate this issue as part of the new license application process. On that same date, the Relicensing Coordinator for the Saluda Hydroelectric Project forwarded this request to the Compliance Division noting that it was not a relicensing matter. On November 25, 2008 Frank Calcagno of the Commission Staff responded that the installation was necessary, reasonable and appropriate.

South Carolina Parks, Recreation and Tourism Comments dated May 7, 2009:

Comment/Statement - Page 2, Second Paragraph – “Of these existing sites, Dreher Island State Recreation Area, managed by SCPRT, is 348 acres and provides a variety of recreational activities and services – RV, tent, and primitive camping, boat ramps, picnic shelters and tables, marina, tackle shop/fuel, lodging, shore fishing, walking, bicycling, swimming, and a number of restroom facilities. The licensee has proposed no expenditures or improvements for this most used park in the project and has not provided any improvements or maintenance since the last license was approved. This park receives 25 percent of the project's recreation usage.”

Company's Clarification – Over 30 years ago, SCE&G granted, for a nominal rent, a long term lease of Dreher Island to SCPRT, which, in turn, established the Dreher Island State Park. As the lessee of the 348 acre island, SCPRT has constructed, maintained, and operated for many years, facilities for general public use. Without a doubt, current economic circumstances have placed great pressure on the financial resources of SCPRT as well as all other federal, state, and local governments. Nevertheless, such circumstances do not provide justification for an expectation that the Company utilize its financial resources, which in turn must be secured from its customers, in support of this State Park. All stakeholders, including SCPRT, have agreed to develop other sites around the lake. SCE&G's customers, the vast majority of whom do not live in close proximity of and/or do not make use of the Saluda Hydroelectric Project recreation areas, also are experiencing economic hard times. SCE&G is reluctant to call upon any portion of their resources to subsidize the State's under-funded plans for general public recreation. Improvements to the marina on Dreher Island State Park are not required by the license and would infringe on the economic opportunities of existing public marinas.

Comment/Statement - Page 2, Second Paragraph – “Saluda Shoals Park, managed by Irmo-Chapin Recreation Commission, is 240 acres and provides walking, bicycling, and equestrian trails, bank, pier, and wade fishing, boat ramp, canoe access, fish cleaning station, picnic shelters and tables, restrooms, education center and programs, dog park, spray park, and a meeting facility. The licensee has proposed no expenditures or improvements for this most used park on the river.”

Company's Clarification – Saluda Shoals Park is both owned and managed by the Irmo Chapin Recreation Commission (ICRC), which has not asked SCE&G for funding for improvements for the Park. While ICRC does have plans for park enhancements and expansions, and in that regard has approached SCE&G in regards to the possibility of making additional non-project properties the Company owns in the area available to allow for expansion and improvement, ICRC has yet to present its request in sufficient detail to allow SCE&G to give it formal consideration and make a formal response. ICRC has expressed no dissatisfaction with SCE&G's cooperation with it either with regard to the current facilities or plans for future facilities and improvements. The Company is disappointed that SCPRT would present its position in a way that makes it appear, incorrectly, that SCE&G somehow is ignoring a major recreation facility or refusing to participate in support for improvements and/or expansions. In fact, SCE&G is a founding member of the Saluda Shoals Foundation, with a member on its Board of Directors, described by the ICRC in materials displayed on the Saluda Shoals online site as follows:

“The Saluda Shoals Foundation is a nonprofit 501(c)(3) organization committed to serving as a steward and advocate for the preservation and sustainability of Saluda Shoals Park. Since its inception, Saluda Shoals Foundation has assisted in raising funds to establish, maintain and develop Saluda Shoals Park. The 20 member board of directors is dedicated to the development of the park and created the following covenant.

As members of the Saluda Shoals Foundation Board of Directors, we believe:

- In Saluda Shoals Park's mission and its future;
- In the balance and celebration of nature and humankind;
- In the beautiful necessity of experiencing nature in an urban environment.

Therefore, we commit to serve as stewards of Saluda Shoals Park through financial support and as advocates for the preservation and sustainability of the park's programs and the environment.”

SCE&G has remained true to these stated principles, and intends to do so going forward as well.

Comment/Statement - Pages 3 and 4 – The following four comments are being addressed as one response.

“1. Consider deferring some of the proposed improvements to existing boat ramp sites for up to 10 years.

2. Provide assistance to Dreher Island State Recreation Area in the first five years for infrastructure upgrades (such as campground renovations, road/parking improvements, marina upgrade, trail expansion, ADA compatible fishing access, and shoreline protection). This park is open year-round and provides a variety of recreation opportunities not available at the current boat ramp sites.

3. In the 5-10 year time frame, develop a conceptual plan for the Rocky Creek park with significant community involvement such as a planning charrette. Then create a detailed master plan and phase in development over a 10+ year period, beginning with roads, parking, restrooms, water/sewage disposal, and power. Consider leasing the park as a state or regional park. This park has the potential to serve a greater volume and variety of users than the existing

boat ramp sites, including more passive activities such as walking and bicycle trails, primitive/tent camping, bank and pier fishing, canoeing and kayaking, picnicking, and wildlife watching. It could be operated on a year-round basis. It is also located on the southern side of the lake and toward the upper end, both of which are underserved currently.

4. Provide assistance over a 10+ year period to Irmo-Chapin Recreation Commission to extend the trail network along the Saluda River on SCE&G property. The river corridor plan recommends a linear trail connecting the Dam Site to Saluda Shoals Park and continuing downstream to connect with the Three Rivers Greenway. This would help satisfy area needs for trails and linear access to the waterfront, as well as fishing access, safe egress during high water (unanticipated hydro operation), and wildlife watching opportunities.”

Company's Clarification – South Carolina Parks, Recreation and Tourism (“SCPRT”) has worked closely throughout the new license application process as noted in the opening paragraph of their comment letter. Until April of this year SCPRT had been supportive of the proposed site improvements presented in the Recreation Plan. SCPRT attended most if not all of the Recreation Technical Working Committee and Resource Conservation Group meetings and provided numerous comments and changes to the Recreation Plan as it was being developed. The Company finds this change in direction quite disturbing after spending the last three and a half years developing a plan that has taken into account recommendations from all stakeholders including SCPRT. SCE&G respectfully requests the Commission to accept the Recreation Plan as submitted since it has been a joint effort of all the interested stakeholders.

Lower Saluda Scenic River Advisory Council Comments dated May 8, 2009:

Comment/Statement – Page 4 – Recreation and Land Use, first paragraph – “We are pleased that SCE&G lands on the lower Saluda River, approximately 375 acres, will be included within the “project boundary” and set aside for recreation purposes. We would prefer that SCE&G have all these lands permanently protected under some type of conservation easement or deed restriction to limit and guide future developments, as SCE&G already has a conservation easement along the river frontage on most or all these land parcels. Development restrictions would help to insure future actions will be consistent with the corridor plans of the Lower Saluda Scenic River.”

Company's Clarification – The Council's preference for a “permanent” protective status is understandable. However, decisions as to precisely what uses these properties may best serve in the public interests in the long run ought to await completion of some of the currently planned public access improvements. Conservation easements can be rather absolute and restrictive to the point of preventing even what one would consider years afterwards to be a better use. A flexible protection for the term of the new license will allow future generations have an opportunity to participate in any decisions involving the use of the property. Placing properties in the Recreation classification protects them from any less protective uses without approval of the FERC, which would be the subject of study and public input. SCE&G submits that a “recreation” classification represents the best of all circumstances for now, *i.e.*, protection against development or any other activity which might unduly restrict public access and use, while preserving the flexibility to craft plans in the future that are responsive to the public's needs and desires as well as the ecological needs as they are judged in the future, in the context of then current area conditions.

Comment/Statement – Page 4 – Recreation and Land Use, second paragraph – “SCE&G has opted to address most facility needs and opportunities on the river through lease arrangements with other entities. We can understand their interest in avoiding the associated costs; however, our preference would be for SCE&G to provide additional facilities along the river.”

Company’s Clarification – SCE&G is not pursuing this opportunity for local recreation commissions to develop the facilities along the lower Saluda River solely in the interest of avoiding the associated costs. We are working closely with these recreation commissions by providing them with access to the river and a site to develop recreational activities that they would like to manage. This lease provides the associated recreation commissions with opportunities to work within the community they are trying to serve. As the owner of the various properties designated for future recreation, SCE&G submits that it has made substantial financial commitment as represented by the many donations and set asides of property and reclassifications that effectively permanently remove it from the marketplace, both on the lower Saluda River and around Lake Murray. These donations and reservation constitute reasonable mitigation for any possible impacts of its continued operation of this project. The recent economic difficulties have caused local, State, and regional government agencies to readjust their plans in regards to what they may have planned or hoped to accomplish for the public good. However, that cannot be reason to require those costs to be borne by the Company.

Comment/Statement – Page 4 – Recreational Flows, first paragraph – “It will be important that SCE&G provide a reliable and accessible system for public notice and information to inform the public of schedules for recreational flows and planned operations.”

Company’s Clarification – SCE&G reiterates that it provides a siren warning system for downstream flow releases, warning and information signs posted at public access sites on the lake and river and along the river shoreline, river staff gages and river level markings on bridge abutments, an electronic notification system for project operations, and website posting of current conditions and planned operations, educational materials and website links to safety information. As the pending license application indicates, SCE&G is currently evaluating additional siren and strobe locations along the 10 mile stretch of the lower Saluda River with the Safety Technical Working Committee and a proposal will be included in our settlement agreement. Although the electronic notification system and website postings were requested by the Safety Resource Conservation Group to provide more information associated with project operations, these measures have already been implemented by SCE&G and are reliable and accessible by the public.

Lake Murray Watch Comments dated May 6, 2009:

Comment/Statement – Second Page (unnumbered), first paragraph – Land Use and Shoreline Management Plan – “A shoreline development impact study prepared by TVA in (1999) concluded that the public wants its shorelines to stay natural. TVA’s decision to implement a policy of “maintaining and gaining” natural areas reflects that public mandate. On Lake Murray there are very few areas left to “get away from it all”. A similar assessment should be considered to determine how best to utilize the remaining project lands. Lake Watch fully supports protecting all lands in the “Future Development” classification that scored high for natural resources values.”

Company’s Clarification – As part of the relicensing process all lands within the Saluda Hydroelectric Project have been evaluated for both economic and environmental benefits. Through this evaluation and as required by the June 23, 2004 FERC Order all land

classifications within the Project boundary were rebalanced. This rebalancing shifted almost half of the Future Development land into a protected classification. The request of Lake Murray Watch to develop a shoreline development impact study for the remaining land is a request to place additional burdens on the Project lands available for Future Development. The rebalancing, subsequent proposed reclassification of all Company owned lands and restrictions placed on the Future Development land through the Shoreline Management Plan (“SMP”) provided a similar assessment as the requested impact study. SCE&G should not be required to conduct another study to address issues that were resolved through the rebalancing process and the SMP and agreed to by the stakeholders and agencies.

Comment/Statement – Second Page, final paragraph – “While a new guide curve should improve habitat conditions, we are concerned about potential negative impacts from proposed fish habitat flows that would occur during the months of April and May.”

Company’s Clarification – Lake Murray Watch opposes the spring striped bass flows requested by the South Carolina Department of Natural Resources (DNR). SCE&G has agreed to the flows and will leave the justification for those flows to the DNR. For the most part, they can be accommodated without material impact on reservoir levels during normal flow years. Low inflow periods will present challenges from the fact of low inflows as much as striped bass flows, as would be expected during drought periods. This is why a one foot trigger for the Low Inflow Protocol is proposed by the Applicant.

Comment/Statement – Third page, penultimate paragraph – “Based on our analysis, lake levels below 354’ contribute to boating safety concerns due to unmarked hazards.”

Company’s Clarification – Again, no analysis has been presented, only conclusions that supposedly resulted from the undefined analysis. Throughout the entire relicensing process, the claim that lower lake levels produce higher boating risks has been made and repeated – without one scintilla of evidence that there is a negative correlation between lower lake levels and the number of boating accidents that occur. There is ample evidence in the record establishing that there is a robust hazards marking program in operation. The operational history of the Project demonstrates that when there are significant draw downs, *i.e.*, those that are expected to take reservoir levels below the levels for which the current buoy system has been designed and installed to account for (between 350’ PD and 358’ PD), buoys are relocated and special care is taken to inform the boating public about the potential for new hazards. This most recently occurred during the period the reservoir was drawn down to the 345-foot level for the construction of the new back-up dam. The most telling fact about the relationship between reservoir level and boating safety is that during the years during which the reservoir was dropped to between ten and fifteen feet below full pool, the number of boating accidents was drastically reduced. The conclusion that is inescapable is that when levels are especially low, boaters take special care, *i.e.* exercise the personal responsibility that all vessel operators should exercise at all times, but which they forget when reservoir levels are “high,” in the absolutely erroneous belief, reflected in these very comments, that high lake levels mean safe boating. Marking potential hazards may be a good idea, but accepting personal responsibility and taking care seem to be the only really standout factor in improving boating safety. Keeping lake levels high and proclaiming that higher lake levels make boating safer may have the exact opposite effect, *i.e.*, cause a lessening of attention to safe boating and thus lead to more preventable accidents.

South Carolina Department of Natural Resources Comments dated May 8, 2009:

Comment/Statement – Page 2 – Section 3.2.1 Applicants Proposed Project Facilities and Operations – “While we believe that the proposed guide curve will provide a significant enhancement to fish, wildlife and recreation, the value of the new guide curve to fish and wildlife habitat and water based recreation will be directly correlated to the Licensee’s ability to meet the guide curve.”

Company’s Clarification – Based on historic data provided by the United States Geological Survey, the guide curve should be able to be maintained during periods of normal inflow while providing for required generation even with the amount of minimum flows, striped bass flows, and recreational flow releases as requested by the stakeholders.

Comment/Statement – Page 3, first paragraph – “In addition to the guide curve proposed by the applicant, we recommend that a winter drawdown scenario be developed to address water quality concerns. We believe that a drawdown schedule similar to the one recommended in the water quality report Applications of the CE-QUAL-W2 Model, (Sawyer and Ruane, 2007) conducted for relicensing studies should be implemented and evaluated to insure that water quality is not degraded. We also recommend that the license recognize that occasional drawdowns may be needed to control aquatic plants and rebalance fish populations.”

Company’s Clarification – SCE&G does not disagree with the DNR proposition that there may need to be some periodic special winter drawdown, albeit the Company does not necessarily support a present decision as to the frequency or level. Instead, it is SCE&G’s position that it should have the flexibility to take such actions as, with the advice of appropriate resource and regulatory agencies, limnologists, hydrologists, water quality experts and other appropriate technical advisors, are deemed appropriate in the future as conditions and projections of conditions may warrant. This is an issue of importance and uncertainty, requiring deliberate and thoroughly studied response. SCE&G suggests that the new license should have an appropriate article providing the Company the authority to take such actions as needed, after consultation with appropriate resource agencies and experts, for a winter draw down.

Comment/Statement – Page 4 – Section 3.2.1 Applicant’s Proposed Project Facilities and Operations – “Modeling the 1981-2008 data set, which includes the most serious drought on record, shows that the implementation of our recommended LIP would have resulted in significantly higher lake levels than actually occurred during the current license (Figure 1). Also, the difference in lake levels that result from using a one-foot trigger versus a two-foot trigger to implement the LIP ranged from 0.1 to 1.0 feet, with an average of about 6 inches.”

Company’s Clarification – The information provided by the SCDNR in their Figure 1 averages all 28 years which includes drought, normal and high inflow years. If one would evaluate just the low inflow years, since they would be the only years when a low inflow protocol would be implemented, it would show that a difference in lake level that resulted from using a one-foot trigger verses a two-foot trigger to implement the LIP would be in the 8” to 1’ range. Also, individual years would show even greater impacts on the lake level especially during multiple year droughts.

Comment/Statement – Page 5 – Section 3.2.1 Applicant’s Proposed Project Facilities and Operations – “Based on modeling conducted by the DNR, a LIP using a two-foot trigger would

have been implemented in 10 of those years. A one-foot trigger resulted in the LIP being implemented in 17 of the 28 years, or almost twice as often.”

Company's Clarification – SCE&G acknowledges that SCDNR's comment is a true statement; however, it should be pointed out that three of the additional seven years in which the LIP would have been implemented with a one-foot trigger were due to the striped bass flows requested by SCDNR. Without the striped bass flows the LIP would only have been triggered in 14 of the 28 years based on a one foot trigger.

