

**MEETING NOTES**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY**  
**Water Quality, Fish and Wildlife RCG Meeting**

**October 18, 2016**

Final KMK 11-17-16

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**ATTENDEES:**

Bill Argentieri (SCE&G)  
Ray Ammarell (SCE&G)  
Randy Mahan (SCE&G)  
Caleb Gaston (SCANA)  
Tom McCoy (USFWS) via phone  
Fritz Rohde (NOAA) via phone  
Bill Marshall (SCDNR)  
Dick Christie (SCDNR)  
Ron Ahle (SCDNR)

Rusty Wenerick (SCDHEC)  
Gerrit Jobsis (American Rivers)  
Charlene Coleman (American Whitewater)  
Bill Stangler (Congaree Riverkeeper)  
Henry Mealing (Kleinschmidt)  
Kelly Kirven (Kleinschmidt)

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*These notes are a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.*

Henry opened the meeting by reviewing the action items from the previous meeting. He then gave a recap of the proposed operational changes that SCE&G will explore to control downstream fluctuation flows, including installation of a camera on crest gates 1 and 2, improvements on reservoir inventory control, generator upgrades, and instantaneous minimum flow. SCE&G may evaluate inventory control improvements and generator upgrades by testing the inventory control first and generator upgrades when they are complete, approximately 10 years after the license is issued.

The group then began to discuss the “14-day stabilization flows” that were first brought up at the previous RCG meeting. Ray presented data showing inflow versus plant capacity from 2007 through 2016. Ray highlighted years where inflows were high and stabilization may not be possible. When inflow is higher than plant capacity (4,800 cfs), SCE&G cannot control downstream flows. Henry said that forecasting rain events is not always reliable, so it may be difficult to determine a block of time to target stabilization efforts. Gerrit agreed and suggested targeting several different time periods for different species. He also said that American Rivers envisions more of a naturalization instead of stabilization, where inflows equal outflows, instead of having a steady flow. He would like to see natural flows in the river that fish have adapted to over time. Ray pointed out that areas where inflow could equal outflow wouldn’t necessarily be naturalization, since projects located above Parr regulate flows as well.

Ray then shows a graph that compares inflow versus outflow for the years 2012 and 2015. In 2012, outflow varied some from inflow because of generation. Dick said that when flows change from 2,000 cfs inflow to 4,000 cfs outflow on a roughly weekly basis over the course of a month, this might be an opportunity to stabilize flows. He believes this would have a positive impact on fish.

Gerrit said daily inflows in Ray's graph don't show hourly affects, where high spikes in flow are more common. He said daily flows mute out hourly flows and hourly impacts of Fairfield should be considered. In the 2015 graph, flows are lower and closer to the hydraulic capacity of the plant, therefore you don't see the impacts of Fairfield as often. When flows are lower, outflows match up to inflows more frequently. The group looked at hourly flows from March 2012 and it was easy to discern when units were running, which show up as blocks of flow from generation. Gerrit said that uncontrolled Enoree River and Tyger River flows and controlled flows from the Lockhart Project upstream of Parr are all entering the Broad River and that inflow to Parr has a regulated signature and Parr further modifies outflows. Ray asked - with a regulated input and a regulated output, what is stabilization and what is realistic? Ray said he believes the opportunity comes in when there are spikes from inventory spills and SCE&G can try to smooth those spikes out.

Flow stabilization will only be practical and possible when inflow is between minimum flow and plant capacity. When inflow is less than minimum flow, SCE&G must pass inflow. When inflow is greater than plant capacity, spillage will occur. However, spillage might be able to be adjusted so that less water is released over a longer period, keeping in mind Parr has very limited storage available to smooth out inflow.

Henry said that through these meetings the goal is to develop a PME measure to put in the settlement agreement. It would be best to create an adaptive management plan that can be adjusted after the license is issued if necessary, instead of developing something that would be included as a license article, which leaves little to no room for adjustment. Henry said if SCE&G gets specific direction from the agencies, they may be able to test the stabilization during 2017.

Gerrit said that the group is missing a big part of the stabilization idea. It's great to stabilize flows between inflow and plant capacity, but Parr and Fairfield combined create more issues than just Parr on its own. The group looked at USGS data from the Carlisle, Alston, and Enoree gages. Caleb said that some of the spikes are due to flows from Enoree that increase combined flows above plant capacity. Gerrit said that operation of Fairfield causes spikes in flow which he believes impacts spawning. Bill A. said some of these spikes will be controlled by giving control of the gates to operators. When flows are above hydraulic capacity of Parr, there will be spikes in flow. When flows are below hydraulic capacity of Parr, operators can control the gates to better control reservoir inventory. They can also control gates to reduce the amount of water being spilled when Fairfield is operating. Operators will be able to control the gates overnight, which is not currently possible. Henry explained further, saying the workers at the plant now set the gates at 3:00 pm and go home for the night. Whatever happens, happens until they return the next morning and adjust the gates. If operators are given control overnight, they can potentially reduce spikes in flow that may happen during that time. After cameras are installed, this can be tested and an adaptive management plan can be developed. SCE&G wants to make any changes they can to Parr and not have restrictions on Fairfield operations, since flexibility at Fairfield is very important for meeting system demands and operation of the nuclear plant.

Gerrit said that during times of spawning, he would like to see Fairfield operated only for reserve, which would benefit the Broad River and the Congaree River. Dick asked if it would be more beneficial to have a larger number of days where stabilization efforts are in place or a smaller number of days where Fairfield is operated for reserve purposes only.

The group split briefly to allow the stakeholders to have an internal discussion about what they would like to propose to SCE&G regarding downstream fluctuation flows. The group came back with the following proposal for project operations to address Fairfield flow spikes:

- Shortnose sturgeon spawning – for 14 days during the last two weeks in March (March 15-March 31), SCE&G is being asked to greatly regulate or remove effects of FFPS operations (generating and pumping) from Parr Shoals dam discharge, however, FFPS may be used for reserve purposes and when project inflow is less than hydraulic capacity of Parr Shoals powerhouse. SCE&G will determine how to address Fairfield effects.
- Striped bass, American shad, and Robust redhorse (and other species) spawning – during April 1<sup>st</sup>-May 10<sup>th</sup> – establish two 7-day blocks, determined annually by a technical team. SCE&G is being asked to control discharge from Parr Shoals dam to match inflow. During this period, FFPS may operate normally (generate and pump) to meet daily demands and reserve purposes without restrictions.

The group agreed that fluctuations between 3,000 and 4,500 cfs are okay, since flows will attenuate as they move downstream. For striped bass and other species, it is best to have two windows of 7 days each where flows are controlled, with one window being early in the season and one being later in the season, to provide for a better chance of success. Fritz said he would do some more investigation to verify if the shortnose sturgeon request is in line with NOAA guidelines.

Caleb asked if this should be based on water temperature instead of calendar dates. The group agreed that this is why developing an adaptive management plan will be best, so that changes can be made as necessary. SCE&G will discuss this proposal internally and determine how and if they can possibly accomplish these requests.

The meeting adjourned. Action items from this meeting are listed below.

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*ACTION ITEMS:*

- Kleinschmidt will provide meeting notes to the group.
- Kleinschmidt will summarize the stakeholder requests and distribute to the group for verification.
- SCE&G will discuss requests internally and let the RCG know what is possible.

# DOWNSTREAM FLUCTUATION FLOWS WQFW TWC MEETING

OCTOBER 18, 2016

# AGENDA

- Review Action Items from previous meeting (August 17, 2016)
- Review Proposed Operation Changes
- Discuss the “14 Day Stabilization Flow” – define expectations of the TWC for compliance



# Action Items from Previous Meeting

Action Item	Status
Kleinschmidt will provide meeting notes to the group.	9/16/2016
Kleinschmidt will provide Alex P. with methodologies for the additional reach added to HEC-RAS model.	10/10/2016
Kleinschmidt will produce a table of FDC percentages for upgraded capacities using curves produced from the modeled Parr inflow dataset.	Delayed until Generator Upgrade Evaluation Results
Kleinschmidt will provide the model data to Alex Pellett.	10/10/2016
Kleinschmidt and SCE&G will explore ways to quantify and estimate improvements to downstream fluctuations through the proposed plant upgrades and gate operational changes.	Ongoing
Gerrit will provide study that shows sturgeon spawning on the tail end of a high flow event during the spring.	

# Proposed Operational Changes

- Reservoir inventory control
- Camera on gates 1 and 2 to allow for better control of gates
- Potential generator upgrades
- Fisheries TWC developing an instantaneous minimum flow



## SCE&G Proposed Changes

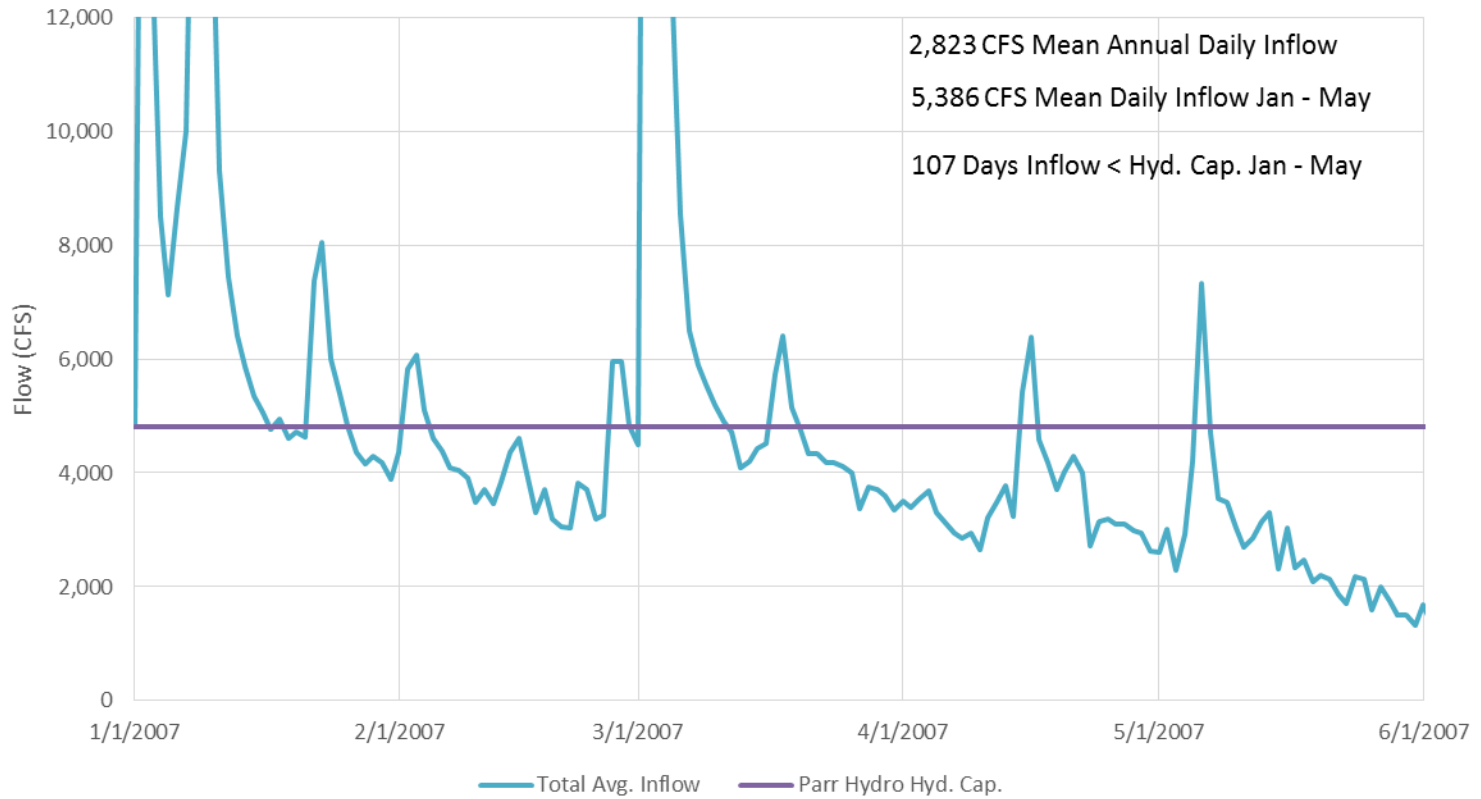
- **Inventory Management**: Working with System Control operators now to learn issues and try to reduce fluctuations. Developing formal guidelines for operators may require a study period after license is issued.
- **Camera/Control of Crest Gates**: Could be implemented within one year of license issuance.
- **Generator Upgrades**: Can likely be completed within 10 years of license issuance – investigating scope of upgrades Fall of 2016
- **Testing**: Perform a multi-year test/study after license is issued to evaluate effect of changes:
  - Inventory Control Improvements
  - Generator Upgrade Improvements