Comment/Statement – Page 7, paragraph three – “Despite the 8-10 feet of annual water level fluctuations experienced under current operations, with a few drought related exceptions, Lake Murray has provided a variety of recreational boating opportunities during the current license period.”

Company's Clarification – Just for the sake of accuracy, it should be noted that the “8 - 10 feet” cited here as the operating range is based on an assumed full pool level of 360' PD with drawdown down to 352' PD or 350' PD. While 360' PD is the maximum operating level, the normal operating level is approximately 358' PD and normal fluctuations in the past several decades have been between 358' PD and 352' PD to 350' PD.

American Rivers and the Coastal Conservation League Comments dated May 8, 2009:

Comment/Statement - Page 1, second paragraph, first bullet:

“The Commission should thoroughly analyze the effects of project operations on these issues through the NEPA process...”

- “Improvement to the stream flow regimen necessary for natural flow values and ecological processes essential to river health, including riparian, wetland and floodplain functions,”

Company's Clarification –SCE&G disagrees with American River's suggestion that the Commission should evaluate the effects of project operations on “stream flow regimen necessary for natural flow values...”. Evaluating flow regimes approximating or based upon “natural flow values” is inconsistent with the FERC policy of considering the project as a given, and not basing evaluations and decisions on pre-dam/pre-project conditions. .

Comment/Statement - Page 2, first bullet.“The Commission should thoroughly analyze the effects of project operations on these issues through the NEPA process...”

- prudent management of the project for the Lake Murray reservoir, the Lower Saluda River, portions of the Broad and Congaree rivers, and Congaree National Park which are affected by project operations”

Company's Clarification –These commenting organizations would have the license conditioned to account for effects far outside the Project area, the Congaree National Park being approximately 25 river miles below the end of the project as identified by the PBL. While indeed the Congaree National Park may benefit in some small ways by the operating protocol contained in the new license, those fact should not be a significant determinant in the FERC's NEPA review and any license conditions that result.

Comment/Statement - Page 2, first paragraph -

- “We have been active in the process to develop an Ecologically Sustainable Water Management (ESWM) plan for the Saluda and Congaree rivers, which is a part of the record for this proceeding. We believe that many of ESWM goals can be met through the ongoing settlement process. The Commission should thoroughly analyze the effects of project operations on CNP through the NEPA process.”

Company’s Clarification – Again, although SCE&G does not challenge the statement regarding the incidental meeting of the ESWM goals, the Company strongly disagrees with the implication that the NEPA review for the relicensing of the Saluda Project should be influenced materially by considerations as to whether or not, or the degree to which the project operations may or may not achieve ESWM goals. ESWM is a process. While the fact that the ESWM process was undertaken simultaneously with the relicensing process, it was entirely separate and therefore, not a part of the record of the relicensing proceeding.

Lake Murray Homeowners Coalition Comments dated May 8, 2009:

Comment/Statement - Page 2, penultimate paragraph – “We would like to note that the recreation use survey for the lake did not take into account users who access the lake from private facilities or commercial docking facilities, thus does not give a fully accurate picture of recreation use on the reservoir.”

Company’s Clarification – This statement is not quite accurate. Field surveys were conducted at public access points owned by SCE&G and not at individual private residences and commercial access points. Nevertheless, it is wrong to imply those boaters and other users of the area resources whose access to the shoreline is primarily from their private residential property or commercial access points were not accounted for in boating surveys. Boating surveys have two components: surveys that involve talking with folks at boat landings to get information, and actually counting the number of boats on the reservoir, which was done from the air. Boats on the reservoir counted by air include boats launched from private residences as well as public access points.

Comment/Statement - Page 2, final paragraph - “We believe a minimum water depth of 3 feet is needed in order to accommodate the various "drafts" of most boats commonly used at the reservoir. This depth also provides adequate water for the use of boat lifts which are popular with many of our members.”

Company’s Clarification – Not surprisingly, owners of docks in shallow water areas prefer higher lake levels. But they bought shallow water lots. SCE&G’s agreement to manage the reservoir levels to within a narrower band with a higher “floor” is more than generous and reflects a compromise and a balance between the desire for convenience for dock owners and the need for power and flexibility in operating the project by SCE&G, plus other water level related issues.

Comment/Statement - Page 3, first paragraph – “Based on our analysis, we believe a minimum elevation of 356' (msl) would allow reasonable use of private docks 100 per cent of the year.”

Company’s Clarification – There are no facts to substantiate the stated belief, and no justification for a guarantee of 100% dock access all the time.

Comment/Statement - Page 3, second paragraph – “Regarding the Low Inflow Protocol...We propose that the LIP be designed to avoid at all cost the potential for "dry ups" that could result in a "sizable" loss of recreation days.”

Company's Clarification – The commenter exaggerates the issue of “dry ups.” Not one single scientifically supported report of dry ups and associated environmental devastation as described, is presented or referenced. Periodic dewatering of areas of the shoreline clearly can have some effect. But the duration and degree of any such effects are not discussed or documented. The issue relates to low inflow periods, when it may be expected that water dependent biota will be impacted and either adjust or suffer negative effects, which may be temporary if they occur at all.

Comment/Statement - Page 3, penultimate paragraph – “The Coalition is concerned about the potential for "dry ups" of littoral areas during the spring and summer months. Based on the Fishermen's Focus Group Analysis', most littoral vegetation lies between the 358' msl and the 356' msl elevation.”

Company's Clarification – SCE&G has seen no details regarding the methodology of the referenced “Fishermen's Focus Group Analysis.” It would appear that some sort of informal opinion poll or survey was conducted wherein those who claim to fish a lot on the lake, including those who charge money as guides or fish “professionally,” were asked their opinions about a variety of subjects, and then someone of undisclosed identity and qualification compiled the results and through some un-described methodology, produced conclusions. At neither meetings of the technical working groups or at any of the periodic public meetings has the referenced “Fishermen's Focus Group Analysis” been presented for peer review or consideration. Such matters are best left to the wildlife/fisheries biologists whose education and experience add weight to opinion, especially when backed up by substantial scientific study and data.

Comment/Statement - Page 4, fourth paragraph – “We propose that the LIP be designed to avoid at all cost, the potential for dry ups of thousands of private docks during the prime recreation season.”

Company's Clarification – The phrase “avoid at all costs” reveals the problem with these recommendations in regards to the Low Inflow Protocol (LIP), which is that it does not appropriately take into account the downstream interests or, in fact, any interests beyond the reservoir level as a convenience for lakeside homeowners and their desire for guaranteed full time dock and boating access.

John Frick's Comments dated March 1, 2009:

Rather than attempt to respond to every aspect of Mr. Frick's comments, Applicant will address only the more egregiously erroneous or misleading assertions. Using Mr. Frick's paragraph numbering references to identify the location of statements which Applicant specifically is addressing, SCE&G responds as follows:

Comment/Statement: 1. ".... making the purchase of public fringe lands a prerequisite for obtaining a dock permit."

Company's Clarification – The fringe land to which Mr. Frick refers, which is property lying inland of the 360' PD contour line and between the 360' line and the project boundary line (PBL), is private property. Until sold, it is owned in fee by SCE&G¹. Mr. Frick equates SCE&G's policy of allowing reasonable public access to its fringe land properties to "public ownership." This is incorrect.

Also, Mr. Frick's comments imply that SCE&G sells all the way down to the high water mark (360' PD), which also is incorrect. The Company retains ownership of the required buffer properties, i.e., presently a 75' wide strip measured horizontally above the 360' PD line. This has been the case for over 25 years and is required by the current license. SCE&G sells only that project property it is allowed by its license or specific Commission Order to sell

Comment/Statement: 2. "By circumventing existing FERC regulations..."

Company's Clarification – The Company does not circumvent and has not circumvented any regulations of the FERC. Mr. Frick has provided no evidence that it has.

Comment/Statement: 3. "SCE&G abused their position as licensee and misled FERC with..."

Company's Clarification – Mr. Frick's statements lack any basis in fact. The elements of the SCDNR's Wildlife Management Acreage program involving private property make it clear that it is a voluntary program. Properties are subject to being put in and taken out of the program upon the request of the property owners or at SCDNR's discretion. Acreages are constantly changing. There was and is no deception. There was no requirement that SCE&G track and report on changes in the number of acres in the Project vicinity contained within the WMA program at any particular time.

Comment/Statement: 4. "SCE&G as licensee preferentially categorized public lands adjacent to back property that they owned as future development..."

Company's Clarification – Mr. Frick's claims of some sort of economic conspiracy by SCE&G relating to classification of its properties as Forest Management is entirely fallacious. Mr. Frick has expressed very strong disappointment that he will be unable to secure permission for multiple docks for a planned development on his lake area property (fringeland) under shoreline management elements approved by the relicensing working groups and proposed by Applicant for Commission approval and operation during the new license period. Mr. Frick bought his property years ago, knowing that under rules currently in place, it would not be allowed to have

¹ Some fringe land was never owned by SCE&G. Such land comprises about 10-12% of the shoreline area where Licensee acquired only flowage and clearing rights. Thus, this statement about sale by SCE&G does not apply to those properties.

any docks whatsoever. Under new rules, he now will be able to have a single dock. He wants more.

Comment/Statement: 5. “When SCE&G categorized properties, it did so without consultation with the property owners, the counties, or the public as a whole. Meetings were held with a small number of developers and individuals selected by SCE&G without the knowledge of the citizenry.”

Company’s Clarification – The initial shoreline classifications, performed in compliance with Opinion No. 39 in the Commission’s Docket No. E-7791², did not have the benefit of public discourse that pervades the present relicensing process. Nonetheless, those classifications were not the product of covert meetings between SCE&G and developers and selected groups of individuals. The classifications, with very few changes (all changes having been specifically approved by the Commission after periods of public notice and allowance for comment from interested parties), have been in place for nearly 30 years. They were in place long before Mr. Frick bought his property and have been a matter of public record for all the years of their existence. The present relicensing process has been extraordinarily public in every respect, with participation by many organizations and individual private property owners as well. There is absolutely nothing about the classifications that has not been fully aired over the past five years.

Comment/Statement: 9. and 10.

9. “As a property owner, I was discouraged from attending the public meetings on multiple occasions by as many as 4 SCE&G employees and their licensing contractor. During the meetings comments and suggestions were allowed but largely ignored and rarely incorporated into the meeting minutes.”

10. “Meetings that were supposed to be public were often held on private SCE&G property protected behind a fence, gate and armed guards. Without prior notification and acceptance by the licensee, admittance was not possible.”

Company’s Clarification – Mr. Frick is a passionate and articulate advocate for his interests. However, at times he seemingly was unable to control his emotions to the point that he was on more than one occasion admonished that should he be unable to comport himself in a courteous and considerate manner, and should he not refrain from making personal attacks on other participants and long speeches, he would be asked to leave, or if necessary be physically removed, and not be allowed to return. In spite of Mr. Frick’s sometimes prickly behavior, he was fully able to make his views known and to argue the merits of his case. The minutes of meetings are replete with notes regarding Mr. Frick’s discussions and positions. As with others, when he asked from time to time to amend minutes to add materials or comments that were not a part of the meetings, his requests were refused. And he was reminded that the minutes were never intended as verbatim transcripts. The essence of the discussions was faithfully recorded, minutes circulated, and then finalized. They can be accessed by anyone with internet access.

Meetings of the technical working groups were always public. Most were held at SCE&G’s Lake Murray Training Center, located on the downstream side of the Saluda Dam, and accessed from a readily and heavily traveled public road. Visitors are required to pass through a security gate,

² *South Carolina Electric & Gas Company*, 7 FERC ¶ 61,180, *order on reh’g*, 8 FERC ¶ 61,161 (1979). The initial shoreline classifications were approved by the Commission in *South Carolina Electric & Gas Company*, 16 FERC ¶ 62,479 (1981).

but this hardly amounts to an impediment to participation in these meetings. Those people planning to attend were asked to provide their names in advance. This was to facilitate the process of passing through security gate as well as to provide a head count inasmuch as SCE&G usually provided snacks and lunch and needed that information for planning purposes. In no case of which the Applicant is aware was anyone seeking entry to participate ever refused. When someone's name was not provided to security personnel in advance, calls were made from the security gate to the meeting coordinator and permission was granted. The statement that admittance was not possible can only be described, generously, as an untruth.

Comment/Statement: 12. "SCE&G stated several times during the TWC meetings that their goal was to generate at least \$50 million in public fringe land sales.... Proposals that protected public lands while allowing adjacent property owners boating access to the lake were dismissed because they did not meet the revenue requirements demanded by SCE&G."

Company's Clarification – The \$50 million goal claim is at best a gross mischaracterization and exaggeration. During discussions of the Company's plans and needs for its remaining property around the reservoir, SCE&G made no secret of its desire to be able to continue to engage in some real estate sales in support of its operations. But SCE&G has no overarching sales goals for its remaining properties.

SCE&G has no idea what Mr. Frick is referring to with regard to his claim that "Proposals that protected public lands while allowing adjacent property owners boating access to the lake were dismissed because they did not meet the revenue requirements demanded by SCE&G." The Company makes no demands or sets any revenue requirements when it considers requests for boating access to the lake, so long as that access meets all shoreline management program criteria, which are based on lot size, location, and environmental consideration above all else.

SCE&G Comments to Scoping Document 2

SCE&G Comments to Scoping Document 2

The following comments are provided by South Carolina Electric & Gas Company (“SCE&G” or “Company”) to the Commission in response to the issuance of Scoping Document 2 (SD 2)

FERC Statement - Fourth bullet under Section 2.2 – Comments, Scoping Meetings, and Site Visit (Page 4) – “A wide range of issues and concerns were expressed at the scoping meetings, which we summarize as follows:

The need for establishing a Lake Murray guide curve, with an absolute minimum lake level recommended by some entities, and the need to examine the merits or effects of periodic winter drawdowns;...”

SCE&G Comment: Realizing that this is simply a summary of comments made, the issue is important enough that SCE&G believes it necessary to comment on this orally made request. SCE&G has worked very closely with all of the stakeholders to develop a guide curve that can be followed during normal flow periods. However, to place an absolute minimum elevation of anything higher than a pool level consistent with the original design of the Project structures as identified in Exhibit B would be detrimental to the ability of the Licensee to use Saluda Hydroelectric Project for its primary purpose of reserve generation. As noted in the transcript of the morning session of your scoping meeting (Page 55), a clarification to this concern was provided by Mr. Ray Ammarell in which he described the problem with setting an absolute minimum lake level as follows:

“That being said, any time the outflow exceeds the inflow, the reservoir is going to fall. And there's nothing to prevent that. So you can't set an absolute minimum and say it's never going to go below that, because if the inflow is very low for an extended period of time, then even the most restrictive outflow regimes will result in the lake falling below whatever level you might set.”

FERC Statement - Second Response (Page 7) - “We discuss several of these issues above or in other places in this section. In addition, we have already identified some of the concerns in SD1 as issues to be assessed in the EA. However, we have added a new bullet in SD2, Aquatic Resources, that shows that staff intends to examine the effects of project operations on a stream flow regimen downstream of the Saluda dam that would approximate natural flow values.”

and

Fourth bullet under Section 4.2.2 – Terrestrial Resources (Page 25) “Effects of project operation on potential stream flow regimes in the lower Saluda River, downstream from the Saluda dam, which would create natural flow values essential to river health, including riparian, wetland, and floodplain functions.”

Company's Comment – SCE&G takes exception to the staff-stated intent in SD2 to evaluate the effects of Project operation on stream flow regimes which would create natural flow values. Evaluating flow regimes approximating or based upon “natural flow values” is inconsistent with the FERC policy of considering the project as a given and not basing evaluations and decisions on pre-dam/pre-project conditions¹. This appears to be inconsistent with judicially approved FERC policy. Therefore, SCE&G respectfully requests the Commission to eliminate consideration of natural flow values in conducting the environmental analysis.

¹ See U.S. Court of Appeals for the Ninth Circuit in *American Rivers v. FERC*, 210 F.3d 1186 (9th Cir. 1999).