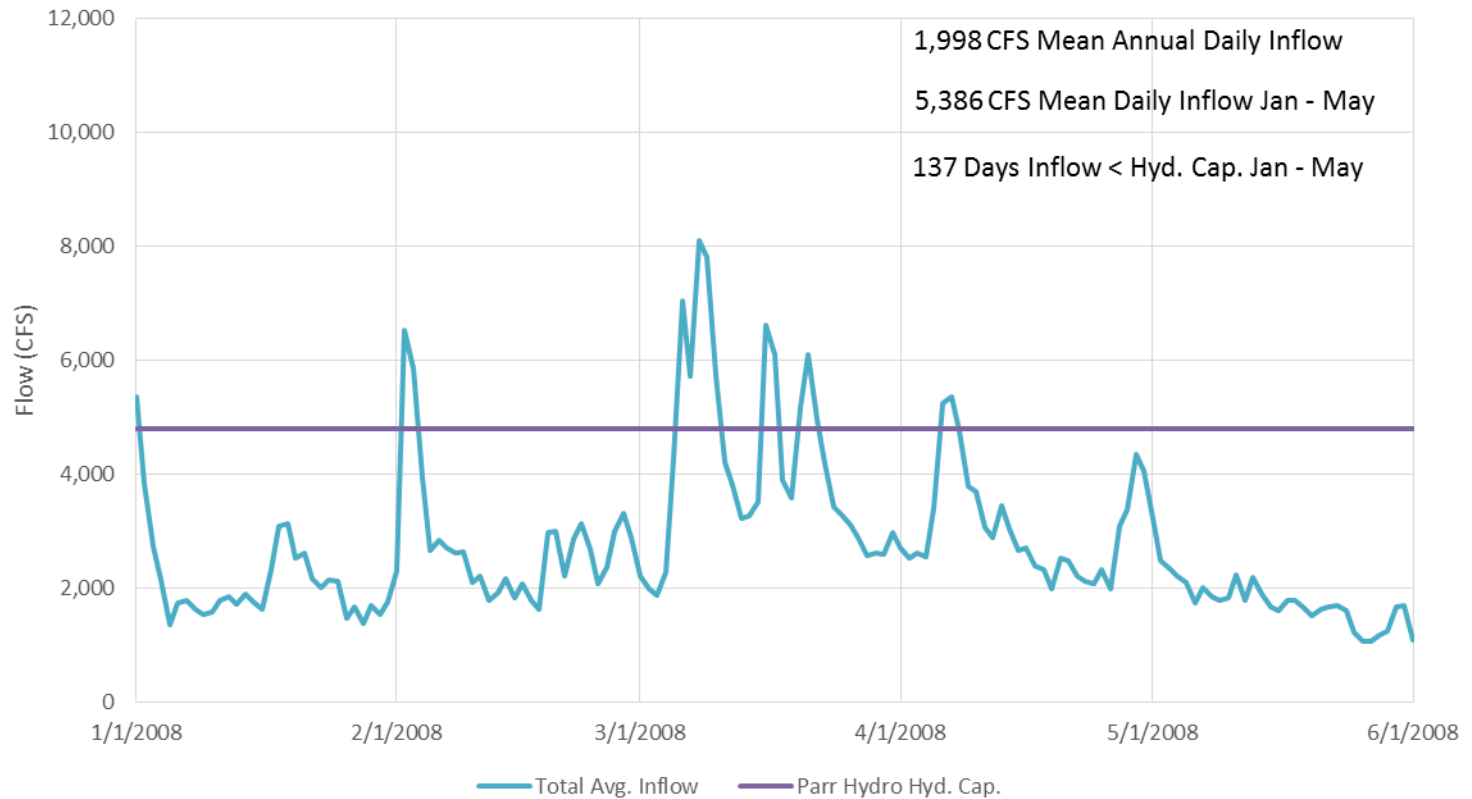
# 14 Day Stabilization Flow

- Additional information on “14 Day Stabilization Flows” from TWC
- What are TWC expectations for measuring compliance?
- Can it be broken up into segments?
  - What is the shortest time?
  - Three “5 day” flows
  - Two “7 day” flows
- Stabilization of flow based on a percentage, +/- inflow

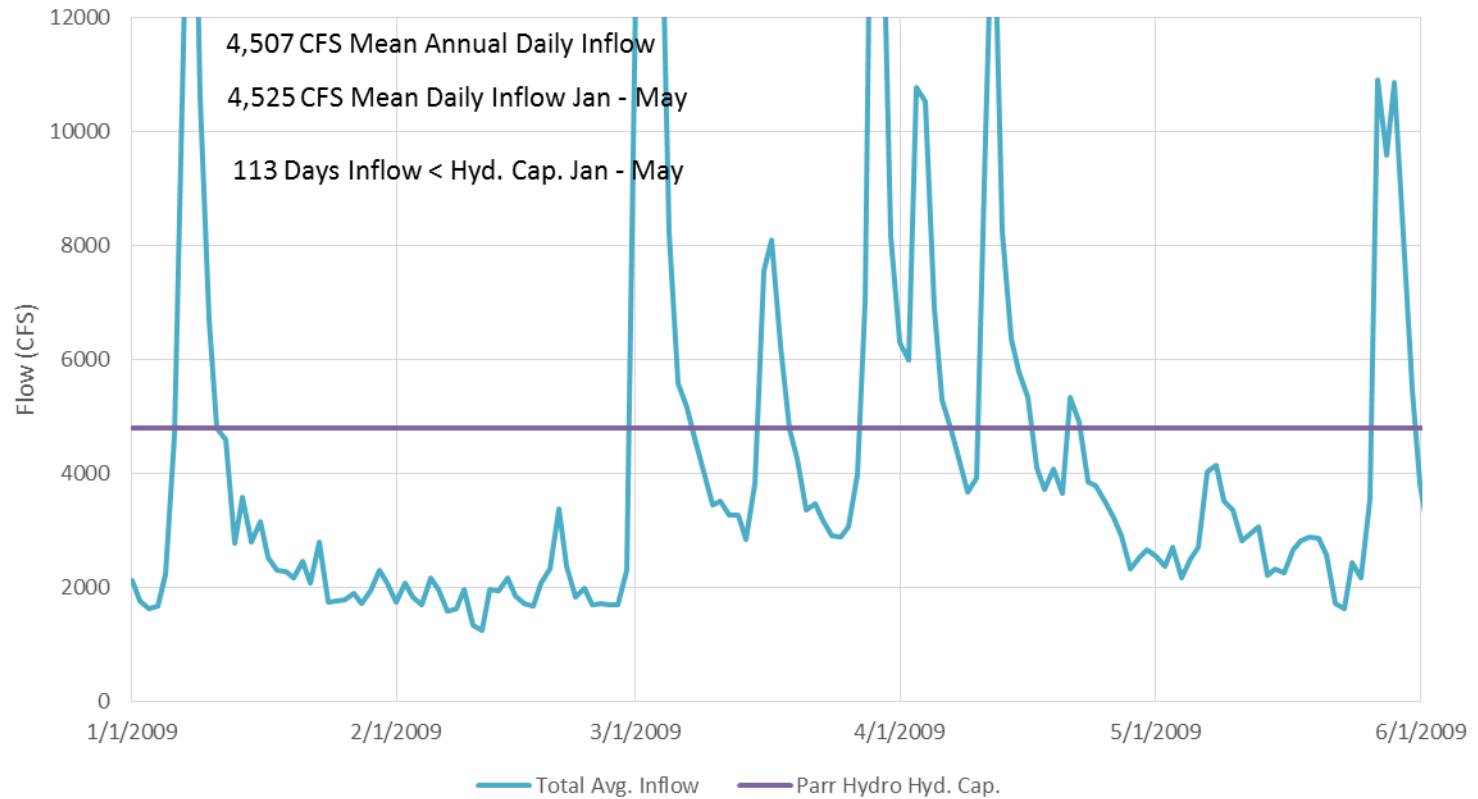
2007



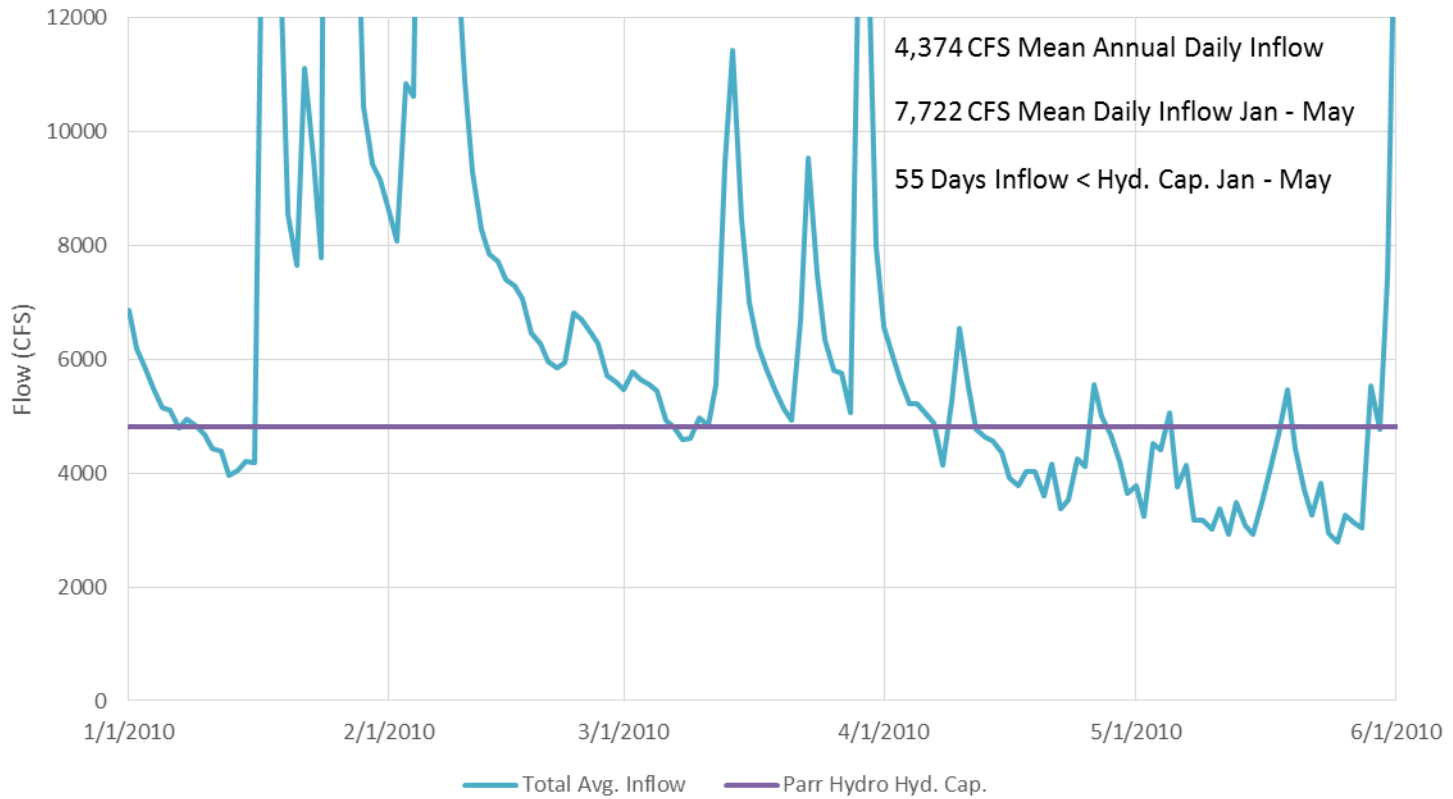
2008