SOUTH CAROLINA ELECTRIC & GAS COMPANY

COLUMBIA, SOUTH CAROLINA

SALUDA HYDROELECTRIC PROJECT

2008 ANNUAL REPORT ON WATER QUALITY AND AERATION OPERATIONS AT THE SALUDA PROJECT

May 2009

Prepared by: Jim Ruane and Andy Sawyer, Reservoir Environmental Management, Inc

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Energy & Water Resource Consultants

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2008 ANNUAL REPORT ON WATER QUALITY AND AERATION OPERATIONS AT THE SALUDA PROJECT

INTRODUCTION

As required by Section 8.5 of the Offer of Settlement on Complaint Regarding Water Quality in the Lower Saluda River (“Settlement Agreement”), submitted to the Federal Energy Regulatory Commission on May 19, 2004 and approved by the Commission in an order issued on July 15, 2004, as modified by an order issued on December 21, 2004, South Carolina Electric & Gas Company (“SCE&G” or “Company”), as the licensee for the Saluda Hydroelectric Project (“Saluda Project” or “Project”) has prepared this annual summary of the following topics:

1. Dissolved Oxygen (“DO”) and other water quality monitoring results for Lake Murray and the Lower Saluda River (“LSR”);
2. A preliminary evaluation of the implementation of the prior year’s Operating Plan; and
3. Preliminary recommendations for the coming year’s Operating Plan

This report will present the results of water quality monitoring, as based on data obtained from the United States Geological Survey (“USGS”),¹ for the period June 1 through the time of lake turnover that occurred in mid-November 2008. Then, an evaluation of maintaining the goal of the water quality standard, as expressed in Sections 9.2 and 9.3 of the Settlement Agreement, will be presented, subject to the conditions identified in Section 9.3.

The following background considerations are restated from the 2004 Operating Plan, the initial operating plan submitted in compliance with the Settlement Agreement:

¹ As with any *in-situ* continuous monitor, anomalous readings occur from time to time, due to equipment fouling or malfunction. If the USGS determines the data are suspect through their Quality Control/Quality Assurance Program, that data may be ignored, appropriately adjusted, or otherwise dealt with according to their final determination. It is acknowledged that the USGS data is reported initially as “provisional.” SCE&G will use it subject to the data error issues discussed here.

- The Company is committed to complying with the DO standard for the Saluda River downstream from Saluda Project to the extent practicable. Factors affecting the ability to insure continuous compliance include:
 - the limited capability for aeration of water released through the turbine units;
 - the requirement that SCE&G manage water levels in Lake Murray for project safety and other reasons;
 - the need to use Saluda Hydro for the special operating needs specified under Item 9.3 of the Settlement Agreement; and
 - the need to meet SCE&G's reserve obligation to maintain electric load-generation balancing and management of local voltages and system frequency in real time.
- Generators sometimes fail, and generation failures generally are unpredicted and sudden, upsetting the load-generation balance. Because electricity cannot be stored, any sudden reduction in generation cannot be handled by an inventory, as might happen in most other kinds of business. Instead, generation losses must be met by reserve generation that can be dispatched instantly, before voltage sags or frequency excursions lead to local or widespread blackouts. The Company is a member of the Virginia-Carolinas Southeastern Electric Reliability Council sub-region ("VACAR"), whose members are bound in a reserve-sharing agreement by which each has agreed to assist any other member in generation emergencies. As part of its obligations as a member of VACAR, SCE&G must employ its reserves to meet its own generation emergencies before calling on assistance from other VACAR members, and it must be constantly ready to provide reserve generation to other VACAR members. Generally, the reserves required to be maintained by SCE&G are in the range of 190-200 MW, which matches the capacity of the Saluda Project and its ability to respond quickly to any generation outage on its system.

During the low DO period of 2008, SCE&G implemented the operating plan summarized below and contained in Appendix A:

- The plan addressed the limited objectives identified in the settlement agreement, i.e., doing what reasonably could be done to improve the likelihood that stream-specific

DO standards would be met in the LSR, while, at the same time, not constraining in any manner SCE&G's ability to use the Saluda Project to meet its reserve obligations.

- The plan also included evaluations of hub baffles, headcover seals, and existing water quality monitoring equipment.

Overview of 2008 Aeration Operations:

The site-specific DO standard for the LSR was maintained during most of the period June through November.

Positive developments for the 2008 low DO period were the effectiveness of the aeration systems on Units 1 through 4 with hub baffles installed and reduced headcover seal leakage, and the availability of relatively higher DO levels at the intake of Unit 5 starting about October 26. The aeration systems currently in place reflect implementation of best attainable turbine venting systems for the original units at Saluda Hydro.

The DO measured by the water quality monitor (02168504) maintained by the United States Geological Survey ("USGS") some 755 yards downstream from the project's powerhouse was less than the standard on nine occasions for system reserve when the flow through the Saluda Project was greater than flow levels at which current turbine aeration can attain the DO standard:

1. August 24, DO less than 4 mg/L for two hours
2. August 28, DO less than 4 mg/L for three hours
3. August 30, DO less than 4 mg/L for one hour
4. September 6, DO less than 4 mg/L for six hours
5. September 9, DO less than 4 mg/L for one hour
6. September 26, DO less than 4 mg/L for three hours
7. October 5, DO less than 4 mg/L for three hours
8. October 6, DO less than 4 mg/L for seven hours
9. November 3, DO less than 4 mg/L for five hours

All the excursions are summarized in a summary section following the presentations of each period of excursions.

SUMMARY OF 2008 OPERATIONS AND WATER QUALITY MONITORING RESULTS

Water Management and Reserve Obligations:

The gauged inflows and pool level elevations of Lake Murray over the period of assessment are presented in Figures 1 and 2.

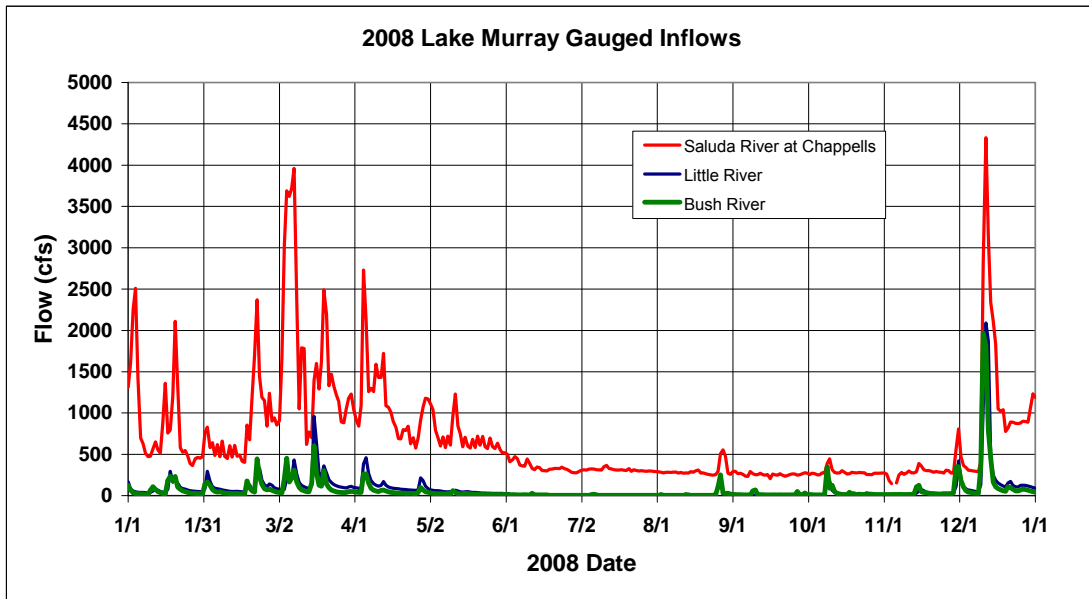


Figure 1: 2008 Lake Murray Gauged Inflows.

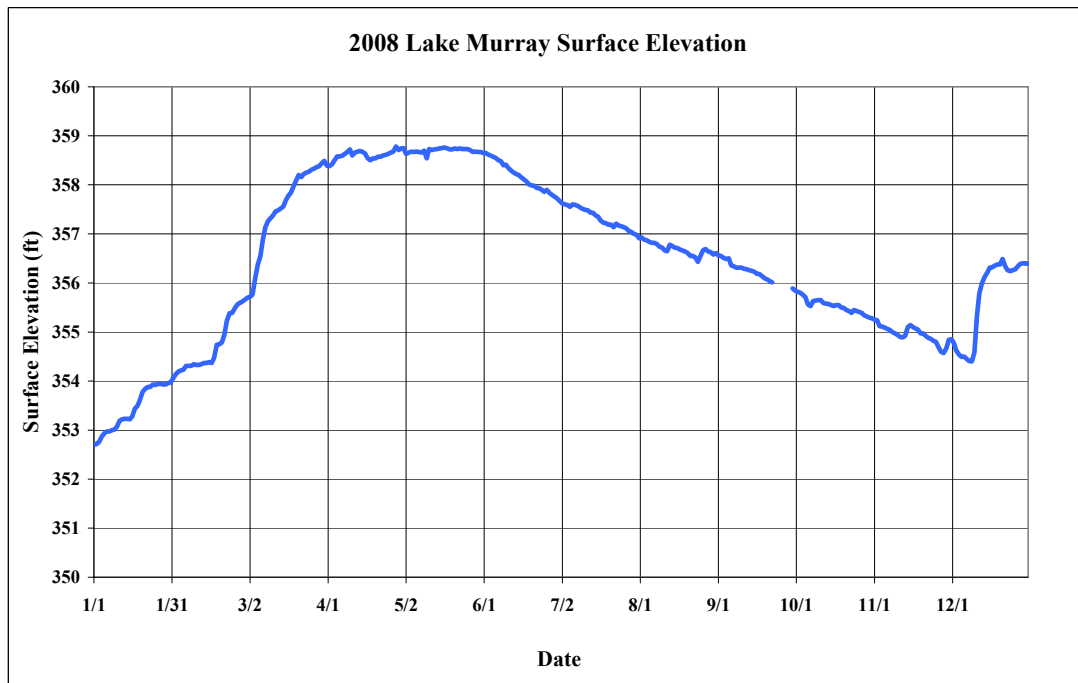


Figure 2: 2008 Pool Elevation of Lake Murray.

The Saluda Project was called upon to meet the Company's reserve obligation during the low DO period on the following dates: July 11, 17, 18, 28, and 31; August 1, 24, 28, and 30; September 6, 9, and 26; October 5 and 6; and November 3 and 11.

Unit Operations and Aeration Systems:

All air valves were 50% open starting on July 7 and 100% open as of July 22, and continued to be open during the rest of the low DO period.

Unit 5 was operated on the basis of "last unit on, and first unit off" during the low DO period. Unit 2 draws about 25-33% less air than Unit 1 (the best aerating unit), and Unit 3 draws about 50% less air than Unit 1. Larger hub baffles were installed on Unit 5 in 2007, but air flow did not increase significantly.

Water Quality Data:

Figures 3 and 4 present the profiles of temperature and DO collected in the forebay of Lake Murray in 2008. These profiles show that DO in front of the intakes for Units 1-4 was near zero starting in mid-September.

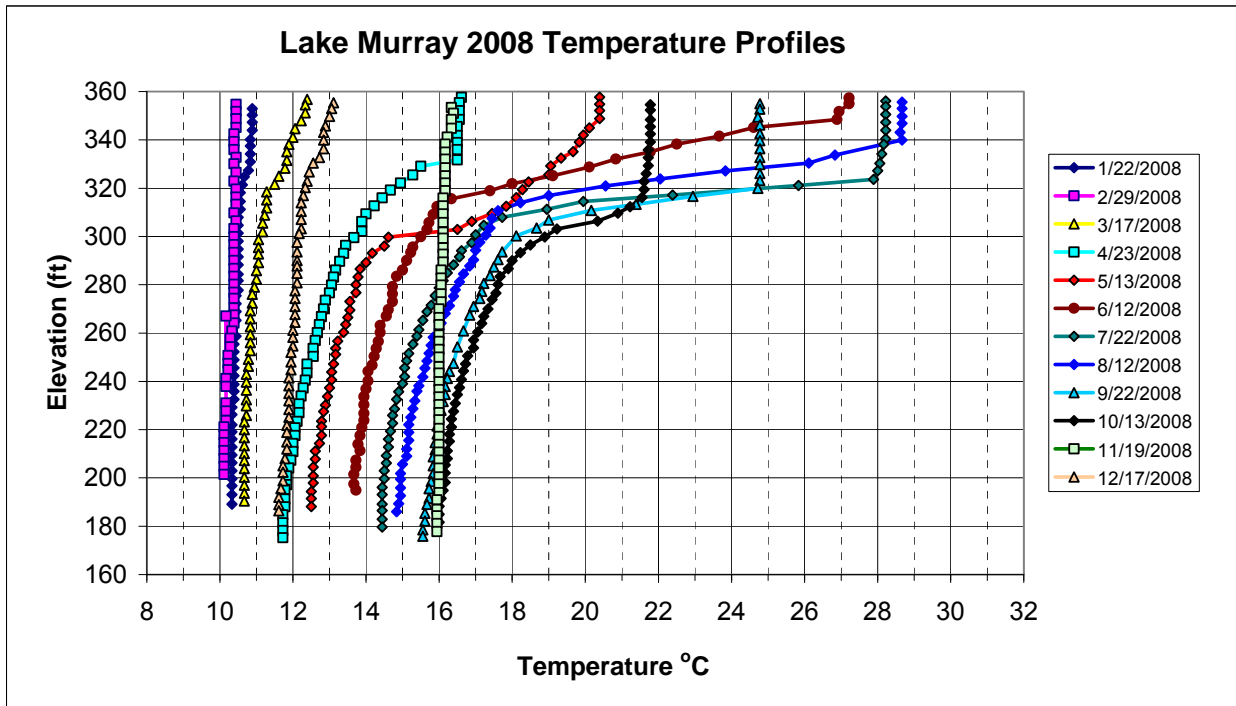


Figure 3: 2008 Temperature Profiles in Lake Murray

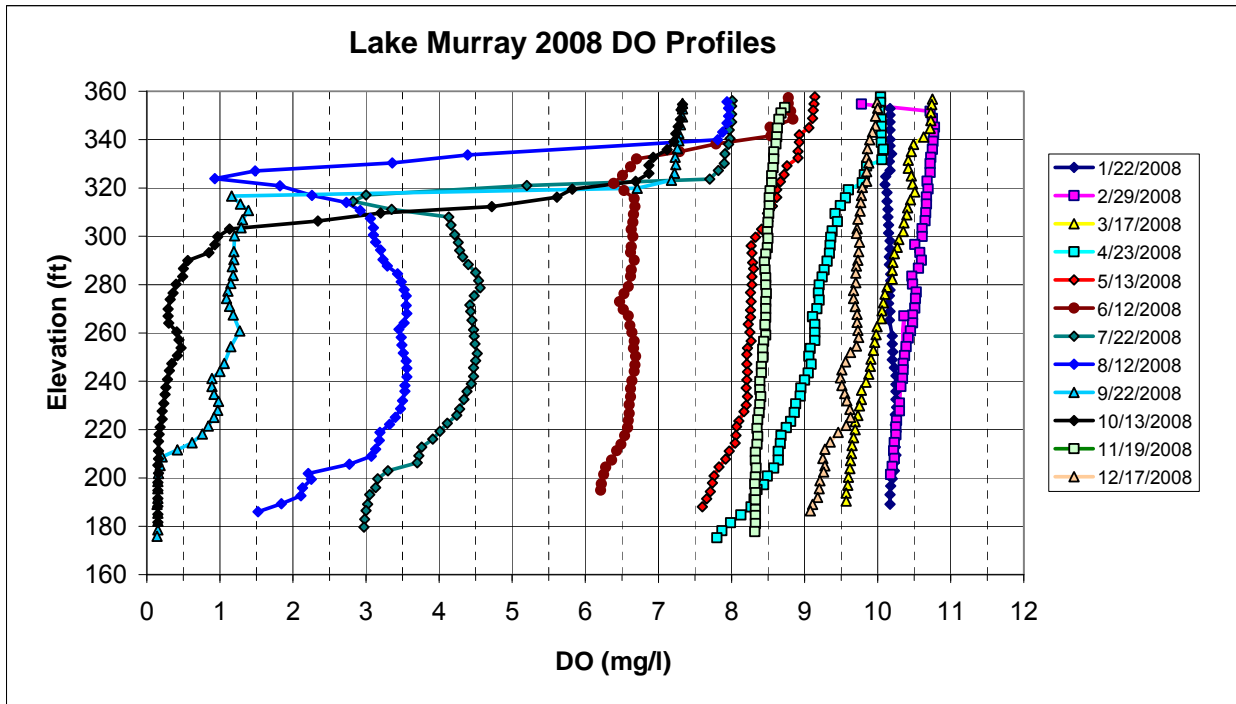


Figure 4: 2008 DO Profiles in Lake Murray

Figure 5 presents the temperature and DO results from the USGS monitors in the forebay of Lake Murray. Figure 5 shows that the temperature and DO at the intake for Unit 5 (i.e., DO-Bottom) increased to about the same level as the surface water in the lake in late October, preceded by transient changes in temperature and DO.