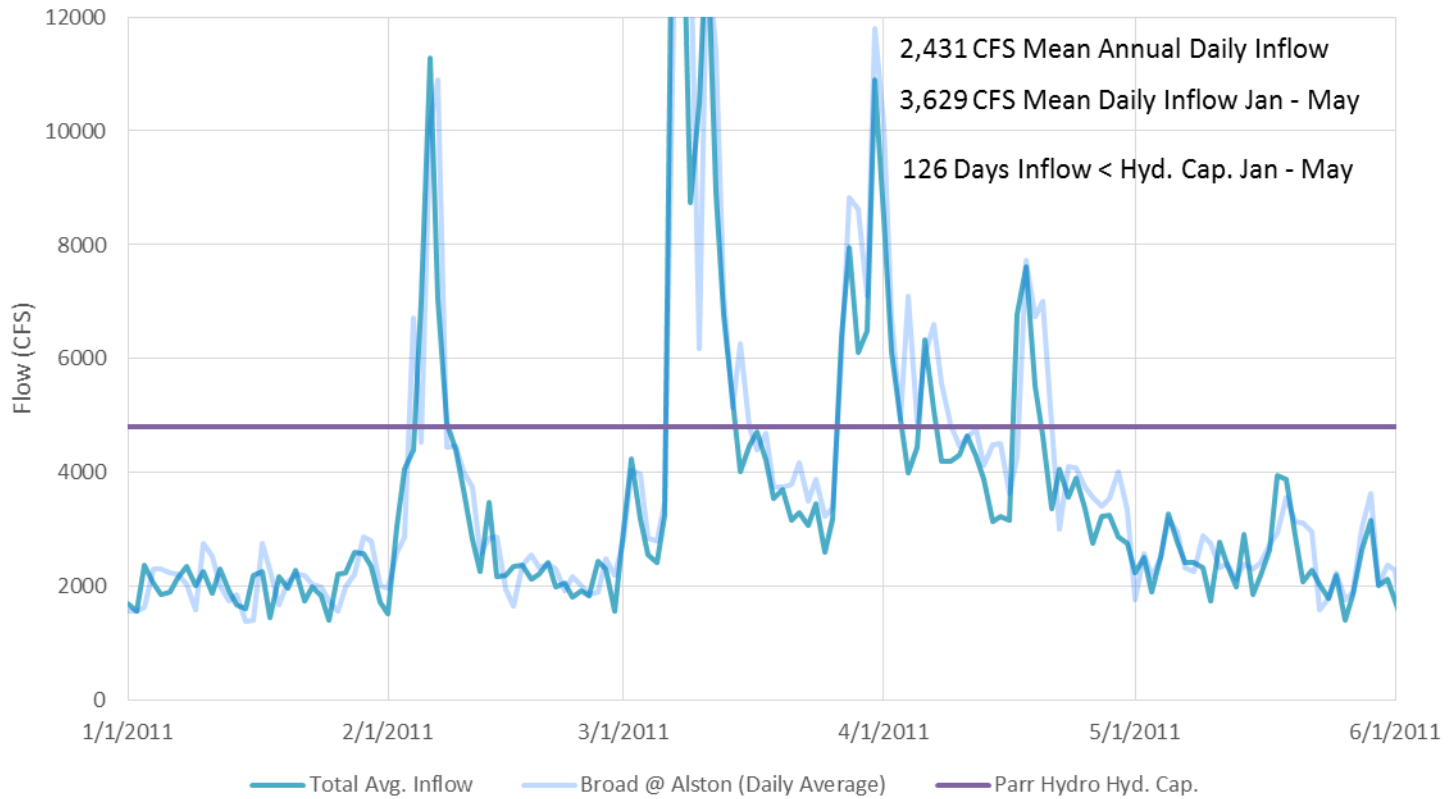
2009



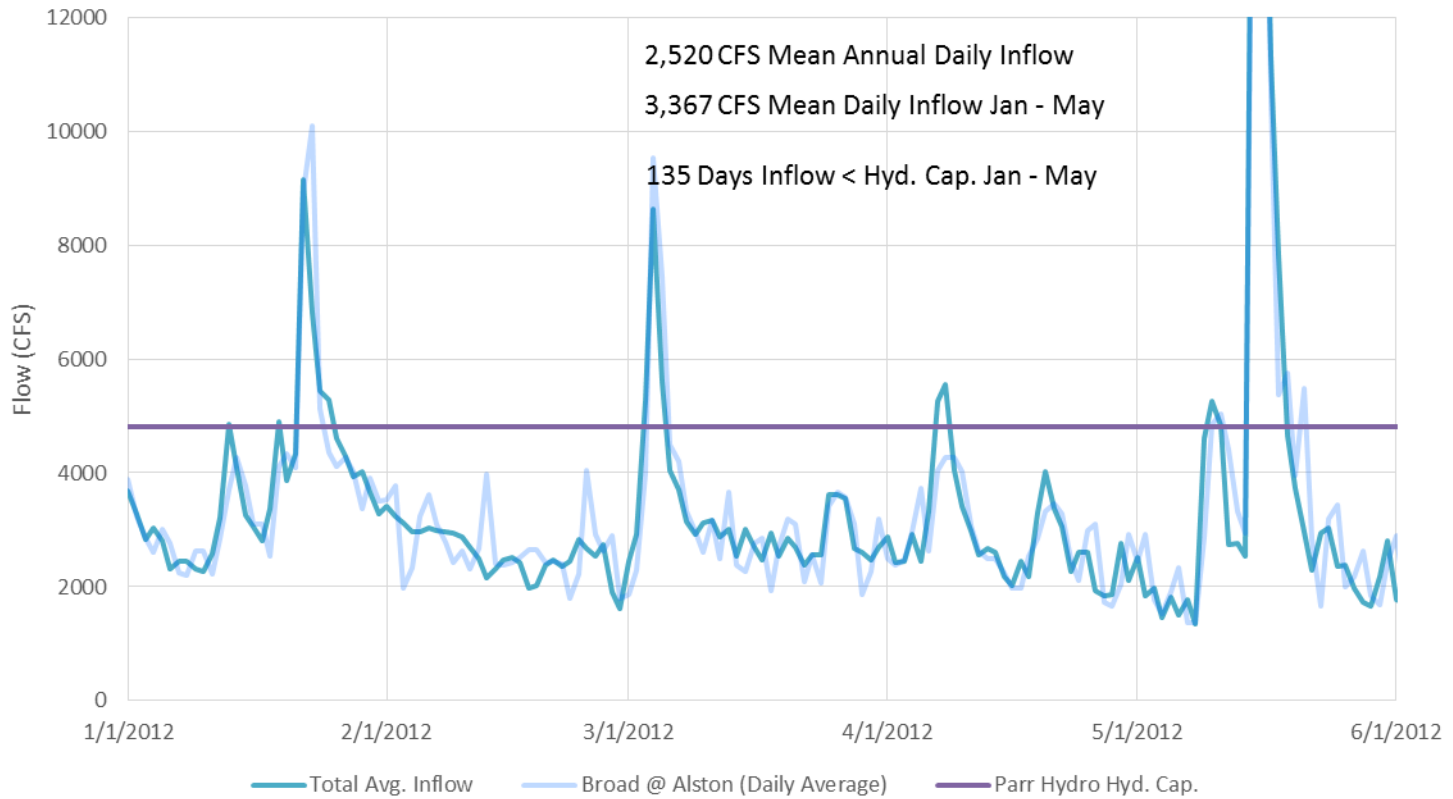
2010



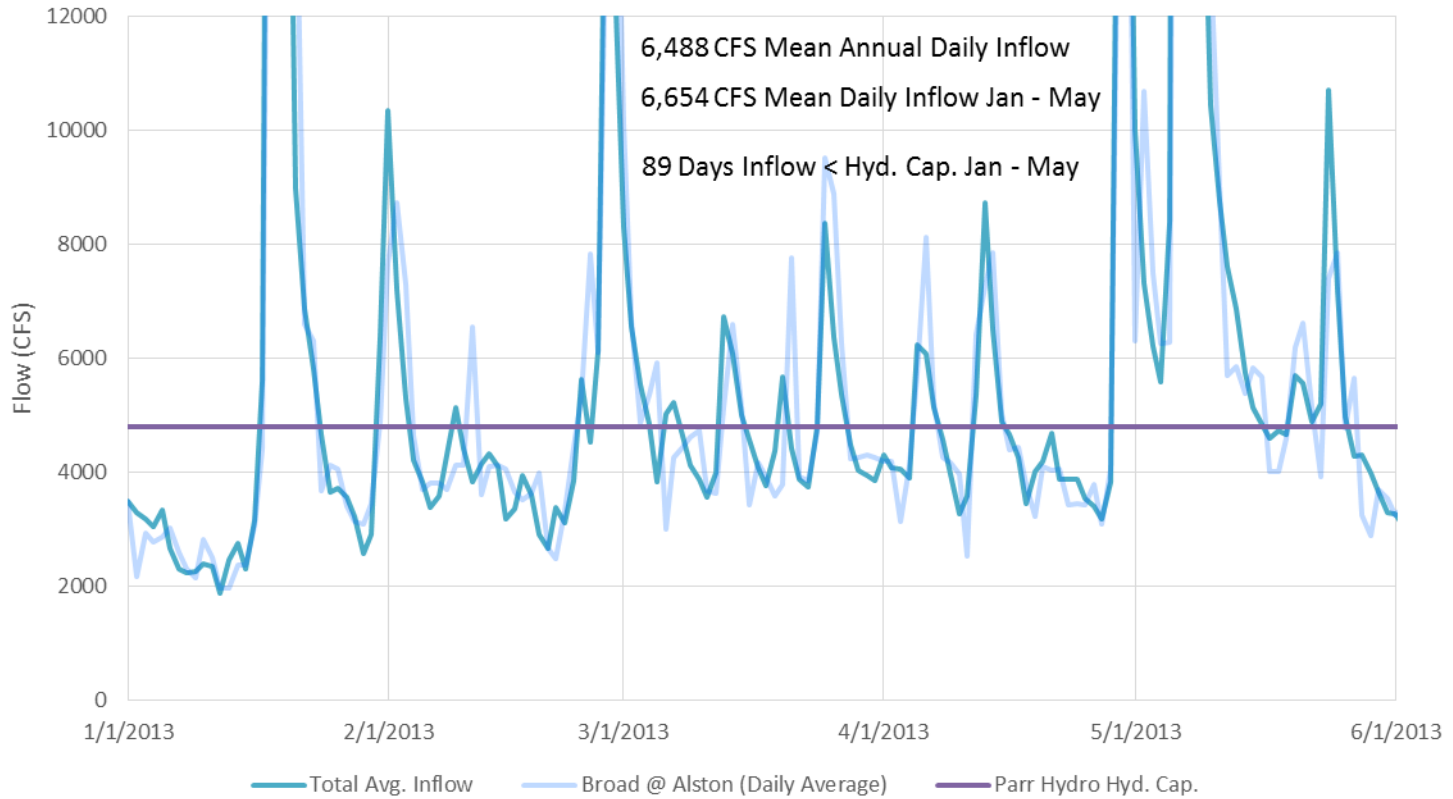
2011



2012

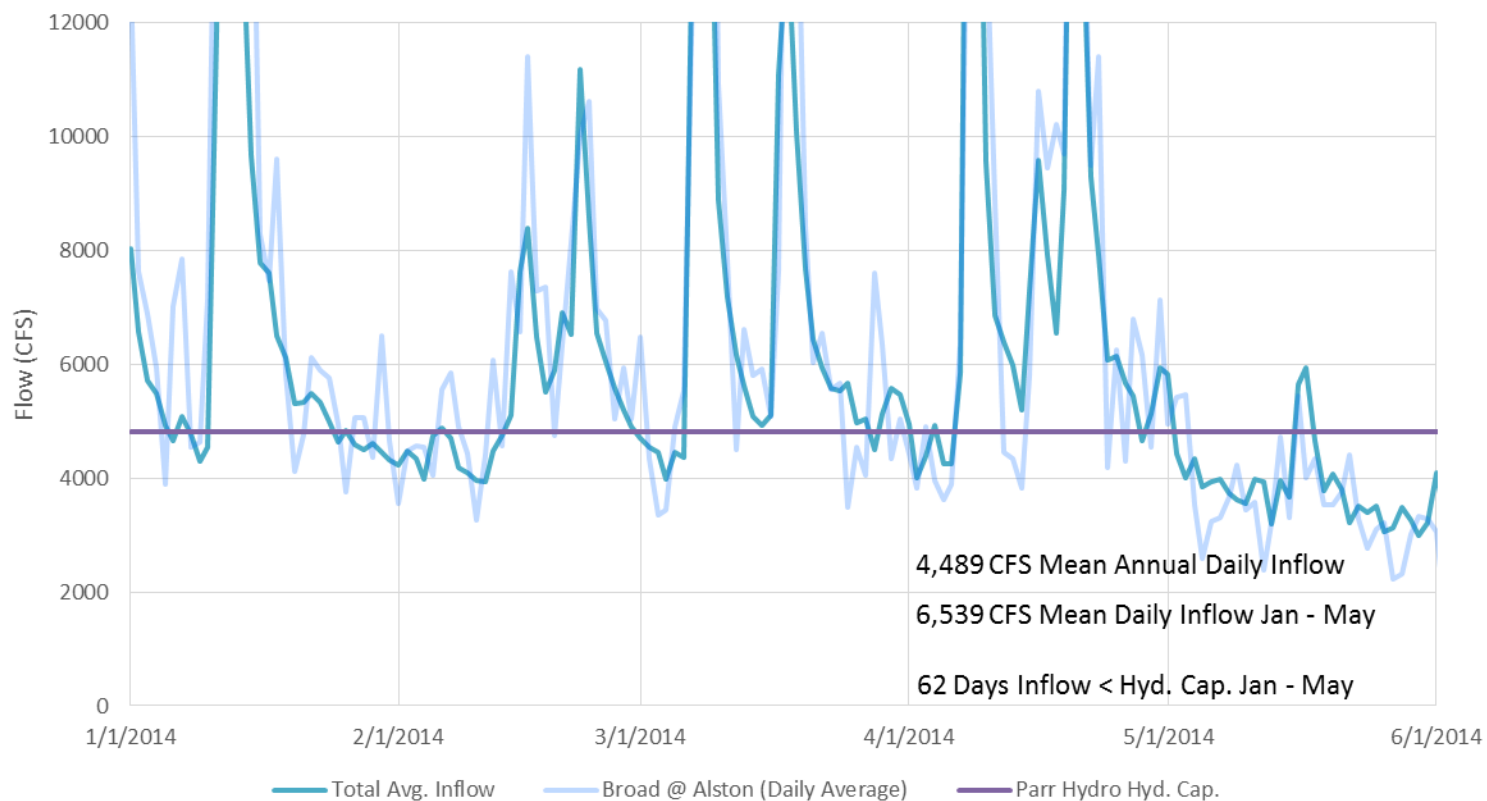


2013

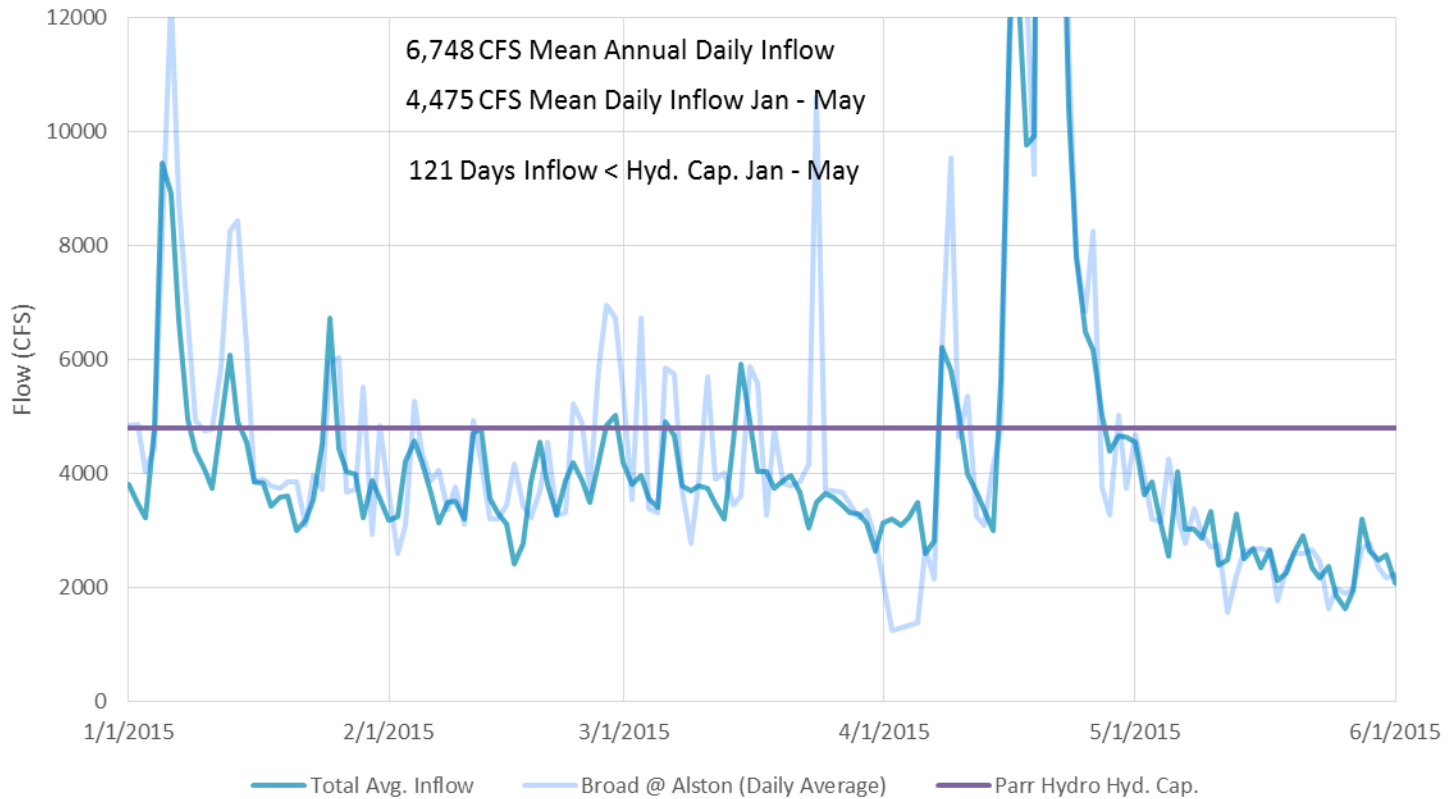