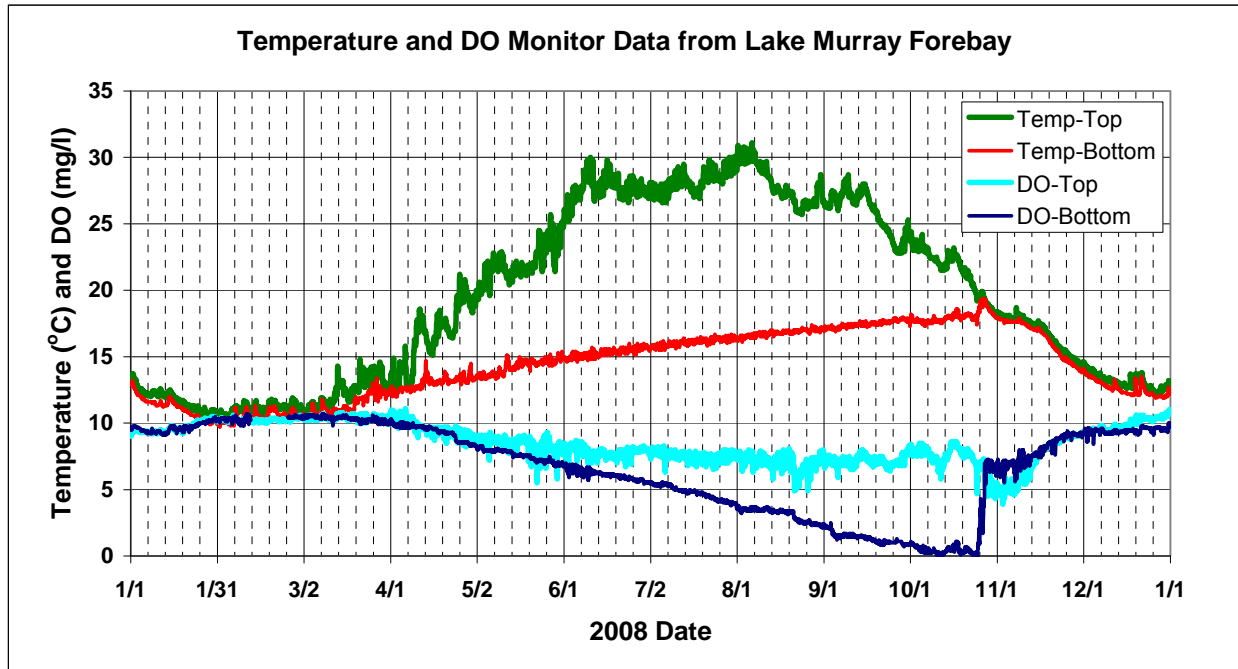


Figure 5: Temperature and DO Monitor Data from Lake Murray Forebay

Figure 6 presents the temperature and DO results of measurements at the USGS monitor immediately downstream from the Saluda Powerhouse. The graph includes the data recorded by the monitor as adjusted by USGS, the pre-calibration measurements of the monitor, and data collected using a separate field monitor by USGS as they performed maintenance on the stationary monitor (i.e., the monitor that was relocated to the center of the river as agreed to in the 2006 annual meeting.) It also includes the flow measurements by the USGS gauge as well as the daily average and the 30-day average DO values.

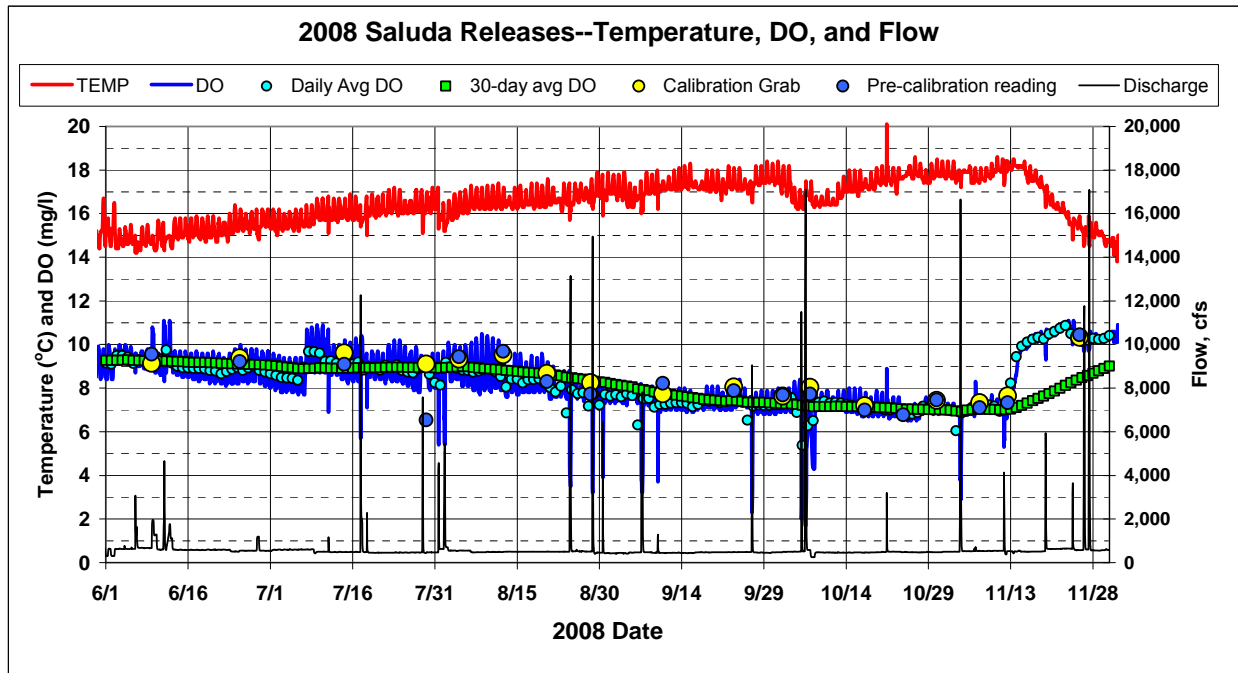


Figure 6: 2008 Saluda Releases – Temperature, DO, and Flow

Figure 7 presents the temperature and DO results of measurements at the USGS monitor (02169000) about eight miles downstream from the Saluda Powerhouse near the confluence of the Saluda and Broad Rivers. The graph includes the data recorded by the monitor as adjusted by USGS. It also includes the flow measurements by the USGS gauge as well as the daily average DO values.

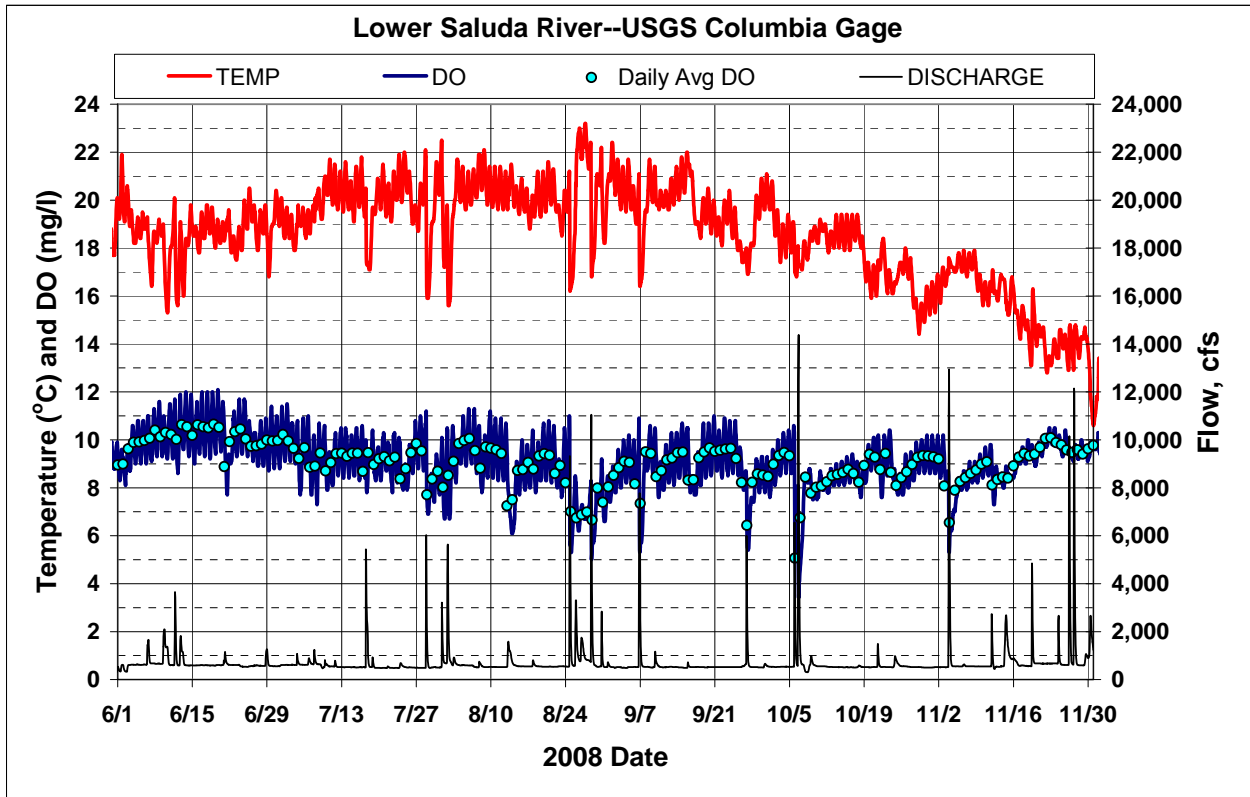


Figure 7: Lower Saluda River – USGS Columbia Gauge

EVALUATION OF 2008 OPERATIONS

In general, the levels of DO in the tailrace were similar to those observed in 2006 and 2007. This continued improvement compared to years prior to 2006 is attributed primarily to the installation of the hub baffles for Units 1 through 4, the reduction of headcover leakage on Units 2 and 3, and the low flows during these years. Excursions of DO less than the SCDHEC site-specific DO standard, as agreed upon in the Settlement Agreement, that were attributable to operations occurred nine times. All of these occasions occurred when the flow through the Saluda Project was greater than flow levels at which available turbine aeration could attain the DO standard. Figure 8 presents an enhanced view of the DO and flow conditions during the time period in which the excursions occurred.

Figure 8 shows that these excursions occurred over the following time periods:

1. August 24, DO less than 4 mg/L for two hours, for system reserve, minimum DO of 3.5 mg/L, average DO of 3.7 mg/L
2. August 28, DO less than 4 mg/L for three hours, for system reserve, minimum DO of 3.2 mg/L, average DO of 3.4 mg/L
3. August 30, DO less than 4 mg/L for one hour, for system reserve, minimum DO of 3.9 mg/L, average DO of 3.9 mg/L
4. September 6, DO less than 4 mg/L for six hours, for system reserve, minimum DO of 3.2 mg/L, average DO of 3.5 mg/L
5. September 9, DO less than 4 mg/L for one hour, for system reserve, minimum DO of 3.7 mg/L, average DO of 3.7 mg/L
6. September 26, DO less than 4 mg/L for three hours, for system reserve, minimum DO of 2.3 mg/L, average DO of 2.7 mg/L
7. October 5, DO less than 4 mg/L for three hours, for system reserve, minimum DO of 2.0 mg/L, average DO of 2.2 mg/L
8. October 6, DO less than 4 mg/L for seven hours, for system reserve, minimum DO of 1.7 mg/L, average DO of 2.1 mg/L
9. November 3, DO less than 4 mg/L for five hours, for system reserve, minimum DO of 2.9 mg/L, average DO of 3.6 mg/L

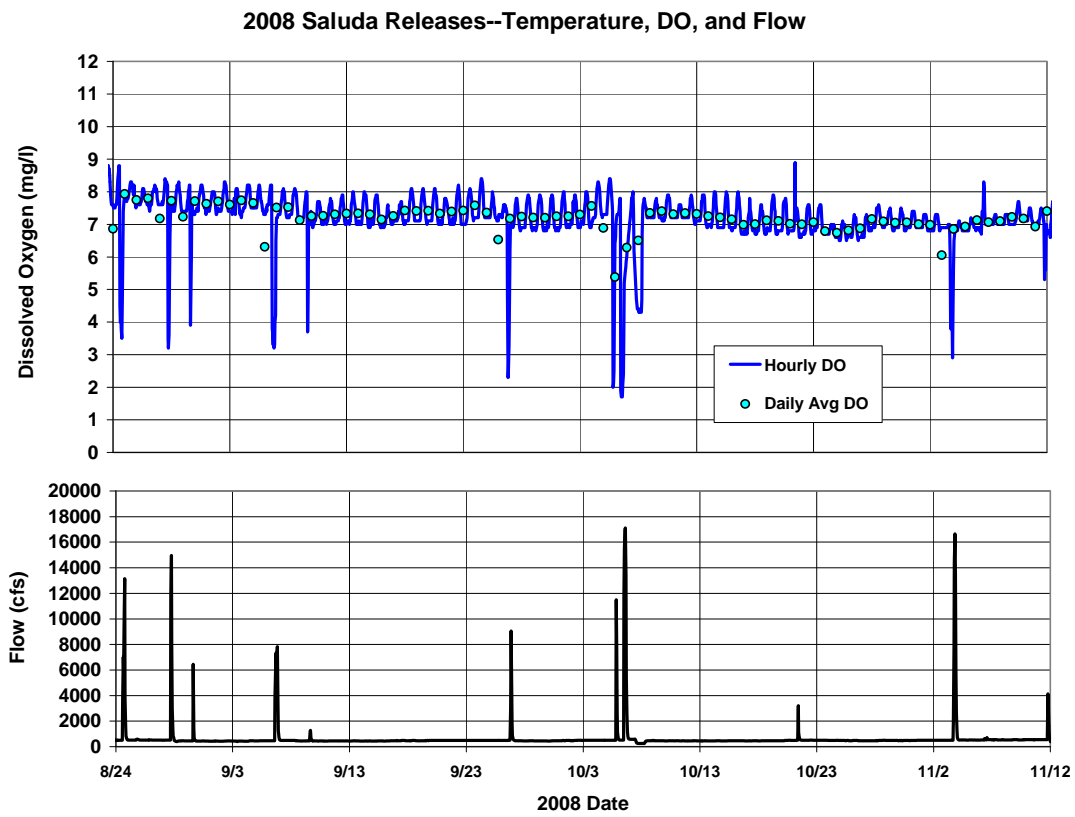


Figure 8: 2008 Saluda Releases – Period when Excursions Occurred.

Summary of all Excursions during the Period of Study:

The summary is presented in Table 1. All excursions of the DO standard were caused by operations to meet reserve obligations under VACAR. There were 31 hourly excursions of the 4 mg/L hourly minimum DO. Excursions were fewer in number in 2008 than in 2007 (34 excursions, 11 hours caused by operations to meet reserve obligations and 23 hours for aeration studies) and 2006 (49 excursions, 20 hours caused by operations to meet reserve obligations and 29 hours for aeration studies). Excursions in 2008 were significantly fewer than those in 2005 which encompassed 224 hours for operations (including pool water management) and 41 hours for special studies (including the monitor location study as well as aeration studies). Dissolved oxygen levels in the LSR, measured below Saluda Hydro, met or exceeded the instantaneous minimum standard of 4.0 mg/l 99.65 % of the time in 2008. There were no excursions of the daily average DO of 5 mg/L or the 30-day average DO of 5.5 mg/L in 2008.

Table 1: Summary of Excursions of DO Less Than the SC Site-Specific DO Standard (Hourly and Daily Standards)

Summary of Excursions for 2008--Causes and Metrics, based on USGS indicated DO monitor readings								
Causes	Dates	Number of Hours < 4 mg/L	% of Time < 4 mg/L	Average DO during Excursions	Minimum DO during Excursions	Number of Days Avg DO < 5 mg/L	% of Time < 5 mg/L Daily Avg	Comments
Operations	Aug 24	2	0.02	3.7	3.5	0		System reserve--5-hr
	Aug 28	3	0.03	3.4	3.2	0		System reserve--3-hr
	Aug 30	1	0.01	3.9	3.9	0		System reserve--1-hr
	Sep 6	6	0.07	3.5	3.2	0		System reserve--6-hr
	Sep 9	1	0.01	3.7	3.7	0		System reserve--2-hr
	Sep 26	3	0.03	2.7	2.3	0		System reserve--3-hr
	Oct 5	3	0.03	2.2	2.0	0		System reserve--3-hr
	Oct 6	7	0.08	2.1	1.7	0		System reserve--7-hr
	Nov 3	5	0.06	3.6	2.9	0		System reserve--6-hr
Totals and Averages		31	0.35			0		

Performance of the Look-Up Tables:

The LUTs developed for 2008 were implemented and reflect the effects of the hub baffles that were added to Units 1-5 and the repairs to the headcover seals for Units 1-4. They appeared to perform well, and they should continue to be used in 2009.

Comments on the current monitoring system:

The increased frequency of the DO monitor maintenance during the months September through November starting in 2006 improved the performance of the DO monitor. However, to evaluate the feasibility of reducing the frequency of maintenance to once every two weeks, the USGS installed on August 28, 2008 an optical DO probe (YSI 600 OMS ROX) that retains calibration for longer periods of time and is less susceptible to biochemical fouling than the previous DO monitors that were used at Saluda Hydro. It was expected that this new monitor would allow for calibration checks to be performed less frequently and still provide reliable DO monitoring.

Figure 9 is a plot of the differences between the continuous monitor downstream from Saluda Hydro and a calibrated field monitor each time the continuous monitor was cleaned and calibrated during the low DO periods in 2006, 2007 and 2008. Negative values indicate that the continuous monitor was under-recording DO when compared to the calibrated field monitor. In 2006 the continuous monitor was cleaned and calibrated two times per week during the low DO period. In 2007 the calibration checks were changed to weekly, and that frequency was continued in 2008. The mean deviations during the low DO periods (9/1 – 11/15) for 2006, 2007 and 2008 were 0.36, 0.60 and 0.22 mg/L, respectively (see Table 2). The difference in the mean deviation between 2006 and 2007 is most likely due to the reduced frequency of monitor cleaning and calibration. However the improvement seen in the mean deviation in 2008 is most likely due to the change to the more reliable optical DO probe (i.e., the optical DO probe with weekly cleaning and calibration was more reliable than the previous monitor was during 2006 when it was being cleaned and calibrated two times every week).

Considering that the frequency of calibration checks varied over the three-year period and the new optical DO probe was installed in 2008, the drift (i.e., fouling) rate was determined for each calibration check over the three years by dividing the monitor deviations by the number of days preceding each of the calibration checks. As shown in Table 2, the mean drift rates for 2006, 2007 and 2008 were 0.07, 0.08 and 0.03 mg/L, respectively. The drift rate of the optical DO probe was almost 60 percent less than the rate for the original DO monitors. These results indicate that checking calibrations every two weeks would likely be sufficient.

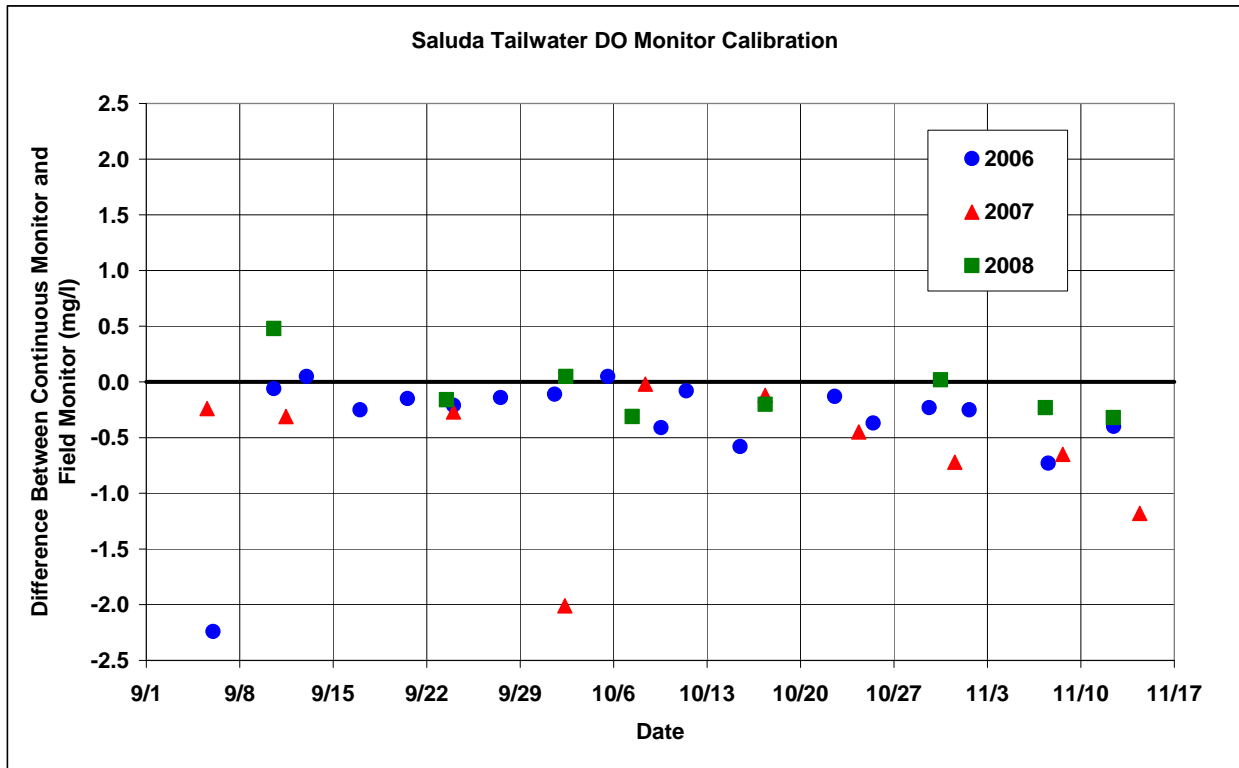


Figure 9: Difference Between the Continuous Monitor and the Calibrated Field Monitor

Table 2: Summary of Continuous Monitor Drift Rates for 2006, 2007, 2008

Year	Means of Absolute Deviations Between the Continuous and Field Monitors, mg/l	Mean of Absolute Drift Rates, mg/l/day
2006	0.36	0.07
2007	0.60	0.08
2008	0.22	0.03

RECOMMENDATIONS FOR 2009

1. With the installation of the new optical DO probe in the tailrace, it is recommended that the USGS return to checking the calibration of the monitor every two weeks instead of on a weekly basis.
2. Implement the LUTS used in 2008.
3. Conduct annual training within SCE&G so that operators are prepared to minimize DO excursions.
4. Review the SCE&G water management procedure to allow sufficient aeration to meet the DO objectives in the tailrace when the pool level is being lowered for normal seasonal operations.
5. SCE&G will notify organizations desiring special releases from the Saluda Project that might adversely affect the level of DO in the tailwater to schedule their activities during periods of the year when low DO is not normally a concern.

MONITORING OF DISSOLVED OXYGEN IN THE TAILRACE

The current USGS water quality monitor in the tailrace has served its purpose well with respect to providing information on temperature and DO conditions. Also, the USGS is now correcting provisional data following calibration checks, although the corrections may not be made on the web site for about one month following data collection. The USGS has also developed and implemented a procedure to rate the accuracy of their monitors. The monitor below Saluda Hydro has in the past been rated as “good” and has an accuracy of $\pm 0.3-0.5$ mg/L. In 2006, SCE&G relocated this USGS gage to the center of the river channel as recommended in the 2005 operating results report in order to reduce fouling of the gage and improve its representation of DO in the releases from the Saluda Project. USGS is now using a new optical DO probe that experiences much less fouling than previous probes.

APPENDIX A

**FINAL GUIDELINES FOR OPERATION OF THE SALUDA
PROJECT
FOR DISSOLVED OXYGEN MANAGEMENT IN 2009**

GUIDELINES FOR OPERATION OF THE SALUDA PROJECT FOR DISSOLVED OXYGEN MANAGEMENT IN 2009

PURPOSE

These Guidelines for Operation of the Saluda Project for Dissolved Oxygen Compliance are prepared pursuant to the *Offer of Settlement On Complaint Regarding Water Quality In Lower Saluda River* (May 19, 2004) (Settlement Agreement). Paragraph 9.3 of the Settlement Agreement provides the following:

To the extent within SCE&G's reasonable control, each Operating Plan will seek to enhance existing water quality in the lower Saluda River and, more specifically, seek to achieve DO concentrations of 4 mg/l minimum, 5 mg/l daily average, and 5.5 mg/l monthly average in the lower Saluda River. In seeking to achieve this goal, each Operating Plan will preserve SCE&G's right or duty to modify operations as necessary to: (A) protect life and property, (B) respond to changed hydrologic or other circumstances not addressed in the Operating Plan, (C) maintain the use of the Project to meet system reserve obligations of 200 MW, and (D) comply with a lawful orders of the [Federal Energy Regulatory] Commission or other authorities. SCE&G will provide notice of such modification to the Conservation Groups, [South Carolina Department of Health and Environmental Control], and Other Agencies in advance of such modification if practicable, and otherwise, as soon as practicable thereafter. The Parties will then use their best efforts to modify the Operating Plan in response thereto.

SCE&G will implement these Guidelines consistent with paragraph 9.3.

LIMITATIONS

Paragraph 9.3 of the Settlement Agreement includes limitations and these limitations are more fully explained here. Operation of the Saluda Project affects dissolved oxygen (DO) levels in the Saluda River downstream of the Saluda Project. Factors affecting achievement and maintenance of the DO standard include: (1) the limited capability for aeration of water released through the turbine units, (2) the requirement that SCE&G manage water levels in Lake Murray for safety and other reasons, (3) the need to use Saluda Hydro for the special operating needs specified under paragraph 9.3 of the Settlement Agreement, and (4) the need to meet SCE&G's reserve

obligations as a member of the Virginia-Carolinas Southeastern Electric Reliability Council sub-region (VACAR).

Generating units occasionally fail, and these generation failures are not generally capable of prediction. These often sudden failures upset the load-generation balance. Because electricity cannot be stored, any such sudden reduction in generation cannot be made up by an inventory, as would be the case in most other kinds of business. Instead, generation losses must be met by reserve generation that can be dispatched instantly, before voltage sags or frequency excursions lead to local or widespread blackouts. VACAR members are bound in a reserve-sharing agreement by which each has agreed to assist any other member in generation emergencies. SCE&G must employ its reserves to meet its own generation emergencies before calling on assistance from other VACAR members, and it must be constantly ready to provide reserve generation to other VACAR members. Generally, the reserves required to be maintained by SCE&G are in the range of 190-200 MW, which matches the capacity of the Saluda Project and its ability to respond quickly to any generation outage on its system.

As done in 2004, 2005, 2006, 2007 and 2008, SCE&G will provide via email, during 2009, a weekly report to the South Carolina Department of Health and Environmental Control, South Carolina Coastal Conservation League (SCCCL) and other stakeholders documenting the previous week's operation of the Saluda Project.

Unless otherwise specified, these guidelines will be implemented by SCE&G.

TURBINE VENTING OPERATIONS

Use Lookup Tables (LUTs) As Guides To Aerate The Turbine Releases From the Saluda

Project. SCE&G will use the LUTs included in the document, “Lookup Tables for Operating the Saluda Project to Enhance Dissolved Oxygen in the Tailrace to the Extent Practicable for 2008,” (Appendix AA). These LUTs reflect the best estimate based on field testing and predictive models of how the units at Saluda Hydro can be operated to enhance downstream dissolved oxygen levels and still obtain target MW outputs, given the inflow DO and temperature conditions. To simplify use of the LUTs a condensed set of LUTs was developed, and these are in Appendix AB. Use of the LUTs in Appendix AB results in higher than normal DO levels in the tailwater for the conditions when DO in the inflow is greater than 1 mg/L since these LUTs are based on the assumption that DO in the inflow is zero mg/L.

Estimate Inflow DO and Temperature for Units 1-4 and Unit 5.

Turbine DO and temperature from inflows change during the course of the low DO period. To track DO and temperature conditions in the turbine inflows, SCE&G will obtain DO and temperature profiles in the Saluda Project forebay every other week and use these profiles to predict conditions in the turbine inflows. SCE&G also will use data collected by the United States Geological Survey (USGS) continuous water quality monitor located near the intake of Unit 5 (U5).² These data will also be used to evaluate the presence of conditions that call into operation, constraints to using U5 due to the potential for fish entrainment. If needed, a withdrawal zone model may be used to predict inflow temperature and DO.

Use DO Readings in the Tailrace from the USGS Monitor.

During 2009, the USGS monitor (USGS Gage No 02168504) will be used to track DO conditions in the tailrace on a daily basis, supplemented by periodic spot measurements by SCE&G, especially if DO, as measured at the monitor, appears erratic or is lower than expected (*e.g.*, suspected fouling, meter malfunction, *etc.*).

² As with any *in-situ* continuous monitor, anomalous readings occur from time to time, due to equipment fouling or malfunction. If the USGS determines the data are suspect through their Quality Control/Quality Assurance Program, that data may be ignored, appropriately adjusted, or otherwise dealt with according to their final determination. It is acknowledged that the USGS data is reported initially as “provisional.” SCE&G will use it subject to the data error issues discussed here and agreed to during the March 23, 2006 meeting.

Conduct training of operators in System Control. The System Control Manager will conduct a training session in May or June 2009 with System Operators to ensure proper application of the LUTs. Training of staff included review of current practices and procedures in the proper application of the LUTs. This training is normally conducted one month per year. Additional training will be conducted as the need arises.

APPENDIX AA
LOOKUP TABLES

LOOKUP TABLES FOR OPERATING THE SALUDA PROJECT TO ENHANCE DISSOLVED OXYGEN IN THE TAILRACE TO THE EXTENT PRACTICABLE FOR 2008

May 27, 2008

Lookup Tables (LUTs) will be used as a tool for operating the Saluda Project during the low DO period of 2008 so that the DO standard in the Lower Saluda River may be met continuously, subject to the limitations contained in paragraph 9.3 of the Settlement Agreement, and to provide optimal aeration when the standard otherwise cannot be met. The LUTs will be used by SCE&G to select the turbine units that will be operated at various total project flow rates and power production levels, under varying inflow DO concentrations and temperatures. Also, during 2008, the aeration system will be manually operated. It is expected that when a final turbine aeration system is installed at some point in the future, a computer-controlled automated system may be needed to adjust these operations for more optimal aeration.

The overall process used to develop the LUTs involved the following steps:

1. The aeration characteristics of units 1, 2, 3, and 4 were modeled using the discrete bubble model as described in “Saluda DO Standard Project—Lower Saluda River DO Technical Study Report, Appendix C, Prediction of Dissolved Oxygen Concentrations for Turbine Discharges from Saluda Hydro” 2003. The aeration characteristics of unit 5 were estimated based on data collected during turbine aeration testing in 2005 and 2006 (see report “Saluda Hydroelectric Project—2005-2007 Aeration Studies” revised draft May 2008.)
2. The predicted DO in the tailrace for each set of inflow DO and temperature conditions were then plotted over the range of hydro operations.
3. The LUTs were then developed using these graphs. One set of LUTs was developed assuming that the units were operated several hours per day and

the other set of LUTs was developed assuming the units were operated at a constant level over the course of the entire day.

4. LUTs were developed for a range of DO conditions at the intake, but for only one temperature condition that was similar to that expected during the low DO period of 2008. Model predictions were made for other temperature conditions, but the effort was not expended to develop LUTs for all the temperature conditions modeled due to the time required to develop LUTs. The results of aeration studies and the development of aeration models for the Project have shown that temperature has insignificant effect on DO (i.e., less than 0.2 mg/L) within the range of temperature variations in the turbine intakes.
5. The LUTs were developed using mass balance equations that integrated the effects of all the units and predicted DO in the tailrace, assuming full mixing of the releases from all the units.
6. For project operations, SCE&G System Control normally dispatches Saluda Hydro by power production levels rather than water flow rates; therefore, the flow rates initially determined using the turbine aeration model were supplemented by conversion to MW levels using the results of unit tests conducted in 1997 and 1998.