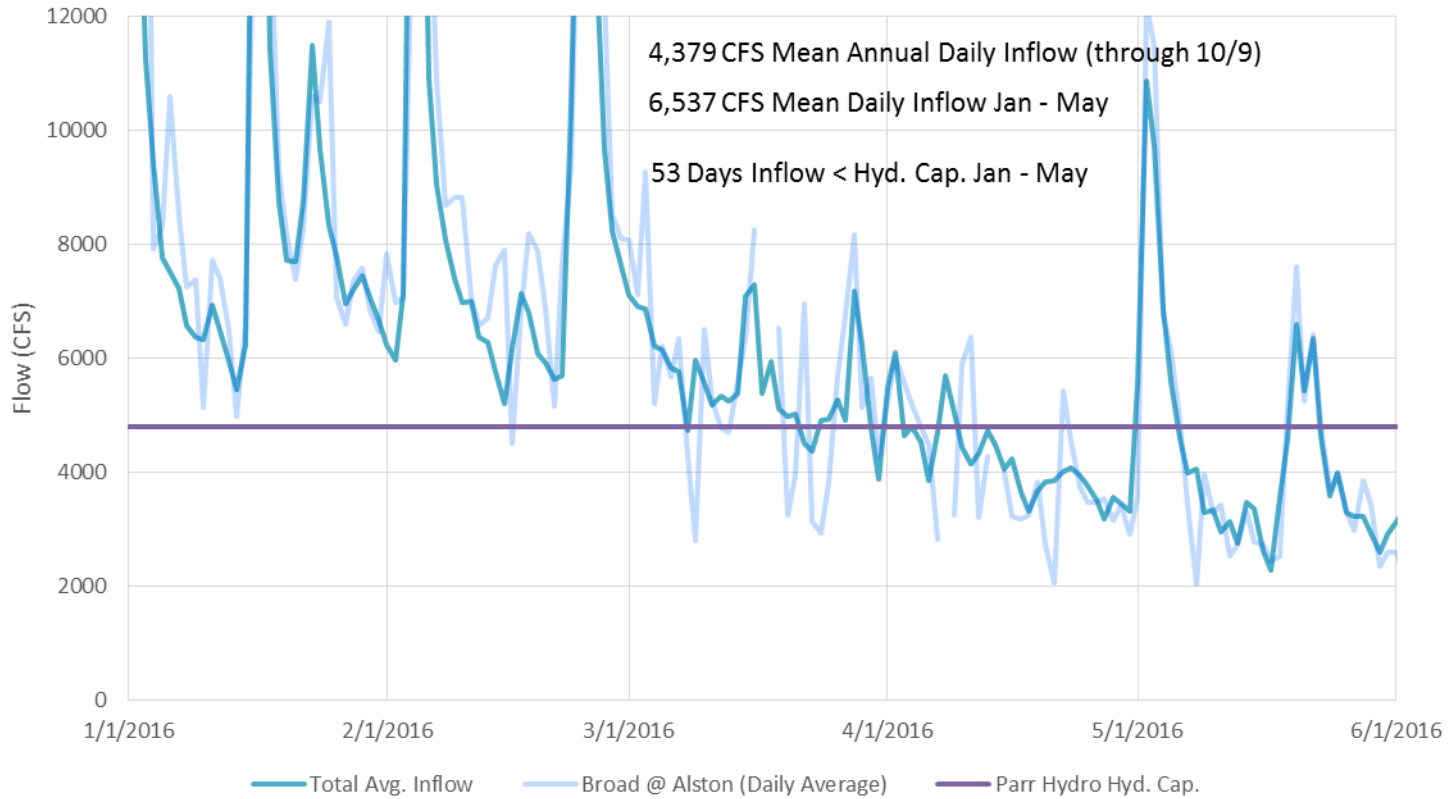
2014



2015



2016



# Next Action Items

- Include in an MOU, Settlement Agreement, not a license article
- Adaptive Management Plan after the license is issued
  - How do we evaluate?
- Test in 2017