The assumed conditions for the turbine aeration systems are as follows:

1. Units 1-5 have hub baffles, and aeration characteristics for Units 1 and 4 were assumed to be as modeled in 2008 based on data collected on Units 1 and 4 in 2005 and 2006, respectively. Predicted DO levels for Units 2, 3, and 5 were based on data collected during testing in 2005 and 2006.
2. Unit 2 cannot be operated unless 2500 cfs is being released by the other units. Unit 5 would normally be operated on a “last on, first off” basis.

Assumptions used in developing the LUTs:

1. SCE&G plans to operate the Saluda Project at a minimal release of approximately 500 cfs during the summer of 2008. Under this condition, DO in the release from the Saluda Project should be well over the State DO standard for Units 1 and 4. Also, inflow water quality (*i.e.*, DO and temperature) will change slowly over the course of the summer and early autumn. The use of Unit 3 for providing minimum flows during the period of low DO will be avoided unless Units 1 and 4 are not available.
2. Two sets of LUTs were prepared: one set for hourly operations where the DO target is 4 mg/L (see discussion below), and the other set for daily operations where the DO target is 5 mg/L, *i.e.*, the daily operations tables will be applied when Saluda is being operated around the clock under steady state conditions, the hourly operations tables will be applied when one or more units are operated over a period of hours. An analysis of historical conditions (see the report supporting the new site-specific standard for DO for the Lower Saluda River) showed that if 4 mg/L was achieved over a period of several hours during a typical day of operations at the Saluda Project, the other requirements of the DO standard (*i.e.*, the daily average of 5 mg/L and the 30-day moving average of 5.5 mg/L) are achieved under almost all conditions. Considering the current aeration systems, the lack of computerized powerhouse controls, and the DO monitoring system, the use of these two sets of LUTs is considered to be what is practicable.
3. It was assumed that the target minimum DO would be 4 mg/L during the period of maximum release each day. This is because an analysis of historical conditions showed that if 4 mg/L was achieved during the maximum release period, the other requirements of the DO standard (*i.e.*, the daily average of 5 mg/L and the 30-day moving average of 5.5 mg/L) are achieved under almost all conditions.

4. For days when the Saluda Project would be operated through out the day, it was assumed that the target minimum DO would be 5 mg/L. This approach is consistent with the assumption that SCE&G plans to operate the Saluda Project at around 500 cfs during the low DO period of 2008.

Inflow water quality for Unit 5 was assumed to have the same conditions as the inflows for Units 1- 4. This is a conservative assumption in that DO in the inflow to Unit 5 is rarely less than the DO in the inflows to Units 1- 4. This is based upon an extensive review of historical reservoir profile data.

The following LUTs are proposed for the operating guides for achieving aeration objectives during the low DO period of 2008. Figures 1 through 6 show the predicted DO concentrations in the tailrace versus unit releases for various operating conditions (i.e., inflow water quality conditions) at the Saluda Project. These graphs were used in developing the LUTs.

LOOKUP TABLES FOR HOURLY OPERATIONS
(DO TARGET IS GREATER THAN OR EQUAL TO 4 MG/L)

(Note: DO_{min} values in the following tables are the predicted lowest DO levels that would be expected to occur for the range of stated DO and temperature inflow conditions and the project flows. These values are provided only for those operations that might not attain the 4 mg/L DO objective in the tailrace.)

Turbine Inflow Conditions: DO 3 – 3.9 mg/L; Temperature = 15°C (approximately mid-July to August 1)		
MWs desired	Approx. flow (cfs)	For Hourly operations, the following is recommended:
≤ 18	≤ 1500	U1; U3; U4; U5 (last on, first off) U2 (restricted for thermal load),
18-28	1500-2250	U1; U4; U3; U5 (last on, first off); U2 (restricted for thermal load)
28-37	2250-3150	U1; U4; U3; U5 (last on, first off); U2 (restricted for thermal load)
37-75	3150-6300	Any two units ^{***} (except U5) Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	Any three units (except U5) Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600, limit for 4 mg/L	Any available small units with U5 as needed to supplement the small units;
≥ 150	≥ 12,600	Any units with preference to U1, U4, U2 and U3, then U5. DO _{min} = 3.7

*** unless unit-specific flows are listed, “any 2 units”, “any 3 units”, and “any 4 units” implies splitting flow approximately evenly between the units.

Turbine Inflow Conditions: DO 2 – 2.9 mg/L; Temperature = 16°C (approximately August 1 to mid-August); DO objective in tailrace is 4 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Hourly</u> operations, the following is recommended:
≤ 16	≤ 1400	U1; U4; U3;
16-37	1400-3150	U1; U4; U3 DO _{min} = 3.3; U5 (last on, first off) DO _{min} = 3.0
37-75	3150-6300, limit for 4 mg/L	U1+ any unit (except U5); U4+ any unit (except U5) DO _{min} = 3.4; U3+U2 DO _{min} = 3.2; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	U1+U2+U3+U4 DO _{min} = 3.8; U1+U4+(U2 or U3), DO _{min} = 3.6; U4+U2+U3 DO _{min} = 3.2; U2+U3+U5 DO _{min} = 3.0 with U5 (last on, first off) Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	Four original units DO _{min} = 3.3; any available small units with U5 as needed to supplement the small units; DO _{min} = 3.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5, DO _{min} = 3.0; U1+U2+U3+U5@72MW, DO _{min} = 2.7; U4+U2+U3+U5@72MW, DO _{min} = 2.6 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 2.8 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Turbine Inflow Conditions: DO 1 – 1.9 mg/L; Temperature = 16°C (approximately mid-August to September 1); DO objective in tailrace is 4 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Hourly</u> operations, the following is recommended:
≤ 14	≤ 1250	U1, U3, U4
14-21	1250-1750	Any original unit;
21-32	1750-2750	U1; U4; U3 DO _{min} = 2.9;
32-37	2750-3150	U1; U3+U4; U4 DO _{min} = 3.5; U3 DO _{min} = 2.4
37-50	3150-4000, limit for 4 mg/L	U1+U4; U1+U3 DO _{min} = 3.6; U4+U3 DO _{min} = 3.4; (U1 or U4)+U5 (last on, first off) DO _{min} = 3.0; U3+U5 (last on, first off) DO _{min} = 2.5
50-75	4000-6300	U1+U4 DO _{min} = 3.5; U1+(U2 or U3) DO _{min} = 3.1; U4+(U2 or U3) DO _{min} = 2.5; U3+(U2 or U5) DO _{min} = 2.2 with U5 (last on, first off) Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	Four original units DO _{min} = 3.0; U1+U4+U2 or U3 DO _{min} = 2.7; U1+U2+U3 DO _{min} = 2.5; U4+U2+U3 DO _{min} = 2.3; any two small units with U5 (last on, first off) DO _{min} = 2.1 to 2.7 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	U1+U4+U3+U2 DO _{min} = 2.4; U1+U4+(U3 or U2)+U5 DO _{min} = 2.3; U2+U3+U4+U5 DO _{min} = 2.1; U3+U2+U5@72MW DO _{min} = 1.6 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5, DO _{min} = 2.1; U1 or U4+U2+U3+U5, DO _{min} = 1.7; three small units+U5, DO _{min} = 1.4 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 1.8 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Turbine Inflow Conditions: DO 0 – 0.9 mg/L; Temperature = 16°C (approximately September 1 to mid-September and stays at 0 until lake mixing); DO objective in tailrace is 4 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Hourly</u> operations, the following is recommended:
≤ 12	≤ 1100	Any unit except U2 or U5
12-19	1100-1600	U1, U3 or U4;
19-29	1600-2400	U1; any two units except U2 or U5; U4 DO _{min} = 3.4; U3 DO _{min} = 2.2;
29-38	2400-3200	U1+U4; U3+U4; U1 DO _{min} = 3.6; U4 DO _{min} = 2.7; U3 DO _{min} = 1.5;
38-57	3200-4800, limit for 4 mg/L	U1+U3+U4; U1+U4 DO _{min} = 3.2; U1+U2 DO _{min} = 2.8; U1+U3 DO _{min} = 2.8; U2+U4 DO _{min} = 2.6; U3+U4 DO _{min} = 2.4; U2+U3 DO _{min} = 2.0;
57-75	4800-6300	U1+U4 DO _{min} = 2.6; U1+U2 or U3 DO _{min} = 2.3; U4+U2 or U3 DO _{min} = 1.8; If only one small unit is operating, consider U5 (last on, first off) as follows: U1+U5 DO _{min} = 2.1; U4+U5 DO _{min} = 1.6; U2 or U3+U5 DO _{min} = 1.2 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	All 4 original units DO _{min} = 2.0; U1+U4+(U2 or U3) DO _{min} = 1.8; U1+U2+U3 DO _{min} = 1.6; U4+U2+U3 DO _{min} = 1.4; any available small units supplemented by U5 as needed DO _{min} = 0.7 ; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	All 4 original units DO _{min} = 1.5; If only three small units are operating, consider U5 (last on, first off) as follows: U1+U2+U3+U5, DO _{min} = 1.3; U4+U2+U3+U5, DO _{min} = 1.1; U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5 DO _{min} = 1.1; U1+U4+(U3 or U2)+U5@72MW, DO _{min} = 1.0; U1+U2+U3+U5@72MW, DO _{min} = 1.0; U4+U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 1.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Turbine Inflow Conditions: DO 0 – 0.9 mg/L; Temperature = 20°C (approximately September 1 to mid-September and stays at 0 until lake mixing); DO objective in tailrace is 4 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Hourly</u> operations, the following is recommended:
≤ 10	≤ 1000	Any unit except U2 and U5
10-18	1000-1500	U1, U3 or U4;
18-25	1500-2000	U1; Any two units except U2 and U5; U4 DO _{min} = 3.5; U3 DO _{min} = 2.6;
25-31	2000-2500	Any two small units except U2; U1 DO _{min} = 3.7; U4 DO _{min} = 3.1; U3 DO _{min} = 2.1;
31-36	2500-3000,	Any two small units except U2; U1 DO _{min} = 3.5; U4 DO _{min} = 2.7; U3 DO _{min} = 1.5;
36-44	3000-3600, limit for 4 mg/L	U1+U4; U1+U3 DO _{min} = 3.7; U4+U3 DO _{min} = 3.3; If only one small unit is operating, consider U5 (last on, first off) as follows: U1@ ≤ 33MW + U5@ ≤ 12MW DO _{min} = 3.7; U4@ ≤ 31MW + U5@ ≤ 12MW DO _{min} = 3.4;
44-75	3600-6300	All small units DO _{min} 3.5; U1 full gate + rest split between U3+U4 DO _{min} = 3.3; U1+U4+(U2 or U3) DO _{min} = 2.7; U1+U4 DO _{min} = 2.5; U4+U2+U3 DO _{min} = 2.3; U1+(U2 or U3) DO _{min} = 2.2; If only one small unit is operating, consider U5 (last on, first off) as follows: U1+U5 DO _{min} = 2.0; U4+U5 DO _{min} = 1.5; U2+U3 DO _{min} = 1.4; (U2 or U3)+U5 DO _{min} = 1.1; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	All four original units DO _{min} = 2.0; U1+U4+(U2 or U3) DO _{min} = 1.7; U1+U2+U3 DO _{min} = 1.5; U4+U2+U3 DO _{min} = 1.3; any one-two small units supplemented by U5 as needed DO _{min} = 0.7; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	All 4 original units DO _{min} = 1.4; U1+U4+U5+(U2 or U3) DO _{min} = 1.3; U1+U2+U3+U5, DO _{min} = 1.2; U4+U2+U3+U5, DO _{min} = 1.1; U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5 DO _{min} = 1.1; U1+U4+(U3 or U2)+U5@72MW, DO _{min} = 1.0; U1+U2+U3+U5@72MW, DO _{min} = 1.0; U4+U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 1.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Lookup Tables for Daily Operations

(DO Target Is Greater Than or Equal to 5 mg/L)

(Note: DO_{min} values in the following tables are the predicted lowest DO levels that would be expected to occur for the range of stated DO and temperature inflow conditions and the project flows. These values are provided only for those operations that might not attain the 5 mg/L DO objective in the tailrace.)

Turbine Inflow Conditions: DO 4 – 4.9 mg/L; Temperature = 14°C (approximately July 1 to mid-July); DO objective in tailrace is 5 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Daily</u> operating conditions (i.e., operating ~ 24 hours per day), the following is recommended:
≤ 25	≤ 2000	Any unit except U2 and U5
25-37	2000-3150	Any original unit(s) except U2;
37-75	3150-6300	Any 2 or more original units; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	Any 3 or 4 small units; if only one original unit is available and U5 is operated up to 72MW, DO _{min} = 4.4 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600, limit for 5 mg/L	Any 4 or more units; if U1 and U4 are out and U5 is operated up to 72MW DO _{min} = 4.6 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	All 5 units DO _{min} = 4.9; if U1 or U4 is out DO _{min} 4.5; U1+U4+U5@72MW+U2 or U3 DO _{min} = 4.7 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units DO _{min} = 4.8 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

*See discussion in Appendix A on Page 1 Paragraph 1, and Items 2 and 4 on Pages 8 and 9.

Turbine Inflow Conditions: DO 3 – 3.9 mg/L; Temperature = 15°C (approximately mid-July to August 1); DO objective in tailrace is 5 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Daily</u> operating conditions (i.e., operating ~ 24 hours per day), the following is recommended:
≤ 15	≤ 1350	Any unit except U2 and U5
15-25	1350-2000	Any original unit;
25-37	2000-3150	U1; U4; Flow split between any 2 units; U3 DO _{min} = 4.3;
37-75	3150-6300, limit for 5 mg/L	U1+U4; any 3 original units; U2+U3 DO _{min} = 4.3; U2+U5 DO _{min} = 4.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	All small units DO _{min} = 4.6; U1+U4+(U2 or U3) DO _{min} = 4.5; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	U1+U4+U2+U3 DO _{min} = 4.2 ; any available small units with U5 as needed to supplement the small units DO _{min} = 3.7 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 150	≥ 12,600	Any units with preference to U1, U4, U2 and U3, then U5. DO _{min} = 3.7 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Turbine Inflow Conditions: DO 2 – 2.9 mg/L; Temperature = 16°C (approximately August 1 to mid-August); DO objective in tailrace is 5 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Daily</u> operating conditions (i.e., operating ~ 24 hours per day), the following is recommended:
≤ 13	≤ 1200	Any unit except U2 and U5
13-21	1200-1750	Any original unit except U2 and U5;
21-28	1750-2250	U1; U4; Any 2 units except U2 and U5; U3 DO _{min} = 4.0;
28-37	2250-3150	U1; Any 2 original units; U4 DO _{min} = 4.3; U3 DO _{min} = 3.3;
37-75	3150-6300, limit for 5 mg/L	U1+U2+U3+U4; U1+U4+(U2 or U3) DO _{min} = 4.5; U1+U4 DO _{min} = 4.2; U1+(U2 or U3) DO _{min} = 3.8; U4+(U2 or U3) DO _{min} = 3.4; U2+U3 DO _{min} = 3.3; (U2 or U3)+U5 DO _{min} = 3.1 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	U1+U2+U3+U4 DO _{min} = 3.8; U1+U4+(U2 or U3), DO _{min} = 3.6; U4+U2+U3 DO _{min} = 3.2; U2+U3+U5 DO _{min} = 3.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	Four original units DO _{min} = 3.3; any available small units with U5 as needed to supplement the small units DO _{min} = 3.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5, DO _{min} = 3.0; U1+U2+U3+U5 at full gate, DO _{min} = 2.7; U4+U2+U3+U5 at full gate, DO _{min} = 2.6 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 2.8 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Turbine Inflow Conditions: DO 1 – 1.9 mg/L; Temperature = 16°C (approximately mid-August to September 1); DO objective in tailrace is 5 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Daily</u> operating conditions (i.e., operating ~ 24 hours per day), the following is recommended:
≤ 10	≤ 1000	Any unit except U2 and U5
10-16	1000-1400	U1; U3; U4;
16-25	1400-2000	U1; Any 2 units except U2 and U5; U4 DO _{min} = 4.5; U3 DO _{min} = 3.5;
25-37	2000-3100, limit for 5 mg/L	Any 2 original units except U2 and U5; U1 DO _{min} = 4.4; U4 DO _{min} = 3.6; U3 DO _{min} = 2.5;
37-75	3100-6300	U1+U4 DO _{min} = 3.4; U1+(U2 or U3) DO _{min} = 3.1; U4+(U2 or U3) DO _{min} = 2.6; U3+(U2 or U5) DO _{min} = 2.2 with U5 (last on, first off) Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	Four original units DO _{min} = 3.0; U1+U4+U2 or U3 DO _{min} = 2.7; U1+U2+U3 DO _{min} = 2.5; U4+U2+U3 DO _{min} = 2.3; any two small units with U5 (last on, first off) DO _{min} = 2.1 to 2.7 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	U1+U4+U3+U2 DO _{min} = 2.4; U1+U4+(U3 or U2)+U5 DO _{min} = 2.3; U2+U3+U4+U5 DO _{min} = 2.1; U3+U2+U5@72MW DO _{min} = 1.6 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5, DO _{min} = 2.1; U1 or U4+U2+U3+U5, DO _{min} = 1.7; three small units+U5, DO _{min} = 1.4 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 1.8 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Turbine Inflow Conditions: DO 0 – 0.9 mg/L; Temperature = 16°C (approximately September 1 to mid-September and stays at 0 until lake mixing); DO objective in tailrace is 5 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Daily</u> operating conditions (i.e., operating ~ 24 hours per day), the following is recommended:
≤ 8	≤ 900	Any unit except U2 and U5
8-21	900-1700	U1; U3+U4; U4 DO _{min} = 4.2; U3 DO _{min} = 3.7;
21-31	1700-2500	U1+(U3 or U4); U1 DO _{min} = 4.0; U4 DO _{min} = 3.3; U3 DO _{min} = 2.0;
31-37	2500-3150, limit for 5 mg/L	U1+U3+U4; U1+ (U3 or U4) DO _{min} = 4.8; U1 DO _{min} = 3.6; U4 DO _{min} = 2.9; U3 DO _{min} = 1.6;
37-75	3150-6300	All 4 small units DO _{min} = 3.7; U1+(U3 or U2)+U4 DO _{min} = 2.9; U1+U4 DO _{min} = 2.6; U1+(U2 or U3) DO _{min} = 2.2; U4+(U2 or U3) DO _{min} = 1.6; U2+U5 DO _{min} = 1.2 with U5 (last on, first off) Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	All 4 original units DO _{min} = 2.0; U1+U4+(U2 or U3) DO _{min} = 1.8; U1+U2+U3 DO _{min} = 1.6; U4+U2+U3 DO _{min} = 1.4; any one-two small units supplemented by U5 as needed DO _{min} = 0.7 ; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	All 4 original units DO _{min} = 1.5; If two-three small units are operating, consider U5 (last on, first off) as follows: U1+U4+(U3 or U2)+U5, DO _{min} = 1.3; U1+U2+U3+U5, DO _{min} = 1.1; U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5 DO _{min} = 1.1; U1+U4+(U3 or U2)+U5@72MW, DO _{min} = 1.0; U1+U2+U3+U5@72MW, DO _{min} = 1.0; U4+U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 1.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Turbine Inflow Conditions: DO 0 – 0.9 mg/L; Temperature = 20°C (approximately September 1 to mid-September and stays at 0 until lake mixing); DO objective in tailrace is 5 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Daily</u> operating conditions (i.e., operating ~ 24 hours per day), the following is recommended:
≤ 8	≤ 900	Any unit except U2 and U5
8-18	900-1500	U1; U3+U4; U3 or U4, DO _{min} = 4.0;
18-25	1500-2000	U1+U3 or U4; U1 DO _{min} = 4.0; U4 DO _{min} = 3.5; U3 DO _{min} = 2.6;
25-37	2000-3150, limit for 5 mg/L	U1+U3+U4; U1+(U3 or U4) DO _{min} = 4.5; U3+U4 DO _{min} = 3.9; U1 DO _{min} = 3.4; U4 DO _{min} = 2.6; U3 DO _{min} = 1.5;
37-75	3150-6300	All small units DO _{min} 3.5; U1 full gate + rest split between U3+U4 DO _{min} = 3.3; U1+U4+(U2 or U3) DO _{min} = 2.7; U1+U4 DO _{min} = 2.5; U4+U2+U3 DO _{min} = 2.3; U1+(U2 or U3) DO _{min} = 2.2; If only one small unit is operating, consider U5 (last on, first off) as follows: U1+U5 DO _{min} = 2.0; U4+U5 DO _{min} = 1.5; U2+U3 DO _{min} = 1.4; (U2 or U3)+U5 DO _{min} = 1.1; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	All four original units DO _{min} = 2.0; U1+U4+(U2 or U3) DO _{min} = 1.7; U1+U2+U3 DO _{min} = 1.5; U4+U2+U3 DO _{min} = 1.3; any one-two small units supplemented by U5 as needed DO _{min} = 0.7; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	All 4 original units DO _{min} = 1.4; If two-three small units are operating, consider U5 (last on, first off) as follows: U1+U4+(U3 or U2)+U5, DO _{min} = 1.3; U1+U2+U3+U5, DO _{min} = 1.1; U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	U1+U4+U2+U3+U5 DO _{min} = 1.1; U1+U4+(U3 or U2)+U5@72MW, DO _{min} = 1.0; U1+U2+U3+U5@72MW, DO _{min} = 1.0; U4+U2+U3+U5@72MW, DO _{min} = 0.9 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units, DO _{min} = 1.0 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

FIGURES

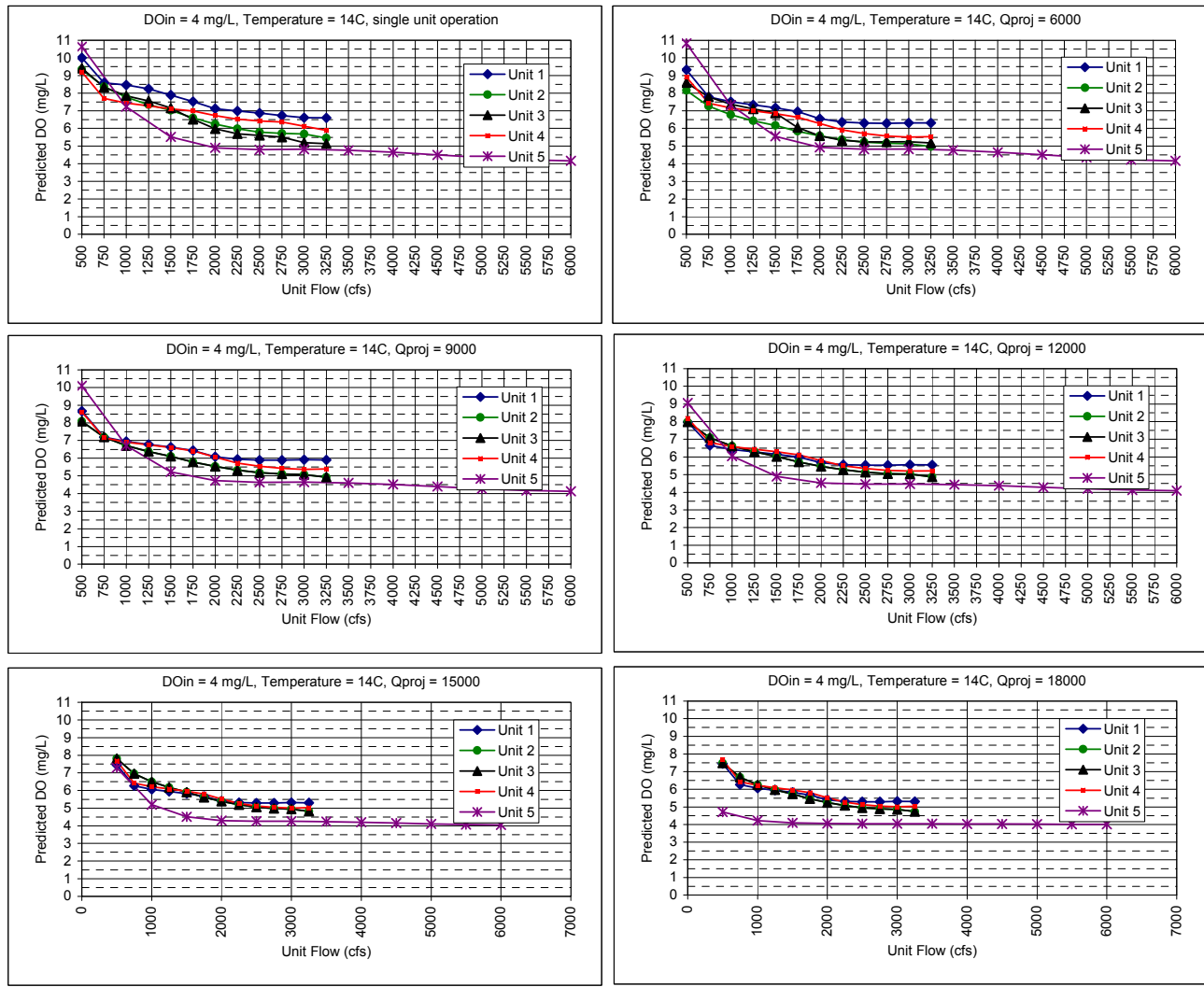


Figure 1: Predicted DO for each unit versus unit flows for the range of total project releases for the following water quality conditions: $DO_{in} = 4 \text{ mg/L}$ and temperature = 14°C . This plot was used to develop the LUTs.

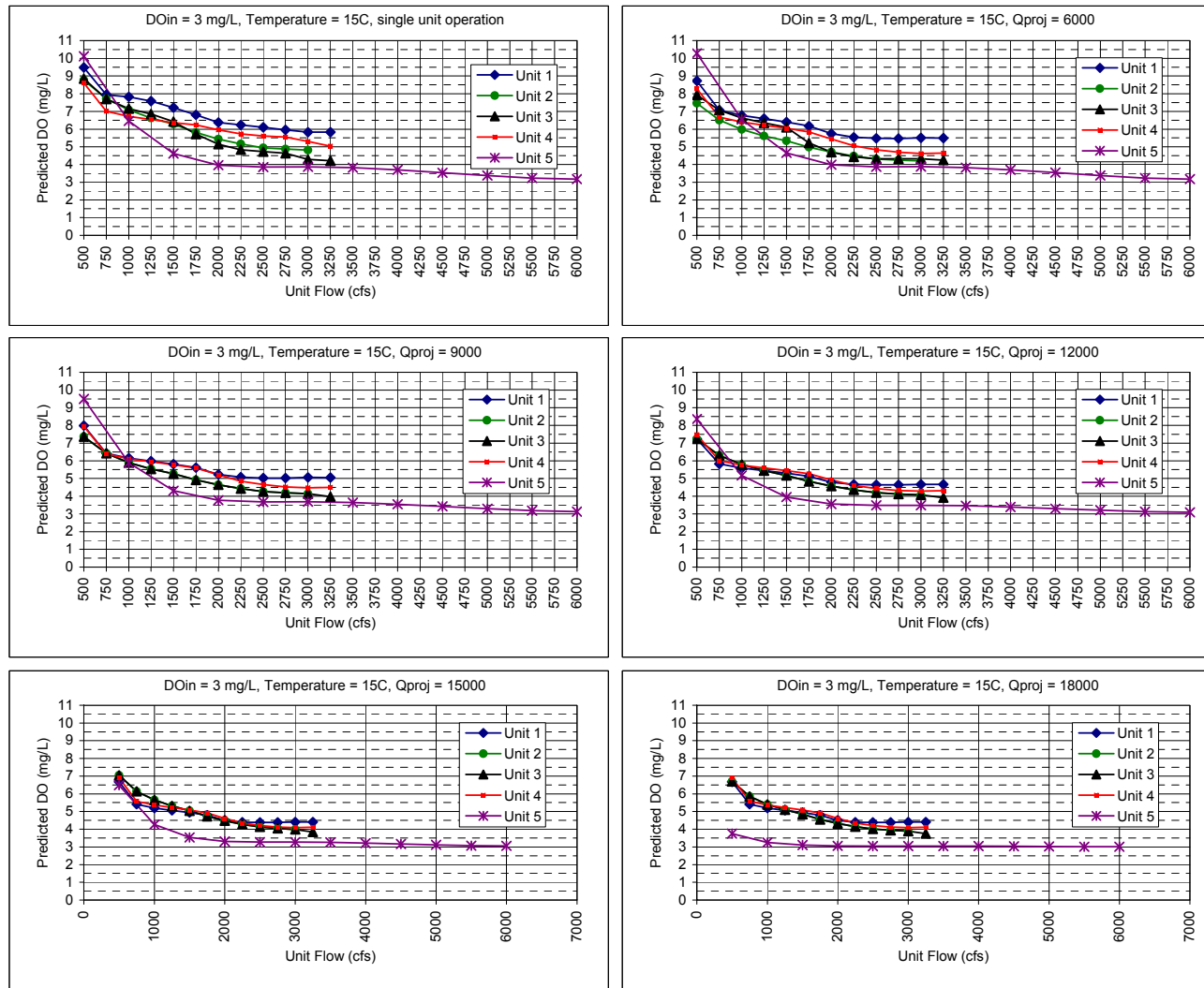


Figure 2: Predicted DO for each unit versus unit flows for the range of total project releases for the following water quality conditions: DOin = 3 mg/L and temperature = 15 °C. This plot was used to develop the LUTs.

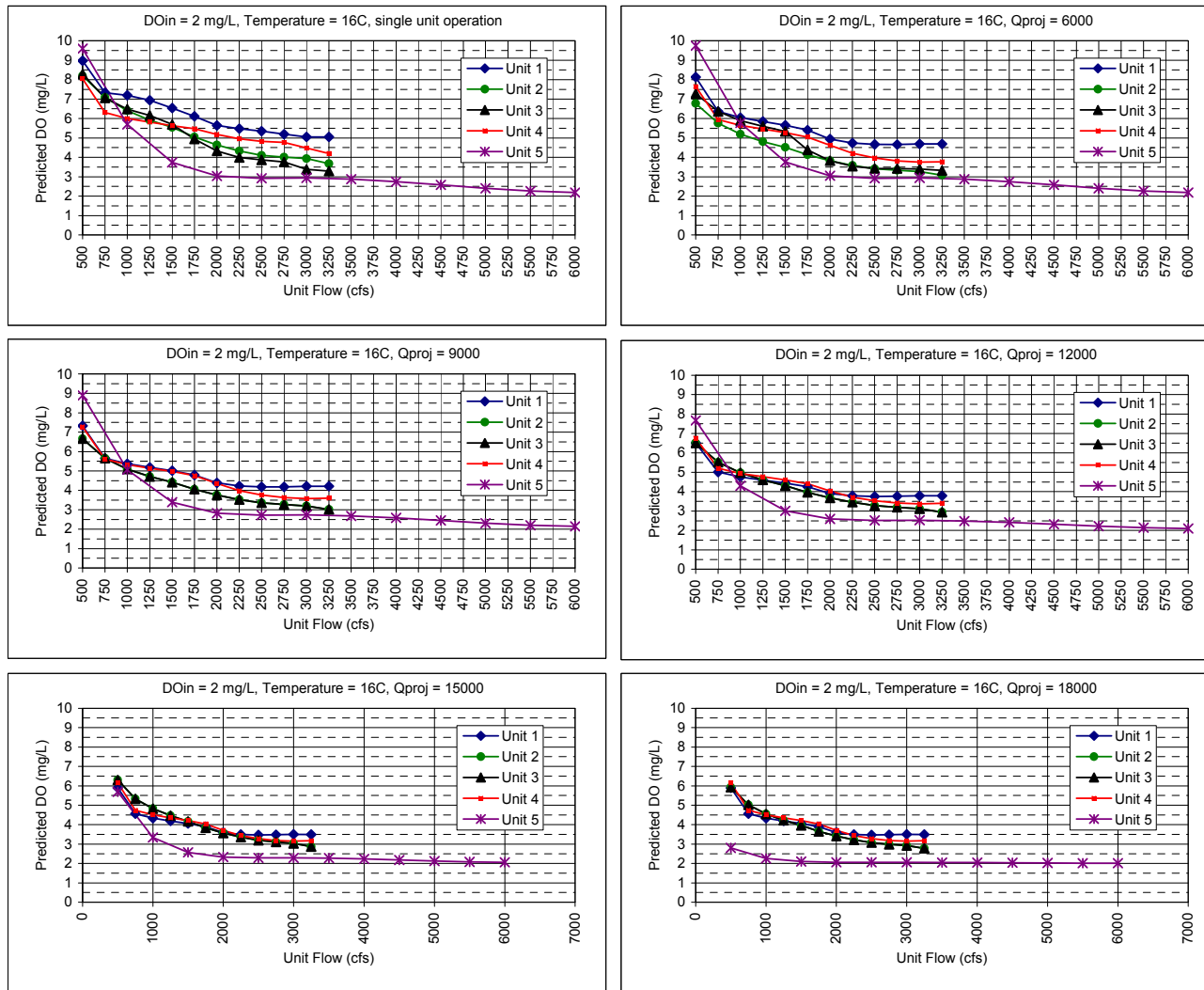


Figure 3: Predicted DO for each unit versus unit flows for the range of total project releases for the following water quality conditions: $DO_{in} = 2 \text{ mg/L}$ and temperature = 16°C . This plot was used to develop the LUTs.

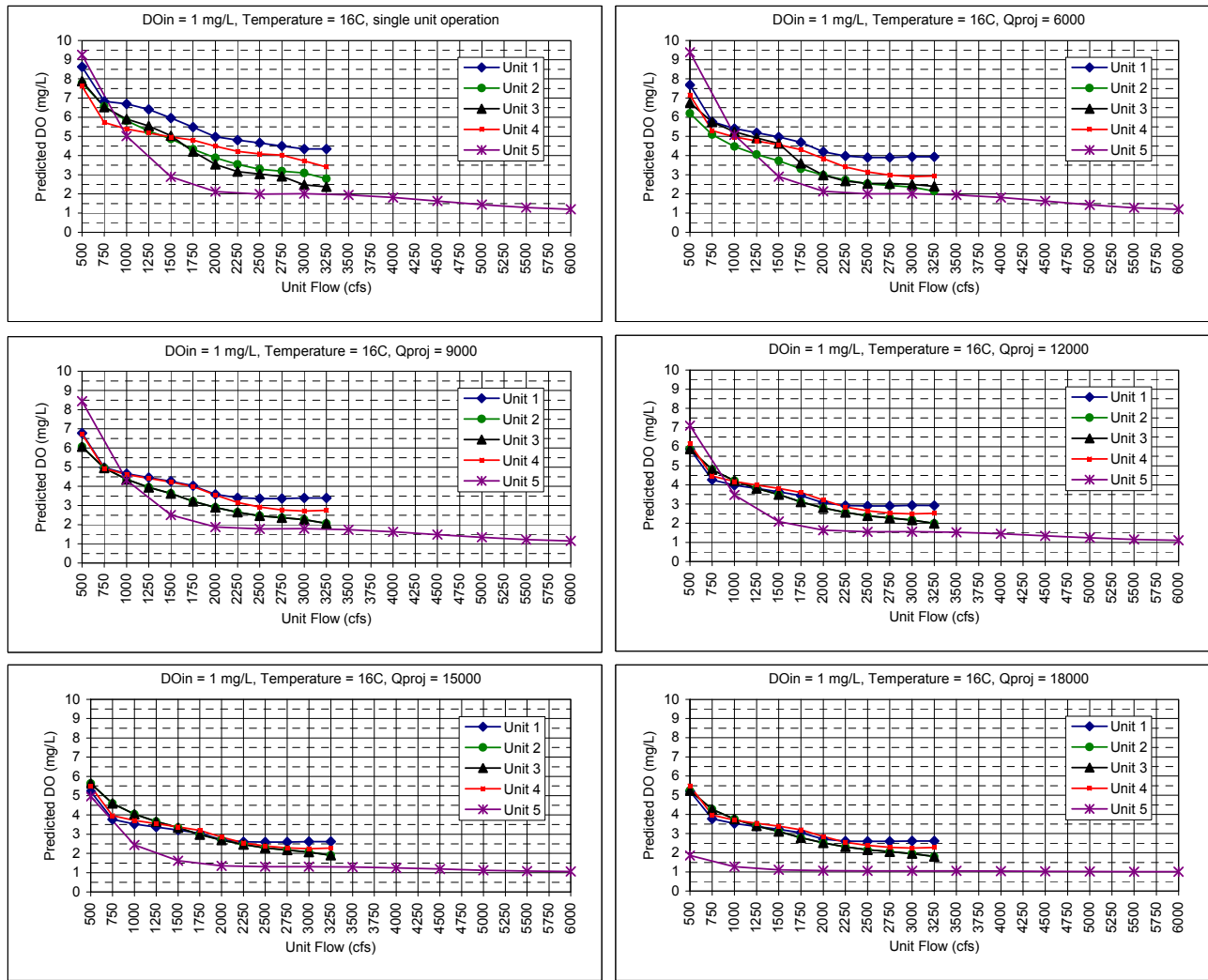


Figure 4: Predicted DO for each unit versus unit flows for the range of total project releases for the following water quality conditions: $DO_{in} = 1 \text{ mg/L}$ and temperature = 16°C . This plot was used to develop the LUTs.

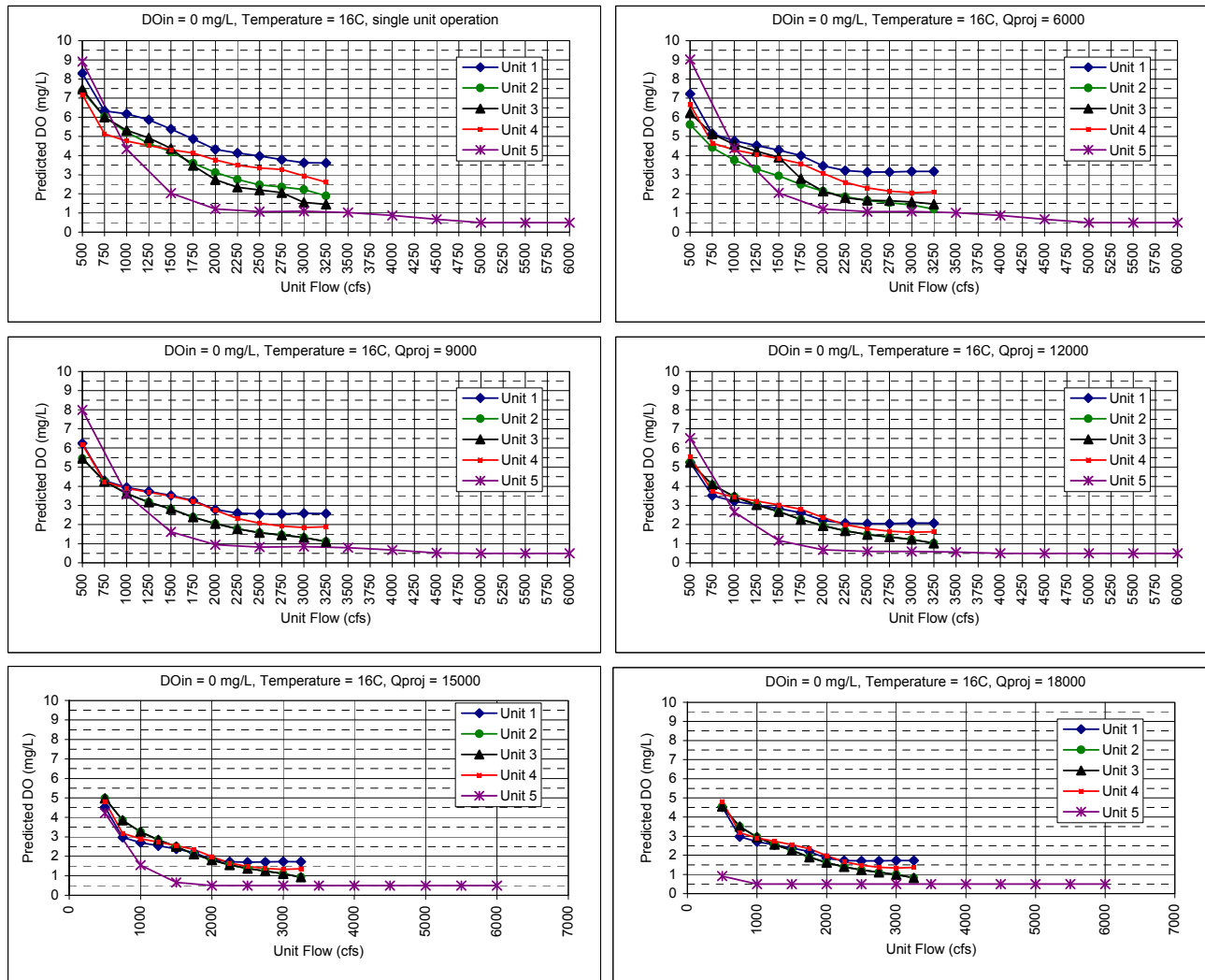


Figure 5: Predicted DO for each unit versus unit flows for the range of total project releases for the following water quality conditions: DO_{in} = 0 mg/L and temperature = 16 °C. This plot was used to develop the LUTs.

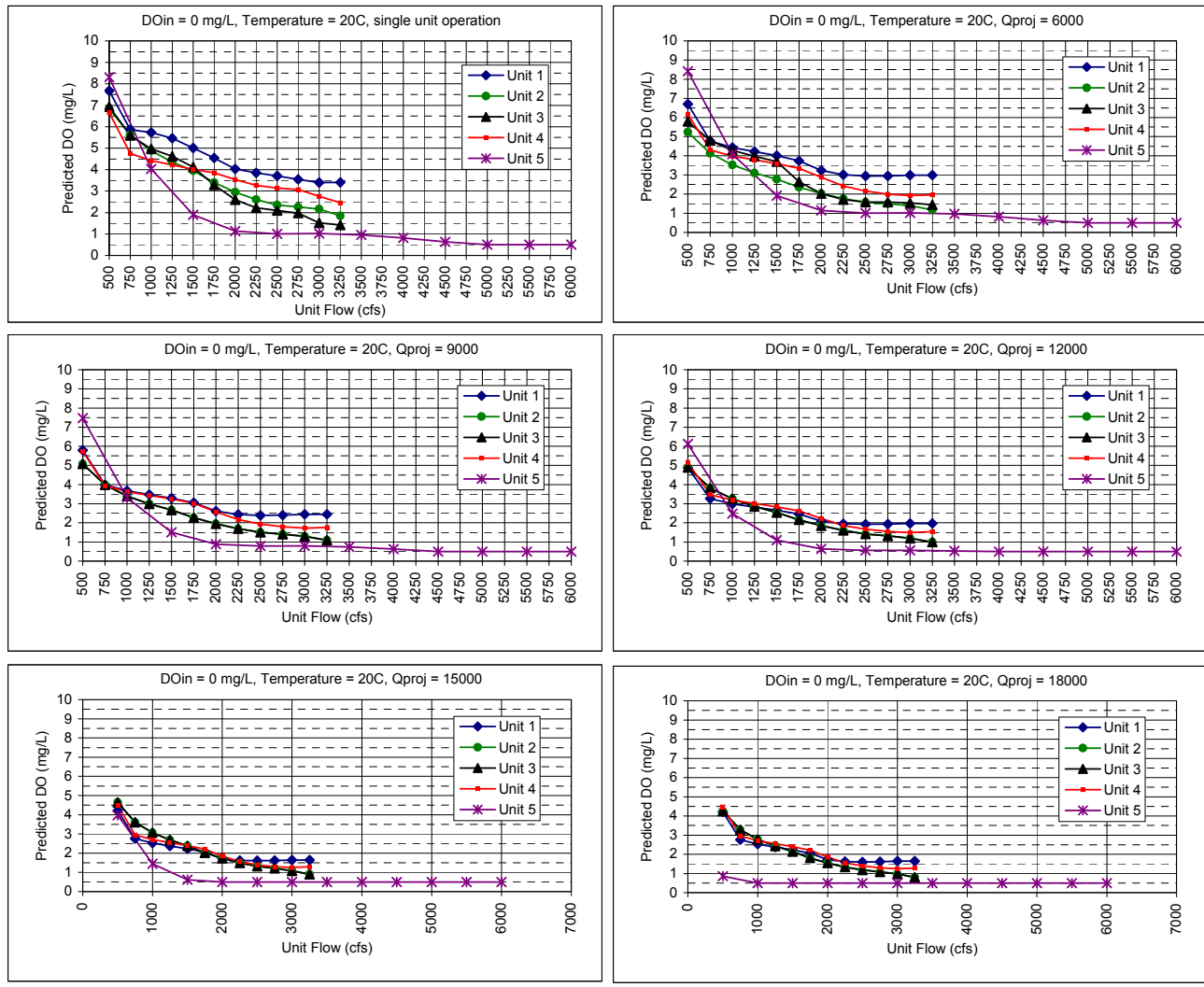


Figure 6: Predicted DO for each unit versus unit flows for the range of total project releases for the following water quality conditions: DO_{in} = 0 mg/L and temperature = 20 °C. This plot was used to develop the LUTs.

APPENDIX AB
CONDENSED LOOKUP TABLES

Condensed Look-up Table for Hourly Operations

Turbine Inflow Conditions: DO = 0 – 3.9 mg/L; DO objective in tailrace is 4 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Hourly</u> operations, the following unit operations are recommended in the order of preference (the bold, blue values should attain 4 mg/L DO):
≤ 10	≤ 1000	1. U1, U3, or U4
10-18	1000-1500	1. U1, U3 or U4; 2. Even split any 2 units (except 2 & 5);
22-25	1500-2000	1. U1; 2. Even split any 2 units (except 2 & 5); 3. U4; 4. U3;
25-31	2000-2500	1. Even split any 2 small units (except 2); 2. U1; 3. U4; 4. U3;
31-36	2500-3000	1. Even split any 2 small units (except 2); 2. U1; 3. U4; 4. U3;
36-44	3000-3600, limit for 4 mg/L	1. U1+U4; 2. U1+U3; 3. U4+U3; 4. for project flow up to 3150 cfs, use in order of preference: U1, U4, U3
44-75	3600-6300	1. U1+U2+U3+U4; 2. U1 full gate + rest split between U3+U4; 3. U1+U4+(U2 or U3); 4. U1+U4; 5. U4+U2+U3; 6. U1+(U2 or U3); 7. U2+U3; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	1. U1+U2+U3+U4; 2. U1+U4+(U2 or U3); 3. U1+U2+U3; 4. U4+U3+U2; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	1. U1+U4+U3+U2 2. any available small units with U5 as needed to supplement the small units; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	1. U1+U4+U2+U3+U5; 2. U1+U4+(U2 or U3)+U5@72MW; 3. U4+U2+U3+U5@72MW Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Note that minimum flows during periods of low DO should be maintained at 450-500 cfs so that venting will draw air into the units

Condensed Look-up Table for Daily Operations

Turbine Inflow Conditions: DO = 0 – 4.9 mg/L; DO objective in tailrace is 5 mg/L		
MWs desired	Approximate flow (cfs)	For <u>Daily</u> operating conditions (i.e., operating ~ 24 hours per day), the following unit operations are recommended in the order of preference (the bold, blue values should attain 5 mg/L DO):
≤ 8	≤ 900	1. Any unit (except 2 & 5)
8-18	900-1500	1. U1; 2. Even split any 2 small units (except 2); 3. U4; 4. U3;
18-25	1500-2000	1. U1+U4; 2. U1+U3; 3. U1; 4. U4; 5. U3;
25-37	2000-3150, limit for 5 mg/L	1. U1+U3+U4; 2. U1+(U3 or U4); 3. U3+U4; 4. U1; 5. U4; 6. U3;
37-75	3150-6300	1. U1+U2+U3+U4; 2. U1+U4+(U3 or U2); 3. U1+U4; 4. U1+(U2 or U3); 5. U4+(U2 or U3); Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
75-113	6300-9500	1. U1+U2+U3+U4; 2. U1+U4+(U2 or U3); 3. U1+U2+U3; 4. U4+U3+U2 Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
113-150	9500-12,600	1. U1+U4+U3+U2 2. any available small units with U5 as needed to supplement the small units; Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
150-178	12,600-15,000	1. U1+U4+U2+U3+U5; 2. U1+U4+(U2 or U3)+U5@72MW; 3. U4+U2+U3+U5@72MW Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run
≥ 178	≥ 15,000	All units Flows from Saluda need to be ≥ 2500 cfs before Unit 2 can be run

Note that minimum flows during periods of low DO should be maintained at 450-500 cfs so that venting will draw air into the units

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